

## Randomised controlled trials in airways disease

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### The Cochrane Collaboration

Randomised controlled trials (RCTs) provide the least biased evidence for a treatment's effectiveness, but there are often too many trials for individuals to access and use. The Cochrane Collaboration is an international organisation that was set up to prepare and disseminate systematic reviews of RCTs in prevention and treatment in many different areas of health care. Systematic reviews provide the starting point for much evidenced-based practice since they provide the best available estimate for the average efficacy of a treatment. Not all patients behave as if they were the average, and systematic reviews can also be used to test for identifiable subgroups of patients who may respond more or less than average, or identify specific combinations of therapy that may be more effective. Each review produced within the Collaboration synthesises all known RCTs on a given topic, and thus provides an extremely valuable source of evidence on the validity and scope of interventions in health care.

### The Cochrane Airways Group

The Cochrane Airways Group has reviewers in 21 countries world-wide. The authors of the reviews are professionals from medicine and allied disciplines. They receive support from the editorial base and supervision from an international editorial team of experts in respiratory medicine.

Most (67%) of the completed reviews are in asthma, with 46% of all reviews in chronic asthma. The asthma reviews tend to include a slightly larger number of trials than those in COPD although on average, the COPD RCTs

tend to include more patients (see Table 1). On average, the reviews include data from over 750 patients and they examine the effects of interventions on variety of outcome measures. In addition to the 72 reviews already produced, there are 83 in progress. Cochrane reviews are updated at 1-3 year intervals to take into account publication of new primary trials. Protocols and reviews are published on the Cochrane Library which is updated every three months.

The Cochrane Airways Group web page, with summaries of reviews, may be viewed at [www.cochrane-airways.ac.uk](http://www.cochrane-airways.ac.uk). The Cochrane Library is available from Update Software, Summertown Pavilion, Middle Way, Oxford OX2 7LG or from [www.update-software.com](http://www.update-software.com).

### Airways disease reviews

Two examples of the wide range of topics covered in the Airways Group reviews are illustrated here. The first shows how subgroup analysis may identify the most effective type of intervention while the second illustrates the value of reviewing an established therapy. The charts, known as forest plots, show the size of the effect for each study under review as well as the combined effect of all studies (a meta-analysis). The estimate for the individual study effect is illustrated by a square whose size reflects the number of subjects in that study, together with a 95% confidence interval (CI). The combined estimates are shown as diamonds in which the 95% CI reflects variation within and between the individual studies.

**Table 1 Summary of reviews by the Cochrane Airways Group**

(a)	No. of reviews	No. of trials	Average no. of trials in each review
Acute asthma	15	174	12
Chronic asthma	33	366	11
COPD	14	96	7
Bronchiectasis	6	5	1
Sleep apnoea	3	7	2
Interstitial lung disease	1	7	7
<b>Total</b>	<b>72</b>	<b>655</b>	<b>9</b>

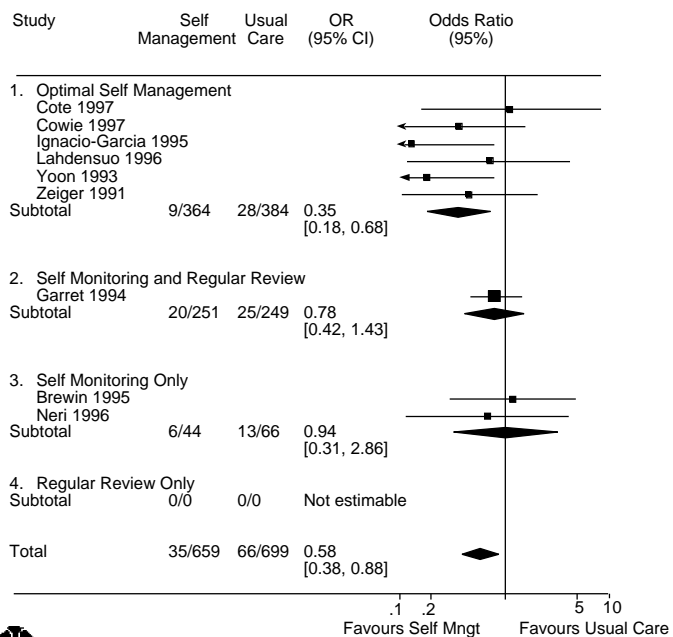
(b)	No. of patients in reviews	Average no. of patients per trial	Average no. of patients per review
Acute asthma	10,710	62	714
Chronic asthma	26,880	73	815
COPD	15,404	160	1100
Bronchiectasis	181	36	30
Sleep apnoea	217	31	72
Interstitial lung disease	627	90	627
<b>Total</b>	<b>54,019</b>	<b>82</b>	<b>750</b>

## 1. Self-management education and regular practitioner review for adults with asthma

A key component of many asthma management guidelines is the recommendation for patient education and regular medical review. Asthma education programmes improve patient knowledge, but their impact on health outcomes is less well established. This review of 25 trials was conducted to test whether four types of such programmes influence health outcomes. The 9 trials that showed the effect on hospital admissions are presented in Figure 1 with odds ratios for each program type. Though there was a significant overall reduction in hospital admissions in the intervention group (mean estimate to the left of the line of unity), this effect was confined to patients who received 'optimal' care in whom the odds of admissions were reduced by a third (OR=0.35). Here, 'Optimum' comprised self-monitoring, regular review and a written self-management plan. Similar beneficial effects were seen in emergency room visits, patients with days off work or school, unscheduled hospital visits and the frequency of nocturnal asthma. Lung function did not improve. Asthma care that includes a written self-management plan, self-monitoring and regular clinician review improves outcomes and reduces health care resource use.

**Figure 1: Hospital admissions in adults following self management programmes**

Outcome: Hospitalisations (% subjects hospitalised)



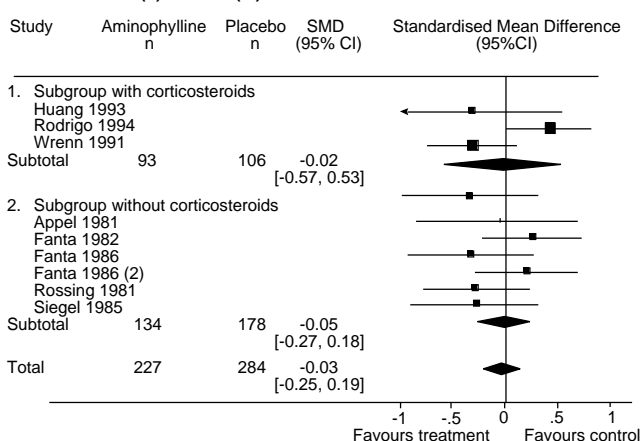
Source: Cochrane Library

## 2. Addition of intravenous aminophylline to 2-agonists in adults with acute asthma

Aminophylline has been used extensively in acute asthma, but its role is unclear especially with respect to any additional benefit when added to 2-agonists. Fifteen trials were eligible for inclusion in this review, although the quality of the studies was only moderate. When added to 2-agonists, there was no statistically significant effect of aminophylline on airflow measurements at any time period, or on hospital admissions. Subgroup analysis found no difference in mean airflow by use of corticosteroids (see figure 2), or baseline airflow limitation. Aminophylline treated patients reported significantly more palpitations, arrhythmias and vomiting. Aminophylline offers no benefit when added to 2-agonists and has substantially greater toxicity. It has no place in routine management of acute asthma. The review cannot exclude the possibility that some patients may benefit, but these do not form an identifiable subgroup.

**Figure 2: FEV1 in adults treated with aminophylline compared to placebo, by corticosteroid use**

Outcome: FEV1 (L) or FEV1 (%) at 60 min



Source: Cochrane Library

## References

Self-management education and regular practitioner review for adults with asthma, Gibson PG Coughlan J Wilson AJ Abramson M Bauman A Hensley MJ Walters EH, Cochrane Library, 1, 2001  
 Addition of intravenous aminophylline to 2-agonists in adults with acute asthma, Belda J Parameswaran K Rowe BH, Cochrane Library, 1, 2001