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EDITORIAL

Are Pharmacological Interventions for Adults With Low Back Pain Effective and Safe? An Overview of Cochrane Reviews Summary With Commentary

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The aim of this commentary is to discuss the Cochrane Overview of Reviews "Pharmacological treatments for low back pain in adults: an overview of Cochrane Reviews" [1] by Cashin AG, Wand BM, O'Connell NE, Lee H, Rizzo RRN, Bagg MK, O'Hagan E, Maher CG, Furlan AD, van Tulder MW, McAuley JH,[1] published by the Cochrane Back and Neck and Cochrane Musculoskeletal Groups. This Cochrane Corner is produced in agreement with the *International Journal of Rheumatic Diseases* by Cochrane Rehabilitation with views[2] of the review summary authors in the "implications for practice" section.

1 | Background

In 2020, low back pain (LBP) affected approximately 619 million people globally, making it the leading cause of years lived with disability (YLDs) worldwide [2]. The global burden is expected to rise significantly, with projections showing that by 2050, over 800 million people will be living with LBP. This ever-increasing prevalence highlights the urgent need for tailored strategies to manage the condition in different settings. A key challenge lies in aligning healthcare practices with clinical guidelines to curb excessive opioid use and avoid unnecessary, costly surgical interventions [2]. Guidelines recommend mostly a comprehensive clinical assessment and tailored rehabilitation, although medication may be considered for certain indications [3, 4]. Current guidelines for the pharmacological management of LBP recommend initiating treatment with oral nonsteroidal anti-inflammatory drugs (NSAIDs), using the lowest effective dose for the shortest possible period, and tailoring the choice to each patient's risk factors [3, 4]. If NSAIDs are contraindicated, not tolerated, or ineffective, weak opioids (with or without paracetamol) may be considered for acute low back pain; however, routine use of opioids is discouraged, particularly for chronic LBP. Additionally, the guidelines advise against offering paracetamol alone, or the use of SSRIs, SNRIs, tricyclic antidepressants, gabapentinoids, or antiepileptics for managing LBP. However, the evidence for the pharmacological treatment of LBP is rather weak, and the advantages must be carefully weighed against the disadvantages [5].

2 | Pharmacological Treatments for Low Back Pain in Adults: An Overview of Cochrane Reviews

(Cashin AG, Wand BM, O'Connell NE, Lee H, Rizzo RRN, Bagg MK, O'Hagan E, Maher CG, Furlan AD, van Tulder MW, McAuley JH, 2023)

2.1 | What Is the Aim of This Cochrane Review?

This Cochrane Overview of Reviews aimed to summarize the evidence from Cochrane Systematic Reviews (CSRs) of randomized controlled trials on the efficacy, effectiveness, and safety of systemic pharmacological interventions for adults with non-specific low back pain.

2.2 | What Was Studied in the Cochrane Review?

The population addressed in this review was adults, 18 years or older, with non-specific LBP (e.g., non-radicular LBP, with or without non-specific degenerative changes), of any duration. Systematic reviews that included participants with spinal stenosis, LBP caused by known structural or pathological or specific medical conditions were excluded. The interventions studied were systemic pharmacological interventions used with the intent to improve pain and function for people with LBP, considered broadly as any medicine that affects the body as a whole, rather than individual parts or organs. There was no restriction on routes of administration or dose, and combinations of pharmacological interventions were also included. Comparisons were the following:

- Pharmacological intervention versus placebo or sham intervention (efficacy).
- Different forms of the same pharmacological intervention (e.g., selective NSAID versus a non-selective NSAID) (effectiveness).
- Pharmacological intervention versus a different type of pharmacological intervention (effectiveness).
- Pharmacological intervention versus a non-pharmacological intervention (effectiveness).

The major outcomes studied were pain, physical function, and safety. Minor outcomes were participant ratings of improvement, health-related quality of life, and workplace participation. The outcomes were grouped into a short-term period (≤ 3 months postintervention), an intermediate-term period (3–12 months postintervention), and a long-term period (> 12 months postintervention).

2.3 | What Was the Search Methodology and Search Date of the Cochrane Review?

The review authors searched for Cochrane Reviews in the Cochrane Database of Systematic Reviews that had been published from inception to June 3, 2021, without restriction. They used a combination of Medical Subject Headings (MeSH) and keywords on low back pain.

2.4 | What Are the Main Results of the Cochrane Review?

Seven reviews were included with 22 238 participants across 103 unique randomized controlled trials (RCTs), with two to 32 RCTs in each review. Sample sizes ranged from 722 to 5540 participants. Six CSRs were published before 2017 and one in 2020. The reviews reported on six pharmacological intervention classes: paracetamol, NSAIDs, muscle relaxants, benzodiazepines, opioids, and antidepressants. Very few reviews reported data for intermediate-term follow-up and no reviews reported data for long-term follow-up; so, unless otherwise stated, outcome data are presented below for short-term follow-up.

2.4.1 | Acute Low Back Pain

- For pain intensity, there is moderate certainty evidence that NSAIDs (MD −7.29 on a 0 to 100 scale (higher scores indicate worse pain), 95% CI −10.98 to −3.61) and muscle relaxants (RR 0.58, 95% CI 0.45 to 0.76) probably slightly improve pain, and high-certainty evidence for no difference between paracetamol and placebo (MD 0.49 on a 0 to 100 scale (higher scores indicate worse pain), 95% CI −1.99 to 2.97).
- For physical function, there is high-certainty evidence that NSAIDs provide a small improvement (MD −2.02 on a 0–24 scale (higher scores indicate worse disability), 95% CI −2.89 to −1.15), moderate-certainty evidence that muscle relaxants provide a small improvement (RR 0.55, 95% CI 0.40 to 0.77), and high-certainty evidence for no difference between paracetamol and placebo (MD 0.05 on a 0 to 24 scale (higher scores indicate worse disability)).
- For NSAIDs there was very low-certainty evidence for no evidence of an increased risk of adverse events (RR 0.86, 95% CI 0.63 to 1.18), but moderate certainty evidence was found for an increased risk of adverse events (RR 1.50, 95% CI 1.14 to 1.98) for muscle relaxants.
- None of the included Cochrane Reviews aimed to identify evidence on the efficacy of opioids for acute LBP, whereas for antidepressants no evidence was identified by the included reviews for acute LBP.

2.4.2 | Chronic Low Back Pain

- There is moderate-certainty evidence that selective NSAIDs (MD −6.97 on a 0 to 100 scale (higher scores indicate worse pain), 95% CI −10.74 to −3.19), and strong opioids (SMD −0.43, 95% CI −0.52 to −0.33) provide a small improvement, high-certainty that tapentadol (opioid) provides a small improvement (MD −8.00 on a 0 to 100 scale (higher scores indicate worse pain), 95% CI −1.22 to −0.38), and low-certainty evidence for no difference between placebo and SSRIs (antidepressants) on pain intensity (SMD −0.04, 95% CI −0.25 to 0.17). There was low-certainty evidence for a small between-group difference favoring benzodiazepines compared to placebo for a higher chance of pain relief (RR 0.71, 95% CI 0.54 to 0.93).
- There is moderate-certainty evidence that both strong opioids (SMD −0.26, 95% CI −0.37 to −0.15) and tramadol (opioid) (SMD −0.18, 95% CI −0.29 to −0.07) provide a small improvement in physical function.
- There is low-certainty evidence for no evidence of an increased risk of adverse events for NSAIDs (RR 1.04, 95% CI −0.92 to 1.17), and low-certainty evidence for no evidence of difference

between muscle relaxants and placebo in the risk of adverse events (RR 1.02, 95% CI 0.67 to 1.57). However, low-certainty evidence was found for a small between-group difference for an increased risk of adverse events for opioids (all types) compared to placebo, in particular nausea (RD 0.10, 95% CI 0.07 to 0.14), headaches (RD 0.03, 95% CI 0.01 to 0.05), constipation (RD 0.07, 95% CI 0.04 to 0.11), and dizziness (RD 0.08, 95% CI 0.05 to 0.11). Regarding the efficacy of paracetamol, no evidence was identified by the included reviews for chronic LBP.

2.5 | What Did the Authors Conclude?

The authors concluded that NSAIDs and muscle relaxants may provide a small improvement in pain and function, and there is no evidence of a difference between paracetamol and placebo for acute LBP. They did not find evidence for the use of opioids or any other medicines for acute LBP. For chronic LBP, they found evidence that NSAIDs and opioids may provide a small improvement in pain. Six of the seven reviews were published more than 5 years ago, and some of the evidence from these reviews is more than 10 years old, so an update of the CSRs is needed.

The available evidence suggests that pharmacological interventions for adults with non-specific LBP appear to be only marginally or not effective and carry an increased risk of adverse events. Besides the needed updates of CSRs, the authors also call for new RCTs investigating pharmacological interventions using common outcome sets to improve the synthesis of results and compatibility between trials. Trialists should clearly and comprehensively describe the characteristics of the included participants, as currently, it is unclear to whom the available evidence is applicable. Additional comparative studies for pharmacological interventions would enable us to draw firmer conclusions about which treatments are most effective. The use of network meta-analysis could also offer information.

3 | What Are the Implications of the Cochrane Evidence for Practice in Rheumatology?

Painkillers are a first-line treatment for acute pain, while their use in chronic pain is frequently questioned in favor of more active rehabilitation treatments, particularly in cases of LBP [4–6]. This overview of Cochrane Reviews provides a summary of the existing Cochrane evidence, characterized by the rigorous GRADE approach for assessing the certainty of evidence. The overview highlights the absence of not only long-term but also medium-term results regarding the efficacy and harms of these drugs. Although randomized controlled trials (RCTs) with short-term outcomes are easier to perform and less expensive, one must consider the potential influence of publication bias in the lack of long-term evidence. Alternatively, researchers might not be in equipoise and convinced that painkillers might not be worthwhile studying through medium- and long-term RCTs, also because for some drugs the known harms may outweigh the potential benefits. Whatever the reason, this represents the knowledge gathered from the overview, even though the included Cochrane Reviews urgently need updating. Overall, this evidence supports current guidelines [3–6]: NSAIDs are recommended as a first-line treatment for acute LBP to complement preventive measures against recurrence or the progression to chronicity and may provide short-term small relief in chronic LBP, where additional rehabilitation treatments are necessary.

Endnotes

[1] This summary is based on a Cochrane Review previously published in the Cochrane Database of Systematic Reviews 2023, Issue 4, Art. No.: CD013815, DOI: 10.1002/14651858.CD013815.pub2 (see www.cochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and Cochrane Database of Systematic Reviews should be consulted for the most recent version of the review.

[2] The views expressed in the summary with commentary are those of the Cochrane Corner authors [different than the original Cochrane Review authors] and do not represent the Cochrane Library or Wiley.

Author Contributions

Both authors contributed equally to all sections of the paper.

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Conflicts of Interest

Stefano Negrini declares ownership of stocks in ISICO srl, Milan (Italy).

Data Availability Statement

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

References

1. A. G. Cashin, B. M. Wand, N. E. O'Connell, et al., "Pharmacological Treatments for Low Back Pain in Adults: An Overview of Cochrane Reviews," *Cochrane Database of Systematic Reviews* 4, no. 4 (2023): CD013815, https://doi.org/10.1002/14651858.CD013815.pub2.

2. GBD 2021 Low Back Pain Collaborators, "Global, Regional, and National Burden of Low Back Pain, 1990–2020, Its Attributable Risk Factors, and Projections to 2050: A Systematic Analysis of the Global Burden of Disease Study 2021," *Lancet Rheumatology* 5, no. 6 (2023): e316–e329, https://doi.org/10.1016/S2665-9913(23)00098-X.

3. P. Van Wambeke, A. Desomer, P. Jonckheer, and B. Depreitere, "The Belgian National Guideline on Low Back Pain and Radicular Pain: Key Roles for Rehabilitation, Assessment of Rehabilitation Potential and the PRM Specialist," *European Journal of Physical and Rehabilitation Medicine* 56, no. 2 (2020): 220–227, https://doi.org/10.23736/S1973-9087.19.05983-5.

4. World Health Organization, *WHO Guideline for Non-Surgical Management of Chronic Primary Low Back Pain in Adults in Primary and Community Care Settings* (World Health Organization, 2023).

5. NICE, "Low Back Pain and Sciatica in Over 16s: Assessment and Management. NICE Guideline [NG59]," 2016, https://www.nice.org.uk/guidance/NG59/chapter/Recommendations#non-invasive-treatments-for-low-back-pain-and-sciatica.

6. F. Zaina, P. Côté, C. Cancelliere, et al., "A Systematic Review of Clinical Practice Guidelines for Persons With Non-Specific Low Back Pain With and Without Radiculopathy: Identification of Best Evidence for Rehabilitation to Develop the WHO's Package of Interventions for Rehabilitation," *Archives of Physical Medicine and Rehabilitation* 104, no. 11 (2023): 1913–1927, https://doi.org/10.1016/j.apmr.2023.02.022.