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Montelukast for Patients with Asthma: Clinical Effectiveness

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Research Question

What is the clinical effectiveness of montelukast for patients with asthma?

Key Findings

Twenty-one systematic reviews (ten with meta-analyses) and 48 randomized controlled trials were identified regarding the clinical effectiveness of montelukast for patients with asthma.

Methods

A limited literature search was conducted by an information specialist on key resources including Medline, Embase, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were Montelukast and asthma. Search filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, network meta-analyses, randomized controlled trials or controlled clinical trials. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2008 and July 13, 2020. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Patients any age with asthma not induced by exercise
Intervention	Oral montelukast (leukotriene receptor antagonist) as an add-on therapy or monotherapy
Comparator	Placebo; standard of care i.e.: • LABAs e.g., formoterol, salmeterol • SABAs e.g., salbutamol/albuterol, and terbutaline • ICS e.g., beclomethasone, budesonide, ciclesonide, fluticasone, mometasone • Combination ICS/LABA e.g., budesonide/formoterol, mometasone/formoterol, fluticasone/salmeterol, fluticasone/vilanterol • Combination of standard of care with other medication
Outcomes	Clinical effectiveness: resolution of symptoms, symptom relief (shortness of breath, night-time awakening, asthma exacerbations), rescue SABA use, rescue ICS use/dose, hospitalizations, oral steroid use, forced expiratory volume in 1 second, peak expiratory flow, spirometry, quality of life; Adverse events (i.e., infection, rash, mortality)
Study Designs	Health technology assessments, systematic reviews, randomized controlled trials

ICS = inhaled corticosteroids; LABAs = long-acting beta-agonists; SABAs = short-acting beta agonists

Results

Twenty-one systematic reviews[1-21] (ten with meta-analyses) and 48 randomized controlled trials[22-69] were identified regarding the clinical effectiveness of montelukast for patients with asthma. No relevant health technology assessments were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

1. Murphy KR, Hong JG, Wandalsen G, et al. Nebulized Inhaled corticosteroids in Asthma Treatment in Children 5 Years or Younger: A Systematic Review and Global Expert Analysis. *J Allergy Clin Immunol Pract*. 2020 Jun;8(6):1815-1827. PubMed: PM32006721

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4. Chauhan BF, Jeyaraman MM, Singh Mann A, et al. Addition of anti-leukotriene agents to inhaled corticosteroids for adults and adolescents with persistent asthma. *Cochrane Database Syst Rev*. 2017 Mar 16;3:CD010347. PubMed: PM28301050

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14. Yang D, Luo H, Wang J, Bunjhoo H, Xu Y, Xiong W. Comparison of inhaled corticosteroids and leukotriene receptor antagonists in adolescents and adults with mild to moderate asthma: a meta-analysis. *The clinical respiratory journal*. 2013 Jan;7(1):74-90. PubMed: PM22364111

15. Cao Y, Wang J, Bunjhoo H, Xie M, Xu Y, Fang H. Comparison of leukotriene receptor antagonists in addition to inhaled corticosteroid and inhaled corticosteroid alone in the treatment of adolescents and adults with bronchial asthma: a meta-analysis. *Asian Pac J Allergy Immunol*. 2012 Jun;30(2):130-138. PubMed: PM22830292

16. Chauhan BF, Ducharme FM. Anti-leukotriene agents compared to inhaled corticosteroids in the management of recurrent and/or chronic asthma in adults and children. *Cochrane Database Syst Rev*. 2012 May 16(5):CD002314. PubMed: PM22592685

17. Watts K, Chavasse RJ. Leukotriene receptor antagonists in addition to usual care for acute asthma in adults and children. *Cochrane Database Syst Rev*. 2012 May 16(5):CD006100. PubMed: PM22592708

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PubMed: PM19946008

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PubMed: PM18443162

Randomized Controlled Trials

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http://www.ijcem.com/files/ijcem0104973.pdf

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PubMed: PM31258585

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PubMed: PM30212239

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PubMed: PM30925958

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PubMed: PM31739840

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PubMed: PM29413502

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PubMed: PM29319028

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Mixed Population – Allergic Rhinitis

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PubMed: PM19746439

Appendix — Further Information

Systematic Reviews and Meta-Analyses – Comparator Not Specified

70. Castro-Rodriguez JA, G JR, C ER-M. Principal findings of systematic reviews of acute asthma treatment in childhood. *J Asthma*. 2015;52(10):1038-1045.
PubMed: PM26303207

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PubMed: PM24562976

Randomized Controlled Trials

Asthma Diagnosis Unclear

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73. Kooi EM, Schokker S, Marike Boezen H, et al. Fluticasone or montelukast for preschool children with asthma-like symptoms: Randomized controlled trial. *Pulm Pharmacol Ther*. 2008 Oct;21(5):798-804.
PubMed: PM18647656

Exercise-Induced Asthma Exacerbation

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PubMed: PM22221440

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PubMed: PM20568384

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PubMed: PM18294107

Mixed Intervention

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PubMed: PM18379200

Review Articles

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PubMed: PM31931792

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PubMed: PM27965773

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PubMed: PM18214538