

Inhaled Quick-Relief Medications for Asthma

Key Questions and Inclusion Criteria

Update #1

Key Questions

1. What is the comparative efficacy and effectiveness of quick-relief medications used to treat outpatients with bronchospasm due to asthma, or to prevent or treat exercise-induced bronchospasm?
2. What is the comparative incidence and severity of adverse events reported from using quick-relief medications to treat outpatients with bronchospasm due to asthma, or to prevent or treat exercise-induced bronchospasm?
3. Are there subgroups of patients for which quick-relief medications used to treat outpatients with bronchospasm due to asthma or to prevent or treat exercise-induced bronchospasm, differ in efficacy, effectiveness, or frequency and severity of adverse events?

Inclusion criteria

Populations

1. Adults or children with asthma including those with exercise-induced bronchospasm

Excluded populations:

1. COPD
2. Acute bronchitis
3. Bronchiectasis
4. Children < 2 years with recurrent or persistent wheezing
5. Cystic fibrosis
6. High-altitude pulmonary edema

Interventions

1. Inhaled short-acting beta₂-agonists (SABA)
 - a. Albuterol (salbutamol in Canada) MDI and nebulizer solution
 - b. Levalbuterol (R-albuterol) MDI and nebulizer solution (levalbuterol is not available in Canada)
 - c. Pirbuterol (not available in Canada)
 - d. Terbutaline: available only in Canada
 - e. Fenoterol: available only in Canada
2. Short-acting anticholinergics
 - a. Ipratropium bromide MDI and nebulizer solution
3. Combination products
 - a. Ipratropium bromide with albuterol MDI or ipratropium bromide with albuterol nebulizer solution

Excluded interventions

1. Systemic corticosteroids
 - a. Prednisone
 - b. Methylprednisolone
 - c. Prednisolone
2. Salmeterol
3. Long-acting anticholinergics: tiotropium
4. Studies where bronchospasm was induced by methacholine, histamine, cold
5. Combination products which include a quick-relief agent and another agent not included in this review
6. Formoterol

Comparators

1. Head-to-head studies examining the above bronchodilators

Excluded comparators

1. Comparisons to other drugs or to placebo (to achieve indirect comparisons)

Outcomes

Effectiveness outcomes

1. Symptoms: e.g., cough, wheezing, shortness of breath
2. Change in treatment regimen for the exacerbation
3. Healthcare utilization: length of stay in the ER or other clinical facility, need for re-treatment within 24 hours, hospital admissions, length of hospital stay
4. For exercise induced bronchospasm: exercise tolerance, symptoms
5. Mortality

Safety outcomes

1. Overall adverse events reported
2. Withdrawals due to adverse events
3. Serious adverse events

Setting

1. Outpatient settings including urgent care facilities and the emergency room

Study designs

1. For effectiveness: Head-to-head RCTs or controlled clinical trials with total sample size ≥ 20 . No minimum duration of follow-up.
2. For adverse events: Head-to-head RCTs, controlled clinical trials, or observational studies with sample size ≥ 10 . No minimum duration of follow-up.