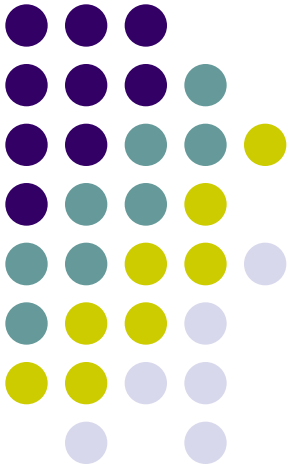
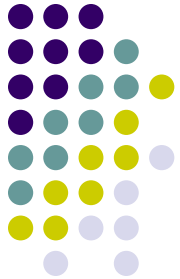
Knowledge Translation and Emergency Medicine

Eddy Lang
Jeremy Grimshaw
Michael Brown



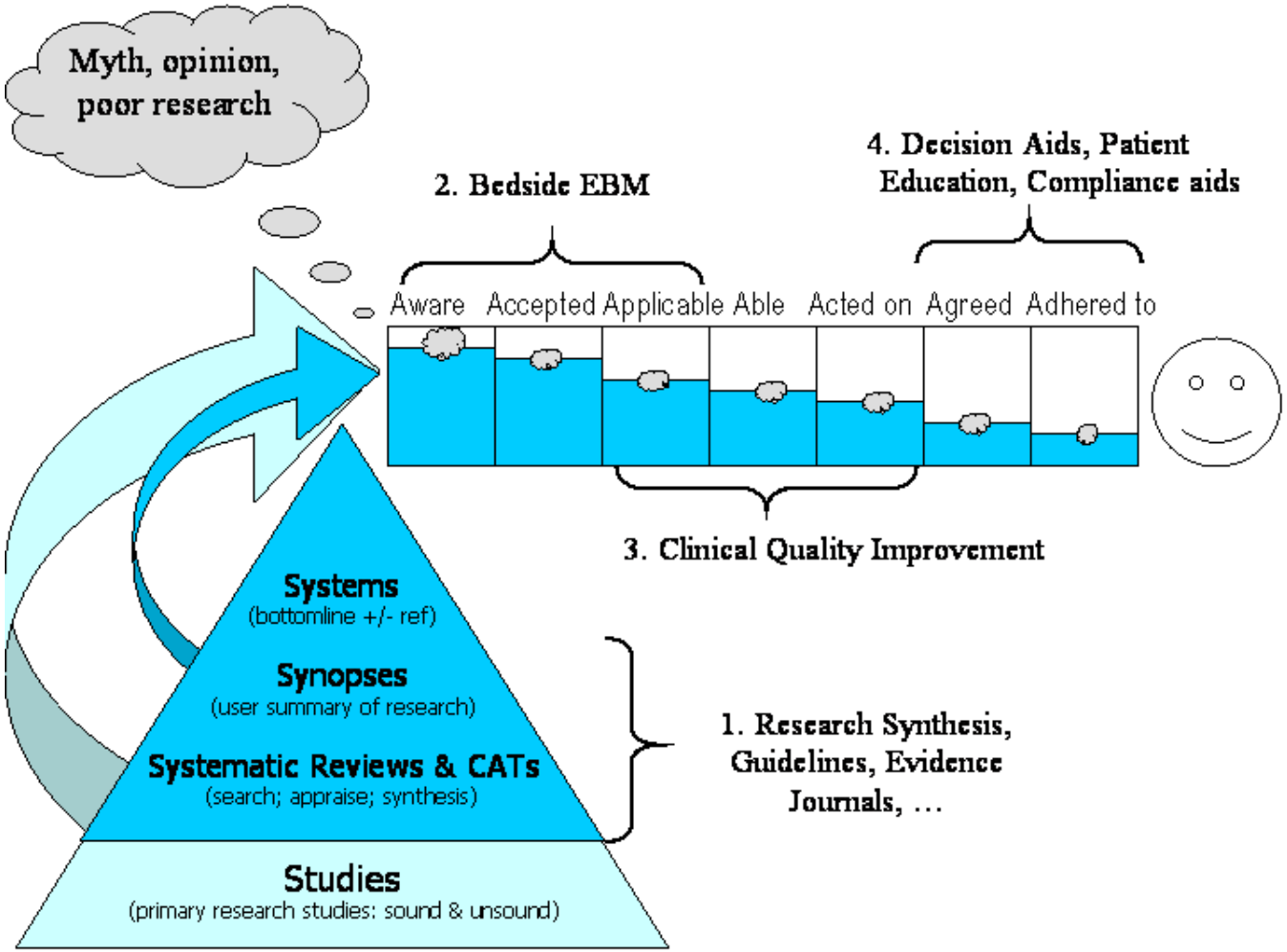
Society for Academic Emergency Medicine

Knowledge Translation



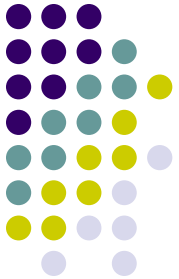
The exchange, synthesis and application of research evidence within a complex system of relationships among researchers and knowledge users.


Available evidence
Evidence that gets incorporated into practice



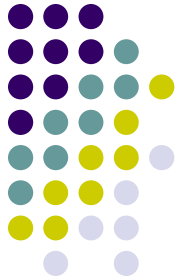
Glasziou P, Haynes B.
ACP J Club. 2005 Mar-Apr;142(2):A8-10.

Dr. Eddy Lang



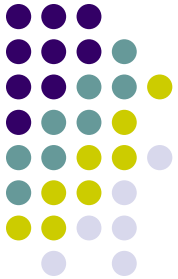
- Assistant Professor McGill University
- EBM undergraduate director
- Workshop director
- EBM Series Annals

Dr. Jeremy Grimshaw



- Director of the Clinical Epidemiology Program of the Ottawa Health Research Institute
- Canada Research Chair in Health Knowledge Transfer and Uptake
- Co-coordinating editor of the Cochrane Effective Practice and Organization of Care review group EBM Series Annals
- KT expert in EM research on uptake of decision rules and croup guidelines

Dr. Michael Brown



- Associate Professor of Emergency Medicine and Epidemiology Michigan State University
- Chair SAEM EBM IG
- EBM Series Annals
- KT research VTE

Scenario Phase I

- 43 year old female presents to the with dyspnea and cough that she attributes to asthma
- Picked up her daughter's URI
- Can't sleep (presents at 2:00am)
- Asthma has been quiescent for months no ED visits for over a year
- Multiple admissions in her 30's

Scenario Phase I

- Salbutamol at home only, seems to have emptied canister
- No fever, chest pain, chills
- ROS and other PMHx unremarkable
- Anxious and dyspneic on exam
- RR = 30, incessant coughing, Sat 98%
- Diminished air entry bilaterally
- Prolonged expiratory phase and wheezing ++

ED Care

- $FEV_{1.0}$ = 50% predicted / Normal CXR
- Aerosolized salbutamol 2.5mg Q1h x 3 then Q2h
- Prednisone 50mg PO
- Gradual improvement over 6-hour stay in the ED
- Discharge on 5-day course of prednisone and renewed Rx for salbutamol

Questions to consider

1. Was the patient's management reasonable?
2. Could this case management have occurred in a North American ED?
3. What critiques would you provide of the management provided for this patient?

Scenario Phase II

- Patient returns 3 days later in severe respiratory distress
- While generally mild allergic symptoms to cats now very SOB after accidental exposure
- Had been doing reasonably well on exit Rx
- No chest pain / no fever

Scenario Phase II

- Appears pale, HR = 130, BP 160/95, RR = 40, Sat 85% (R/A)
- Patient appears pale, barely able to speak 3 words in succession
- Marked accessory muscle use
- Markedly decreased air entry, minimal wheezing

ED Care

- Q15 minute aerosols x 2 (salbutamol 5.0mg) then q30 min
- 120 mg methylprednisolone IV
- Heliox and non-invasive positive pressure ventilation – doesn't seem to help
- Minimal improvement over 4-hour stay in the ED
- Transfer to ICU

Questions to consider

1. Was the patient's management reasonable?
2. Could this case management have occurred in a North American ED?
3. What critiques would you provide of the management provided for this patient?

ED Care (Phase I)

- $FEV_{1.0}$ = 50% predicted / Normal CXR
- Aerosolized salbutamol 2.5mg Q1h x 3 then Q2h
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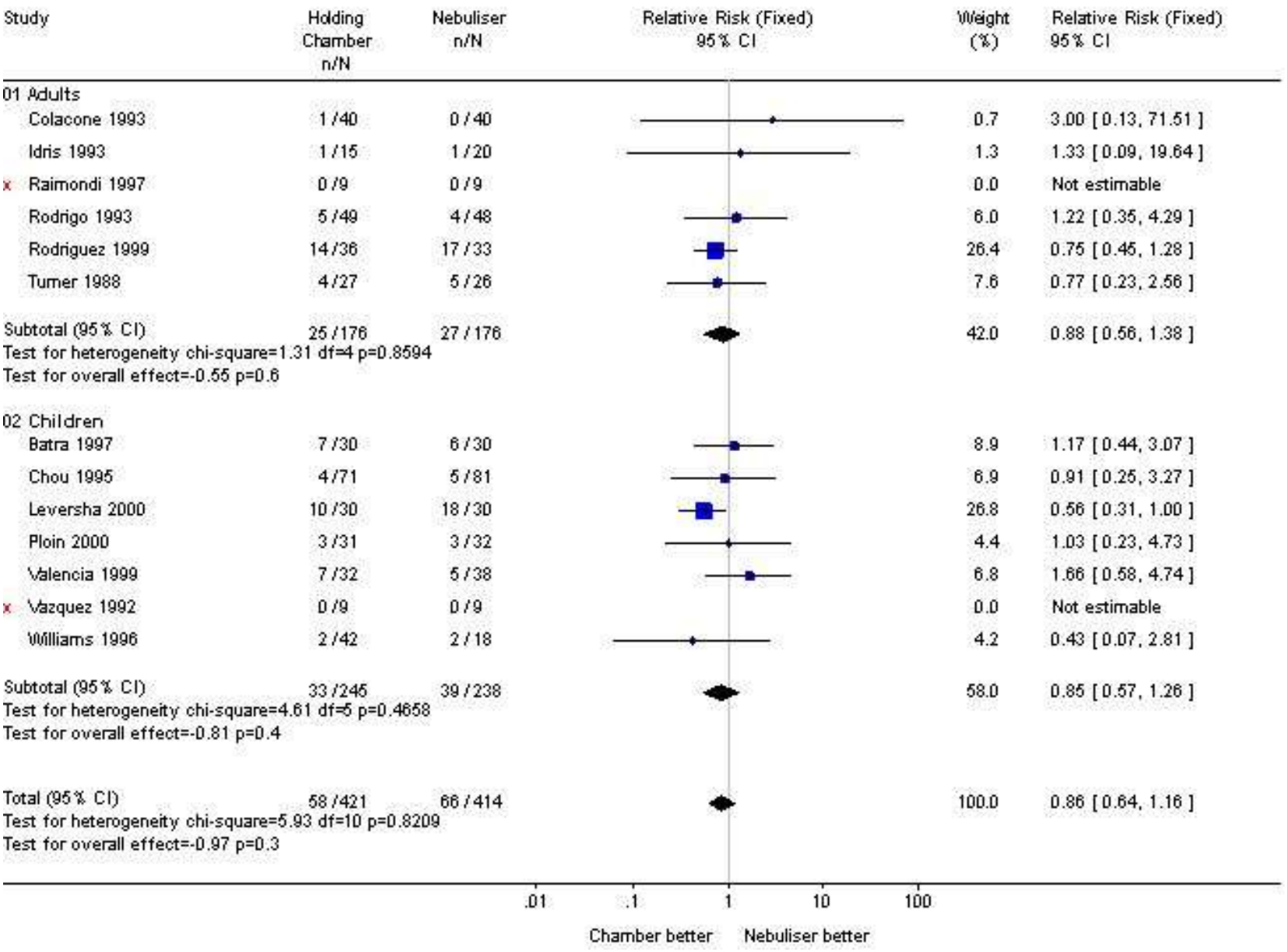
- Gradual improvement over 6-hour stay in the ED
- Discharge on 5-day course of prednisone and renewed Rx for salbutamol

Review: Holding chambers versus nebulisers for beta-agonist treatment of acute asthma
Comparison: 01 Holding chamber versus Nebuliser (Multiple treatment studies)
Outcome: 02 Hospital admission or poor response to treatment



Holding chambers versus nebulisers for beta-agonist treatment of acute asthma
Cates CCJ, Bara A, Crilly JA, Rowe BH. Cochrane Library March 2003

Nebulizers Versus Inhalers With Spacers for Acute Asthma

EBEM Commentator
Barry Diner, MD, MSc (Candidate)

From the Department of Emergency Medicine, Emory University, Atlanta, GA.

[*Ann Emerg Med.* 2004;43:410-412.]

SYSTEMATIC REVIEW SOURCE

This is a systematic review abstract, a regular feature of the *Annals'* Evidence-Based Emergency Medicine (EBEM) series. Each features an abstract of a systematic review from the Cochrane Database of Systematic Reviews and a commentary by an emergency physician knowledgeable in the subject area.

The source for this systematic review abstract is: Cates CJ, Bara A, Crilly JA, Rowe BH. Holding chambers versus nebulisers for beta-agonist treatment of acute asthma (Cochrane Review). In: *The Cochrane Library*. Issue 4. Oxford, United Kingdom: Update Software; 2003.

The *Annals'* EBEM editors helped prepare the abstract of this Cochrane systematic review as well as the Evidence-Based Medicine Teaching Points.

OBJECTIVE

studies. The review is considered updated to November 2002.

STUDY SELECTION

Randomized controlled trials in adults and/or children (aged ≥2 years) with acute asthma, where holding chamber β_2-agonist delivery was compared with wet nebulization, were selected. This report will focus on the results from adult studies only.

DATA EXTRACTION AND ANALYSES

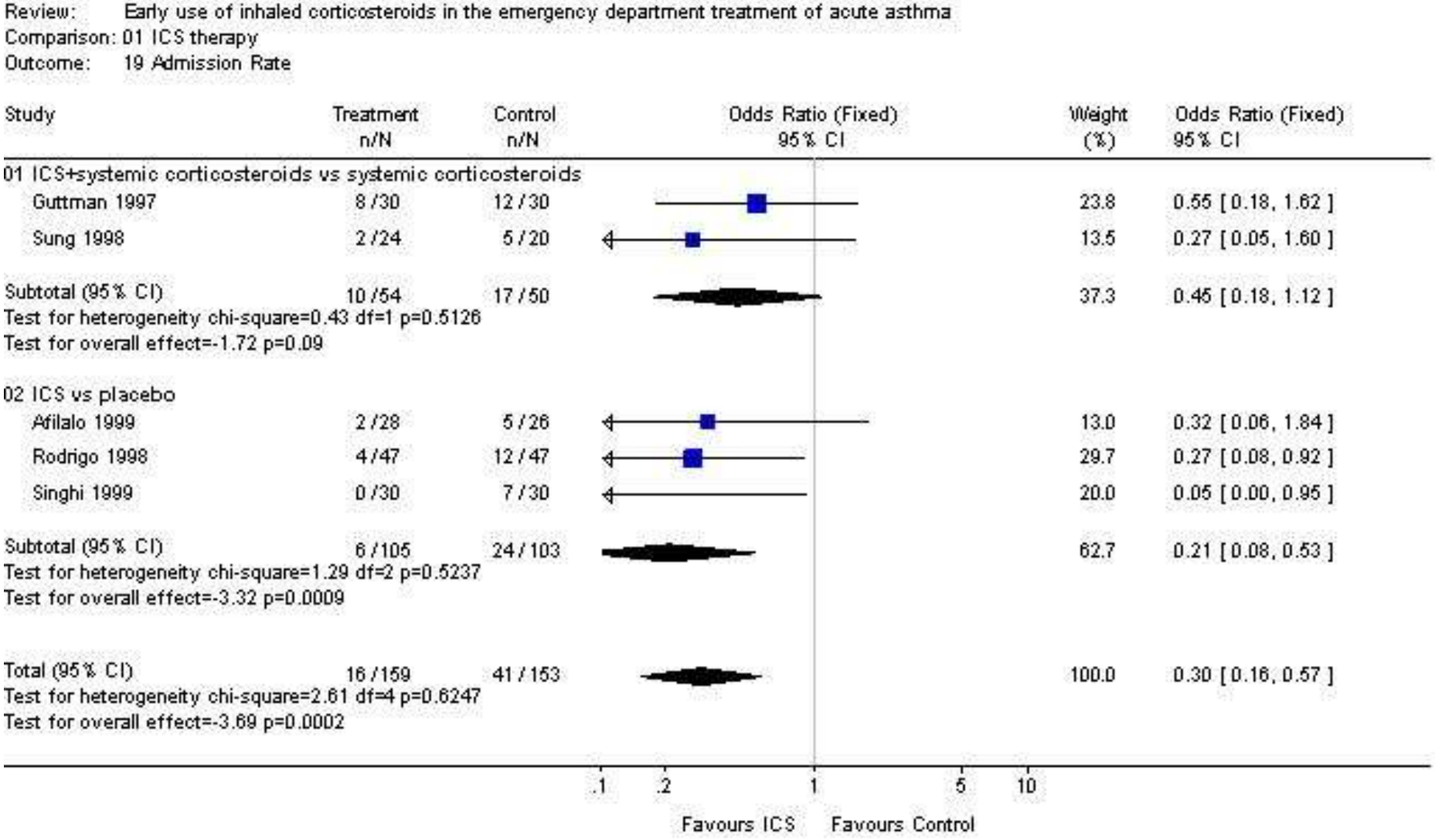
Two reviewers independently selected articles for inclusion, evaluated methodological quality of the studies, and abstracted the data. Continuous variables were reported as weighted mean difference, and dichotomous variables were reported as relative risk (RR), both with associated 95% confidence intervals (CIs).

MAIN RESULTS

This review has been updated in 2003 and has now analyzed 1,076 children and 444 adults included in 22 trials from emergency department (ED) and community settings. In addition, 5 trials on inpatients with acute asthma (184 children and 28 adults) have been added to the review. Method of delivery of β_2-agonist did not appear to affect hospital admission rates. In adults, the relative risk of admission for holding chamber versus nebulizer was 0.88 (95% CI 0.56 to

ED Care (Phase I)

- $FEV_{1.0}$ = 50% predicted / Normal CXR
- Aerosolized salbutamol 2.5mg Q1h x 3 then Q2h
- Prednisone 50mg PO ? inhaled corticosteroids in the ED
- Gradual improvement over 6-hour stay in the ED
- Discharge on 5-day course of prednisone and renewed Rx for salbutamol



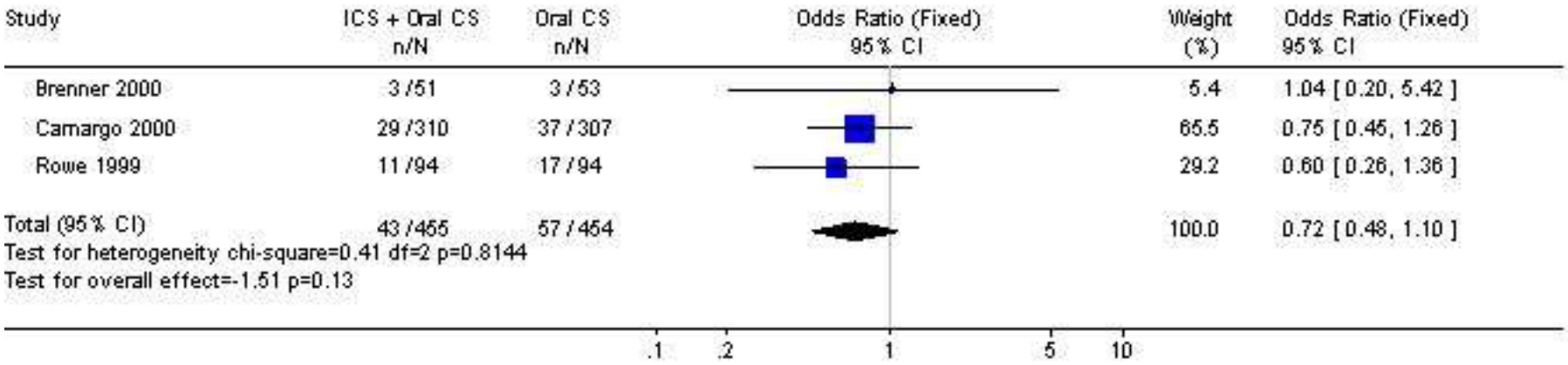
NNT = 6

Early use of inhaled corticosteroids in the emergency department treatment of acute asthma
Edmonds ML, Camargo CA Jr, Pollack CV Jr, Rowe BH. Cochrane library may 2003

ED Care (Phase I)

- $FEV_{1.0}$ = 50% predicted / Normal CXR
- Aerosolized salbutamol 2.5mg Q1h x 3 then Q2h
- Prednisone 50mg PO ? inhaled corticosteroids
- Gradual improvement over 6-hour stay in the ED
- Discharge on 5-day course of prednisone and renewed Rx for salbutamol ? what about inhaled corticosteroids

Review: Inhaled steroids for acute asthma following emergency department discharge
Comparison: 01 Any ICS plus oral CS vs oral CS
Outcome: 01 Asthma relapse at 7-10 days



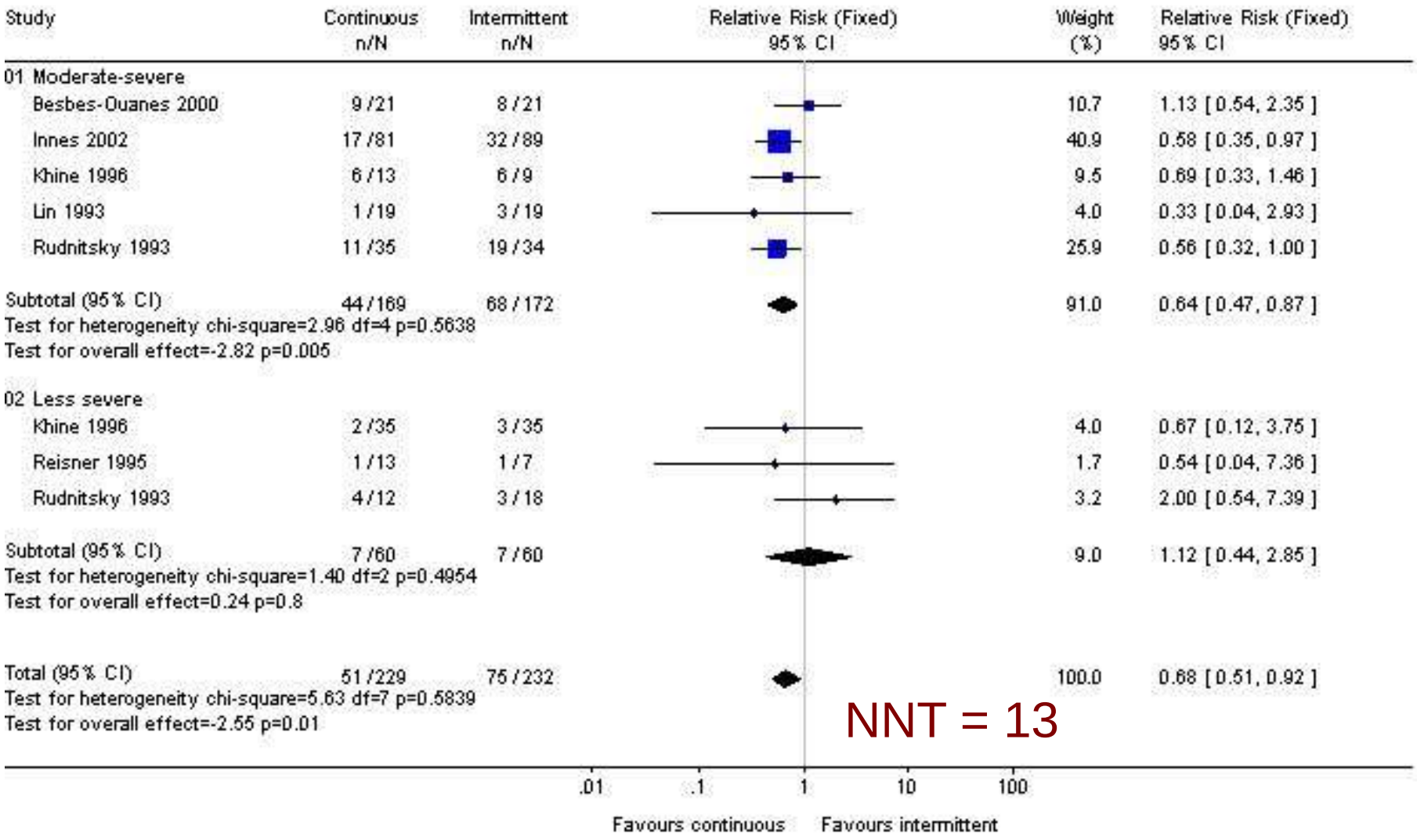
NNT = 30

Inhaled steroids for acute asthma following emergency department discharge
Edmonds ML, Camargo CA Jr, Brenner BE, Rowe BH. Cochrane Library May 2003

ED Care (Phase II)

- Q15 minute aerosols x 2 (salbutamol 5.0mg) then q30 min
- 120 mg methylprednisolone IV
- Heliox and non-invasive positive pressure ventilation – doesn't seem to help
- Minimal improvement over 4-hour stay in the ED
- Transfer to ICU

Review: Continuous versus intermittent beta-agonists for acute asthma
Comparison: 01 Continuous vs intermittent nebulisation (end of study)
Outcome: 01 Admission to hospital (end of observation period)

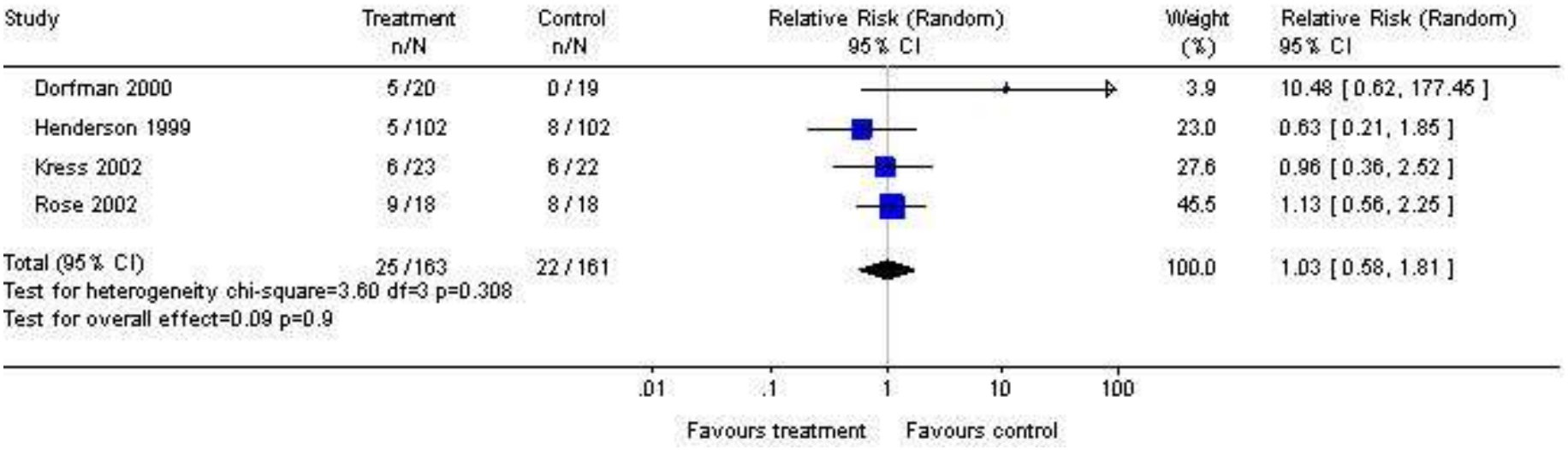


Continuous versus intermittent beta-agonists for acute asthma
Camargo CA Jr, Spooner CH, Rowe BH. The Cochrane Library July 2003

ED Care (Phase II)

- Q15 minute aerosols x 2 (salbutamol 5.0mg) then q30 min
- 120 mg methylprednisolone IV
- Heliox and non-invasive positive pressure ventilation – doesn't seem to help
- Minimal improvement over 4-hour stay in the ED
- Transfer to ICU

Review: Heliox for nonintubated acute asthma patients
Comparison: 02 Heliox therapy vs control (Other outcomes)
Outcome: 04 Hospital admissions

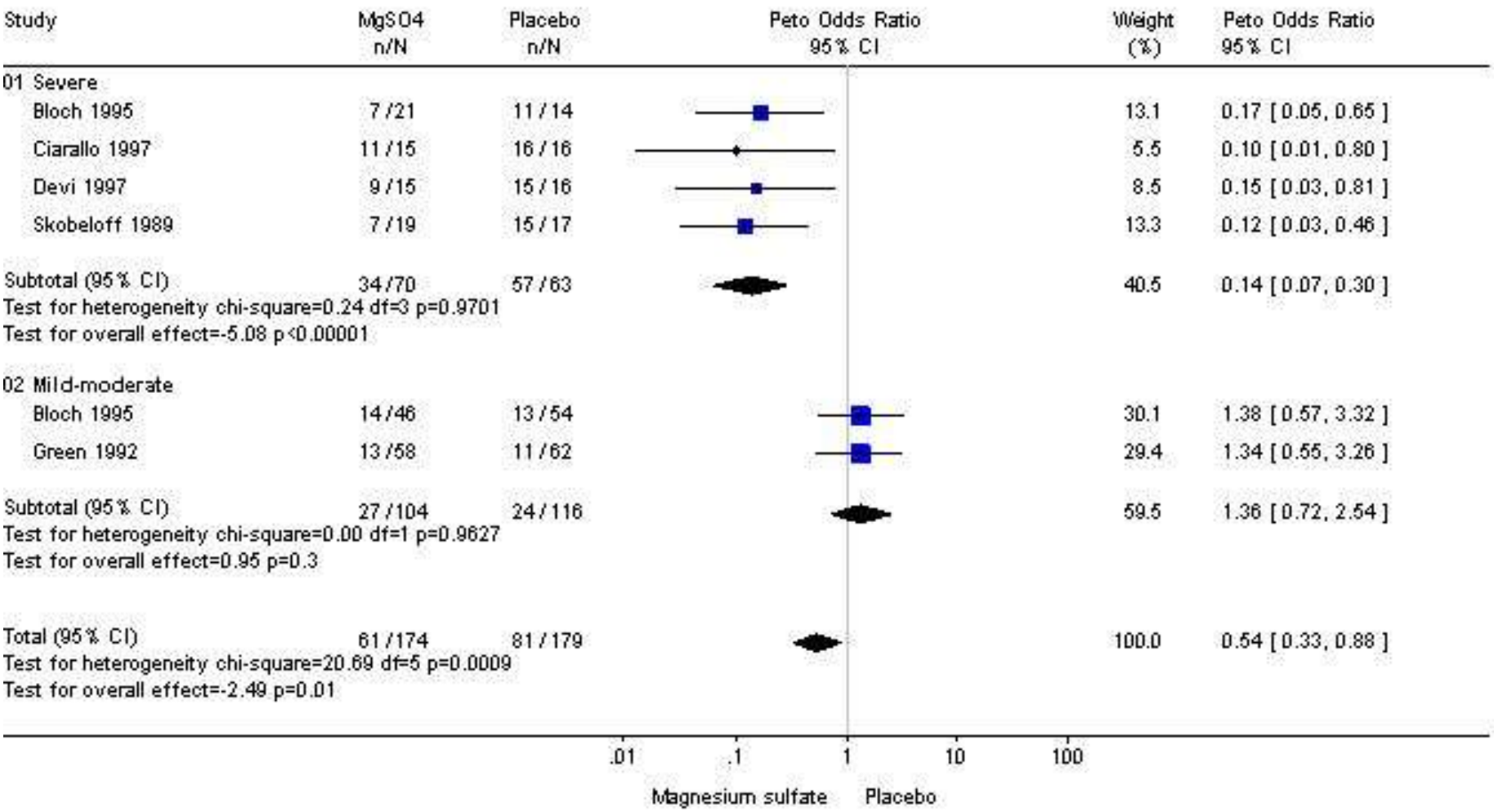


Heliox for nonintubated acute asthma patients
Rodrigo G, Pollack C, Rodrigo C, Rowe BH. The Cochrane Library January 2003

ED Care (Phase II)

- Q15 minute aerosols x 2 (salbutamol 5.0mg) then q30 min
- 120 mg methylprednisolone IV
- Heliox and non-invasive positive pressure ventilation – doesn't seem to help
- Minimal improvement over 4-hour stay in the ED ? What about magnesium
- Transfer to ICU

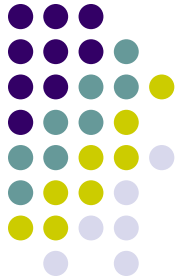
Review: Magnesium sulfate for treating exacerbations of acute asthma in the emergency department
Comparison: 01 Intravenous MgSO4 vs placebo
Outcome: 01 Admission to hospital



NNT = 7

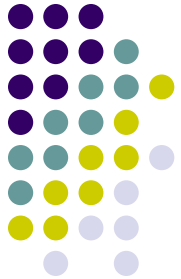
Magnesium sulfate for treating exacerbations of acute asthma in the emergency department
Rowe BH, Bretzlaff JA, Bourdon C, Bota GW, Camargo CA Jr. The Cochrane Library October 1999

Conclusions



- Even common medical conditions may not always treated in an evidence-based manner – there's work to do!
- Shifting the balance from evidence availability to application can be achieved in part through awareness of pre-appraised resources

Future directions



- Clinician-friendly evidence summaries for Emergency Medicine
- Cochrane systematic review summaries in Annals
- ACPJC relevant to EM
- No specific resource evidence summaries for EM
- Evidence synopses may not equate to KT