Spinal manipulative therapy for low back pain—time for an update

We read with interest the Tools for Practice article in the April issue of *Canadian Family Physician*.[1] In an attempt to answer the question posed by the authors, "Is spinal manipulative therapy (SMT) effective for low back pain (LBP)?" Manning and Allan state that the bottom line is "Research around SMT is poor, consistently inconsistent, and almost impossible to interpret."[1]

Given the high prevalence of LBP[2-4] and its associated high burden to society,[5] we appreciate the importance of regularly updating primary care physicians on the management of LBP. Further, we agree that research on LBP is at times difficult to interpret, often because of poor reporting and high heterogeneity of randomized controlled trials (patients, settings, treatments, outcomes).[6,7]

Nonetheless, several recent systematic reviews and national clinical practice guidelines (CPGs) on the treatment of acute and chronic LBP should also be considered when addressing the potential role of SMT in the treatment of patients with LBP. More important, when choosing the right therapy for the right patient, it is necessary to compare the effectiveness, risks of adverse events, and related costs of a given treatment with other commonly used approaches. Patient experience and satisfaction with care also matter to patients with back pain.[8]

Effectiveness. A recent meta-analysis concluded that for patients with acute LBP, SMT is associated with modest short-term improvements in pain and function when compared with sham manipulation, usual care, or other treatments (findings based respectively on 15 clinical trials [1711 patients] and 12 trials [1381 patients] that provided moderate-quality evidence).[9]

For acute and chronic LBP, a review of CPGs on the noninvasive management of LBP[10] and 3 national CPGs published since 2016 in the United States (Agency for Healthcare Research and Quality [AHRQ] comparative effectiveness review [CER][11]), the UK (National Institute for Care Excellence [NICE][12]), and Denmark (Denmark National Guideline[13]) recommend considering manual therapy, including SMT, mobilization, or soft tissue techniques such as massage. A fourth CPG, by the American College of Physicians (ACP),[14] recommends clinicians select nonpharmacologic treatment for acute and chronic LBP (superficial heat, massage, acupuncture, and SMT) before pharmacologic treatment options.

For acute LBP, if pharmacologic treatment is desired, the ACP suggests offering nonsteroidal anti-inflammatory drugs (NSAIDs) or skeletal muscle relaxants.[14] The AHRQ CER also recommends NSAIDs, skeletal muscle relaxants, and opioids, but recommends against acetaminophen and systemic corticosteroids.[11] Similarly, NICE recommends against acetaminophen and opioid use, but suggests NSAIDs might be offered at the lowest effective dose only after careful consideration of comorbidities and other risk factors for side effects.[12] In contrast, the Denmark National Guideline recommends against NSAIDs, acetaminophen, opioids, extraforaminal glucocorticoid injection, acupuncture, and targeted treatment for acute LBP.[13]

For chronic LBP, both the AHRQ CER[11] and NICE[12] specify manual therapy only as part of a multimodal approach including exercise, with or without psychological therapy. The ACP recommends exercise, multidisciplinary rehabilitation, acupuncture, exercises (mindfulness-based stress reduction, tai chi, yoga, motor control exercise), progressive relaxation, electromyography biofeedback, low-level laser therapy, operant therapy, behavioural therapy, and SMT.[14] In patients with an inadequate response to nonpharmacologic therapy, the ACP suggests considering NSAIDs as first-line therapy, or tramadol or duloxetine as second-line therapy for chronic LBP.

Adverse events. While there are case reports of serious complications following SMT, such as cauda equina syndrome, these are extremely rare in the lumbar spine.[15] A meta-analysis of moderate risk of bias studies by Paige et al addressed the risk of harm of SMT.[9] None of the randomized controlled trials or large observational studies identified any serious complications. In contrast, renal and gastrointestinal adverse effects of NSAIDs are common.[16] Among patients taking NSAIDs, renal function abnormalities occur in approximately 1% of patients,[17,18] and superficial gastric erosions or asymptomatic ulcers might occur in up to 5% to 20% of users.[19] Further, LBP is among the most common reasons for prescribing opioids in the United States. Opioid prescriptions for LBP might inadvertently lead to long-term use, with associated risks of dependency, addiction, and overdose.[20,21] Serious adverse events from opioids include tolerance, physical dependence, addiction, and

death.[22] Health and government agencies in the United States[23] and Canada[24] currently refer to this serious and growing problem as the "opioid crisis."

Costs of care. A review of cost-effectiveness of guideline-endorsed treatments for acute LBP found inconsistent or insufficient evidence for advice and SMT, respectively, and no evidence for the cost-effectiveness of medications, yoga, or relaxation.[25] For chronic LBP, the review found interdisciplinary rehabilitation, exercise, SMT, and cognitive-behavioural therapy to be cost-effective.[25] Very few studies have conducted a full economic evaluation of care offered by chiropractors, physical therapists, and general practitioners. A recent review of pragmatic studies comparing chiropractic care with medical care found mixed evidence, with one study favouring chiropractic care, another favouring medical care, and one finding no difference in cost-effectiveness.[26] Reviews of partial economic evaluations also failed to show a clear economic advantage of one type of care over another.[7,27-29] Overall, results from economic evaluations are difficult to compare owing to high heterogeneity (differences in health care systems, perspectives, interventions, populations) and methods used.[7]

Of interest, a recent retrospective observational study of more than 70 000 Medicare fee-for-service reimbursements for patients with multiple comorbidities aged 66 and older with chronic LBP episodes found that those who used only chiropractic services during their LBP episodes had lower overall costs of care, shorter episodes, and lower costs of care per episode day than patients receiving chiropractic care followed or preceded by medical care, or medical care alone.[30] Further, costs of care for the episode and per episode day were lower for patients who used a combination of chiropractic and medical care than for those who did not use any chiropractic services.[30]

Satisfaction with care. Deyo[16] recently commented on a 2013 survey by *Consumer Reports* involving 14 000 subscribers with LBP in which chiropractic care had the largest proportion of "highly satisfied" patients.[31] Among approximately 4000 respondents who had seen a chiropractor, 59% were highly satisfied compared with 55% who saw a physical therapist and 34% who saw a primary care physician.

Current scientific evidence on the effectiveness, lower risks of adverse events, and equivalent costs suggests that nonpharmacologic therapies, including SMT, should be first-line treatments for acute and chronic LBP.

Questions of interest. Notwithstanding the need for better-quality evidence on SMT,[6] the question we should ask ourselves today is not so much is SMT a useful approach for acute and chronic LBP but rather "To what extent does pharmacologic therapy still hold a place

in the management of acute and chronic LBP in light of its comparable effectiveness and cost-effectiveness but greater risk of adverse events to patients than other commonly used conservative approaches, including SMT?" Another relevant remaining question postulated by Foster et al[32] is, "Who should be the gatekeepers of patients presenting with musculoskeletal complaints?"

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Competing interests

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Response

We thank Bussières and colleagues for their letter[1] regarding the Tools for Practice article "Spinal manipulative therapy for low back pain."[2]

They make a number of reasonable points. There is no doubt that pharmaceutical agents like nonsteroidal anti-inflammatory drugs and opioids have risks of adverse events (and dependency issues for the latter). The adverse event profile for spinal manipulation therapy (SMT) is not well described or easily determined from the literature but is likely far less than many pharmaceutical agents, particularly in the long term. While the cost-effectiveness of SMT remains unclear, it does not appear to be considerably more costly than any other therapy.

However, these arguments alone do not advocate for SMT. For this, we need unbiased interpretation of high-quality research of effectiveness for pain, function, and other outcomes. As outlined in our article,[2] this is where our primary concern lies. Here are just some of the issues.

- As mentioned, research shows that when the first author of an SMT review was an SMT provider, 4 of 5 reviews were positive, while only 1 review of 17 was positive when the first author was not an SMT provider.[3]