CADTH Evidence Driven.

Non-Opioid Options for Managing Pain

Canada is in the midst of an opioid crisis. And even with growing awareness of the risks, opioids continue to be used extensively in the management of pain. The *2017 Canadian Guideline for Opioids for Chronic Non-Cancer Pain* recommends optimizing non-opioid pharmacotherapy and non-pharmacological therapy rather than a trial of opioids for patients with chronic, non-cancer pain (who are not currently taking opioids).

The challenge with this recommendation is knowing what the evidence says about the many different non-opioid options for treating pain. Are they effective? Are they safe? Are they readily available to patients?

To help support decisions about managing pain, CADTH has been reviewing the evidence on different treatment options for various types of pain through our Rapid Response service.

Here, you'll find the highlights of many of these evidence reviews — all in one place.

For more information on CADTH's response to the opioid crisis in Canada, visit **cadth.ca/opioids**. To access all of our evidence and full reports on the management of pain, visit **cadth.ca/pain**.

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Summary of Considerations for Practice

Legend:

Reasonable amount of evidence (although comparison with opioids may be lacking, making their place in therapy uncertain).
Evidence indicates that risk of harms is low and/or side effects are mild to moderate.

Some evidence to indicate effectiveness, but it may be conflicting, mixed, or lower quality.
Evidence on harms lacking or unclear.

No evidence or evidence shows lack of effectiveness.
Limited or no evidence on harms.

Chronic Musculoskeletal Pain

Intervention	Research Findings	Limitations and Cautions
Prolotherapy (irritant injection therapy) 	• Evidence suggests that dextrose prolotherapy for the management of musculoskeletal pain, including low back pain, tendinopathy, and osteoarthritis, may provide pain relief and improve physical function compared with saline injection control, exercise alone, or before prolotherapy treatment.	• Evidence of limited quality • No evidence comparing prolotherapy with opioids
Occupational therapy using a biopsychosocial approach 	• A multimodal approach may have a better effect on pain, disability, depression, and life satisfaction compared with usual care or no treatment.	• Considerable heterogeneity across studies • Blinding was not possible so ascertainment bias is possible
Cyclobenzaprine 	• Comparative studies found similar outcomes for cyclobenzaprine compared with diazepam, nonsteroidal anti-inflammatory drugs, or other muscle relaxants for musculoskeletal pain.	• Higher-quality and longer-term studies needed • Adverse effects, including drowsiness, dizziness, and dry mouth, occur frequently

Shoulder Tendinitis

Intervention	Research Findings	Limitations
Shockwave therapy 	• For calcific tendinitis of the shoulder, evidence suggests shockwave therapy using high energy is effective in reducing pain compared with placebo. • For non-calcific shoulder tendinitis, no significant benefit was observed with shockwave therapy compared with placebo or other treatments. 	• No comparison with opioids or other treatments • Adverse effects have been sparsely reported but include pain, small bruises and hematomas, petechial bleeding, and erythema at the site of application and are more common with high-energy shockwave therapy

Chronic Neck Pain

Intervention	Research Findings	Limitations
Manual therapy (manipulation, mobilization, massage, traction) 	• Manipulation and mobilization appear to be effective for managing neck pain in adults. • Massage may be beneficial for neck pain in adults. • Traction may be beneficial for managing neck pain in adults. • Two evidence-based guidelines recommend the use of manual therapies for chronic neck pain in adults including manipulation, mobilization, multimodal manual therapy, and massage. • The guidelines both recommend not to use relaxation massage, strain-counterstrain therapy, and/or traction.	• Evidence is limited (studies were limited in duration, quality, and quantity) • No evidence or recommendations for paediatric patients

Chronic Neck Pain

Intervention	Research Findings	Limitations
Physiotherapy 	• Physiotherapy for neck pain appears to be effective or, at the very least, neutral.	• The evidence was limited and largely low to moderate in quality, and no adverse effects were reported • No studies were identified that compared the clinical effectiveness of physiotherapy with opioids
Transcutaneous electrical nerve stimulation (TENS) (Home based or in a health care setting) 	• In general, guidelines do not recommend TENS (not specific to home use) for knee osteoarthritis, chronic neck pain, or chronic low back pain.	• No comparison to opioids • Limited evidence on harms or adverse events • Limited evidence for specific types of chronic pain

Chronic Back Pain

Intervention	Research Findings	Limitations
Manual therapy (manipulation, mobilization, massage, traction) 	• Spinal manipulation and soft tissue therapy may have positive effects on pain and function for chronic low back pain. • The effectiveness of spinal mobilization (often included as an adjunct to spinal manipulation) is uncertain. • Traction for low back pain with or without radiculopathy appears not to be effective. • No serious harms have been reported. • Three evidence-based guidelines provided recommendations supporting the use of manual therapy (including spinal manipulation) for chronic low back pain in adults. • One guideline recommended against the use of traction.	• Evidence is limited (studies were limited in duration, quality, and quantity) • No evidence or recommendations for paediatric patients
Physiotherapy 	• Physiotherapy for neck and/or back pain appears to be effective or, at the very least, neutral.	• The evidence was limited and largely low to moderate in quality, and no adverse effects were reported • No studies were identified that compared the clinical effectiveness of physiotherapy with opioids

Chronic Back Pain

Intervention	Research Findings	Limitations
Occupational therapy using a biopsychosocial approach	• Multidisciplinary biopsychosocial rehabilitation interventions seem to be more effective than usual care (i.e., pain medication and physical treatment) or physical treatments in decreasing pain and disability. • Multidisciplinary rehabilitation seems to be more effective than physical treatment in work absenteeism but not more effective than usual care.	• Considerable heterogeneity across studies • Blinding was not possible so ascertainment bias is possible
Prolotherapy (irritant injection therapy)	• Evidence suggests that dextrose prolotherapy for the management of musculoskeletal pain, including low back pain, may provide pain relief and improve physical function compared with saline injection control, exercise alone, or before prolotherapy treatment.	• Evidence of limited quality • No evidence comparing prolotherapy with opioids
Transcutaneous electrical nerve stimulation (TENS) (In a health care setting or at home) 	• In general, guidelines do not recommend TENS for chronic low back pain.  • Two guidelines recommend home-based TENS for chronic pain syndrome and chronic low back pain if TENS is shown to be effective in a clinical setting.	• No comparison with opioids • Limited evidence on harms or adverse events • Limited evidence for specific types of chronic pain
Magnesium (Oral or IV via a health care professional)	• Intravenous magnesium followed by oral magnesium may be beneficial for refractory chronic low back pain compared with placebo.	• Demonstrated in only one randomized controlled trial — more evidence is needed
Cyclobenzaprine	• Cyclobenzaprine may be more effective than placebo for patients with back pain.	• Higher-quality and longer-term studies needed • Adverse effects, including drowsiness, dizziness, and dry mouth, occur frequently

Chronic Knee Pain (Osteoarthritis)

Intervention	Research Findings	Limitations
Exercise 	• Exercise compared with no intervention, placebo, or minimal intervention for knee osteoarthritis appears to be effective. • In general, outcomes that improved with exercise included pain, physical function, physical performance, and stiffness (with some inconsistencies in the evidence). • An indirect comparison suggests that exercise may be comparable with opioids for the management of knee osteoarthritis. • There is limited reporting on potential adverse events; however, falling is the most commonly reported adverse event. • Evidence suggests that exercise is not associated with increased knee osteoarthritis progression.	• No evidence on subpopulations of patients with osteoarthritis of the knee • The variety of interventions, lengths of follow-up, and frequency or duration of exercise make it difficult to draw conclusions regarding the optimal approach to exercise
Transcutaneous electrical nerve stimulation (TENS) (In a health care setting or home-based device for purchase) 	• In general, guidelines do not recommend TENS for knee osteoarthritis.	• No comparison with opioids • Limited evidence on harms or adverse events • Limited evidence for specific types of chronic pain
Viscosupplementation (a procedure to inject lubricating fluid into a joint) 	• Viscosupplementation with hyaluronic acid may be superior to intra-articular placebo, corticosteroids, and nonsteroidal anti-inflammatory drugs for improving knee pain and function without increasing adverse events. • The majority of guidelines did not find sufficient evidence to make a recommendation for or against the use of viscosupplementation for knee osteoarthritis. • Two guidelines recommend against its use, while other guidelines recommend viscosupplementation after failure of other treatments, or in older adults with a certain osteoarthritis grade.	• Results are inconsistent, studies had significant limitations, and clinical significance was uncertain

Other Lower Extremity Chronic Pain Conditions

Intervention	Research Findings	Limitations
Shockwave therapy	• For plantar fasciitis, limited evidence suggests shockwave therapy is more effective than placebo, and equally effective as platelet-rich plasma injection, corticosteroid injection, or surgery. • For greater trochanteric pain syndrome, limited evidence suggests that shockwave therapy is more effective than conservative treatment; but findings are inconsistent when comparing shockwave therapy with corticosteroid injection or home-based physical training. • For patellar tendinopathy, limited evidence suggests that shockwave therapy is more effective than conservative treatment or equally effective as surgery; but findings were inconsistent comparing shockwave therapy with placebo or corticosteroid injection. • For medial tibial stress syndrome (shin pain), the addition of shockwave therapy to either conservative treatment or to a running program had added benefit.	• Limited evidence • No comparison with opioids and limited comparison with other treatments • Adverse effects reported with shockwave therapy included skin reddening, bruising at the site of application, and local swelling and pain

Migraine Prophylaxis

Intervention	Research Findings	Limitations
Magnesium (oral) 	• There is a possible benefit of oral magnesium for migraine prophylaxis compared with placebo. • In two guidelines, magnesium was recommended for migraine prophylaxis.	• Limited evidence • Various dosing

Neuropathic Pain

Intervention	Research Findings	Limitations
Delta-9-tetrahydrocannabinol/ cannabidiol buccal spray	• One guideline recommended third-line use of delta-9-tetrahydrocannabinol/cannabidiol buccal spray for patients uncontrolled on drug therapy.	• Lack of high-quality, longer-term research

Neuropathic Pain

Intervention	Research Findings	Limitations
Gabapentin	• Studies suggest a greater reduction in neuropathic pain with gabapentin compared with placebo in adults. • Indirect evidence suggests similar short-term pain relief with gabapentin compared with pregabalin, tricyclic antidepressants, and serotonin-norepinephrine reuptake inhibitors in patients with painful diabetic neuropathy or post-herpetic neuralgia. • Low-quality studies suggest that gabapentin may improve pain and related sleep disturbances caused by HIV-associated sensory neuropathy.	• Only a moderate proportion of patients experienced substantial pain relief (assessed as a 50% reduction or more in pain intensity) • Low-quality and limited-duration evidence • There is the potential for misuse of gabapentin

Fibromyalgia

Intervention	Research Findings	Limitations
Gabapentin	• Indirect evidence suggests similar short-term pain relief with gabapentin compared with pregabalin, tricyclic antidepressants, and serotonin-norepinephrine reuptake inhibitors in patients with fibromyalgia.	• Low-quality and limited-duration evidence • There is the potential for misuse of gabapentin
Cyclobenzaprine	• Cyclobenzaprine may be more effective than placebo. • Comparative studies found similar outcomes for cyclobenzaprine compared with amitriptyline.	• Higher-quality and longer-term studies needed • Adverse effects, including drowsiness, dizziness, and dry mouth, occur frequently

Chronic Pain

Intervention	Research Findings	Limitations
Multidisciplinary treatment programs	• Multidisciplinary management of chronic, non-malignant pain may lead to modest improvement for some (but not all) of the outcomes measured. • Three guidelines recommended multidisciplinary treatment for the management of chronic, non-malignant pain under specific circumstances.	• Unclear how it compares with other treatments • No evidence for paediatric patients • Limited reporting of adverse events
Behavioural and psychological interventions 	• Cognitive behavioural therapy, or CBT, was recommended across all included guidelines. • Other psychological interventions including hypnosis, relaxation, biofeedback, and mindfulness were also recommended in two or more guidelines.	• Whether these interventions are effective for different types of chronic pain is unclear

Chronic Pain

Intervention	Research Findings	Limitations
Home-based transcutaneous electrical nerve stimulation (TENS)	• The evidence was mixed, limited in quantity, and inconclusive. • Two guidelines recommend home-based TENS for chronic pain syndrome if TENS is shown to be effective in a clinical setting.	• No comparison with opioids • Limited evidence on harms or adverse events • Limited evidence for specific types of chronic pain
Nabilone	• Evidence suggests some positive benefits and limited harms of nabilone compared with placebo or known analgesics.	• Evidence is limited and low quality
Delta-9-tetrahydrocannabinol/ cannabidiol buccal spray	• Delta-9-tetrahydrocannabinol/cannabidiol buccal spray may be associated with favourable short-term patient outcomes, including reduced levels of perceived pain and good tolerability, when compared with placebo therapy.	• Sustained benefit of short-term clinical outcomes and safety over a longer term is unclear, and the clinical effectiveness of Delta-9-tetrahydrocannabinol/cannabidiol buccal spray oral spray in comparison with other pharmacologic treatments is lacking
Medical cannabis	• Medical cannabis may decrease the need for opioids, nonsteroidal anti-inflammatory drugs, tricyclic antidepressants, dexamethasone, and ondansetron when used concomitantly.	• Data are limited

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Questions or comments about CADTH or our evidence?

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ABOUT CADTH

CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs and medical devices in our health care system.

CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

Ce document est également disponible en français.

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