Abstract: **Cochrane review of the use of antibiotics for acute exacerbations of asthma**

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**Background:** Asthma is a chronic respiratory condition affecting over 300 million adults and children worldwide. It is characterised by wheeze, chest tightness, shortness of breath and exacerbations. Acute exacerbations of asthma can be serious, leading to hospitalisation or even death, and may be triggered by various factors. Bacterial infections are responsible for a minority of exacerbations and current guidance states that antibiotics should be reserved for cases with clear evidence of bacterial infection. This Cochrane systematic review aimed to determine the randomised controlled trial evidence for the use of antibiotics versus placebo or usual care in acute exacerbations of asthma.

**Methods:** We searched the Cochrane Airways Trials Register, trial registries and reference lists of primary studies. We extracted outcome data and assessed risk of bias in duplicate and used current Cochrane methodology throughout. Our primary outcomes were intensive care unit (ITU) admission, duration of symptoms/exacerbation and adverse events.

**Results:** We included six studies, including a total of 681 adults and children. Trials were of varied methodological quality and we were able to perform only limited meta-analysis. One study reported a single ITU admission but no other studies reported admissions to ITU. Two studies investigating macrolides reported diary card symptom score and showed antibiotics improved symptoms (MD -0.34, 95% CI -0.60 to -0.08). One study including 40 participants reported more symptom-free days in the macrolide group than usual care. One study of a penicillin including 69 participants reported asthma symptoms at hospital discharge; the between group difference was reported as non-significant. Serious adverse events were rare; 10 events were reported across the three trials (n= 502). The pooled effect estimate for all adverse events (AEs) from three studies was imprecise (OR 0.99, 95% CI 0.69 to 1.43). No deaths were reported.

**Conclusion:** We found limited evidence that antibiotics given for asthma exacerbations may improve symptoms compared to standard care or placebo. However, findings were inconsistent across the six studies and we have low confidence in the results. Importantly, many participants in the included trials would not have met the current guidance criteria for receiving antibiotics.