Magnesium sulphate meta-analysis update February 2009

Meta-analysis published in December 2007[1] showed weak evidence of an effect upon respiratory function and hospital admissions in adults with acute asthma, compared to placebo, for both IV and nebulised magnesium sulphate. We have recently updated our literature search and identified one new trial of IV magnesium sulphate[2] that would be eligible for inclusion. We have therefore updated the meta-analysis of IV magnesium sulphate in adults to include this trial.

The trial reported a significant effect upon % predicted FEV1 at 120 minutes (62.84% versus 56.7%; difference=6.07; 95% CI 1.87 to 10.62; p<0.01) and fewer patients admitted to hospital in the intervention group (2/30 versus 9/30). However, on closer inspection it appeared that 3 patients in the intervention group and none in the control group had been excluded on the basis of requiring early admission due to illness severity. The meta-analysis was therefore updated with values of 5/33 versus 9/30 for hospital admission.

Figure 1 shows the original forest plot for the effect of IV magnesium sulphate upon standardised mean difference in respiratory function. Figure 2 is updated to include outcome data from the recent trial.

Figures 3 shows the original forest plot for the effect of IV magnesium sulphate upon hospital admission. Figure 4 is updated to include outcome data from the recent trial.

In the original meta-analysis IV magnesium was associated with weak evidence of an effect upon respiratory function (SMD=0.25, 95% CI -0.01 to 0.51, p=0.06), but no significant effect upon hospital admission (RR=0.87, 95% CI 0.70 to 1.08, p=0.22). In the updated meta-analysis the effect upon respiratory function is slightly larger and reaches statistical significance (SMD=0.35, 95% CI 0.06 to 0.064, p=0.02) but the effect on hospital admission remains non-significant (RR=0.85, 95% CI 0.68 to 1.06, p=0.14).

1. Mohammed S & Goodacre S. Intravenous and nebulised magnesium sulphate for acute asthma: systematic review and meta-analysis. *Emerg Med J* 2007;24:823-830
2. Singh AK, Gaur S & Kumar R. A randomised controlled trial of intravenous magnesium sulphate as an adjunct to standard therapy in acute severe asthma. *Iran J Allergy Asthma Imunol* 2008;7:221-229.

3. **Figure 1: Original forest plot for the effect of IV magnesium sulphate upon respiratory function**

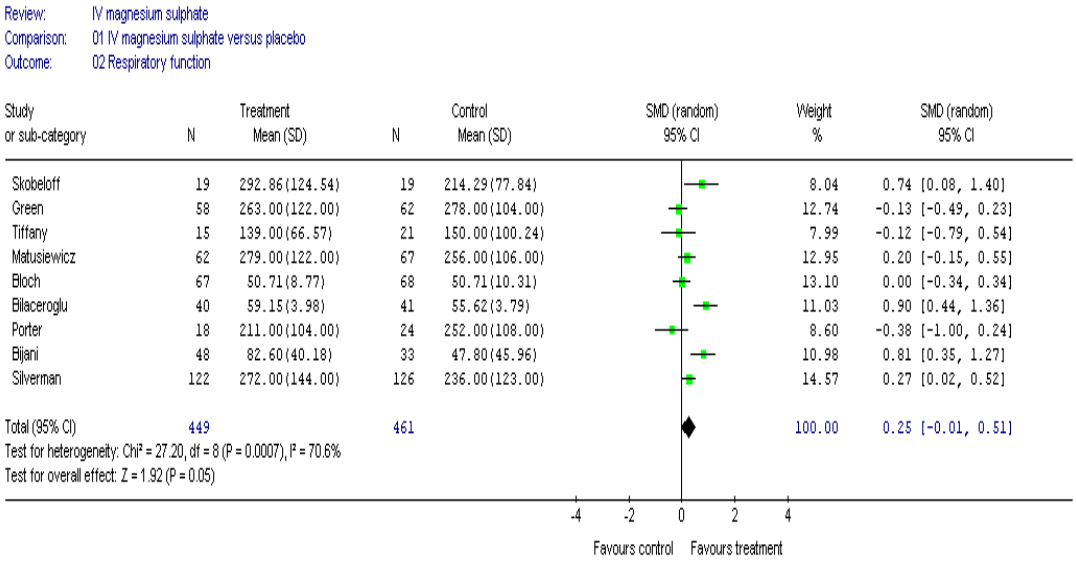

Figure 2: Updated forest plot for the effect of IV magnesium sulphate upon respiratory function

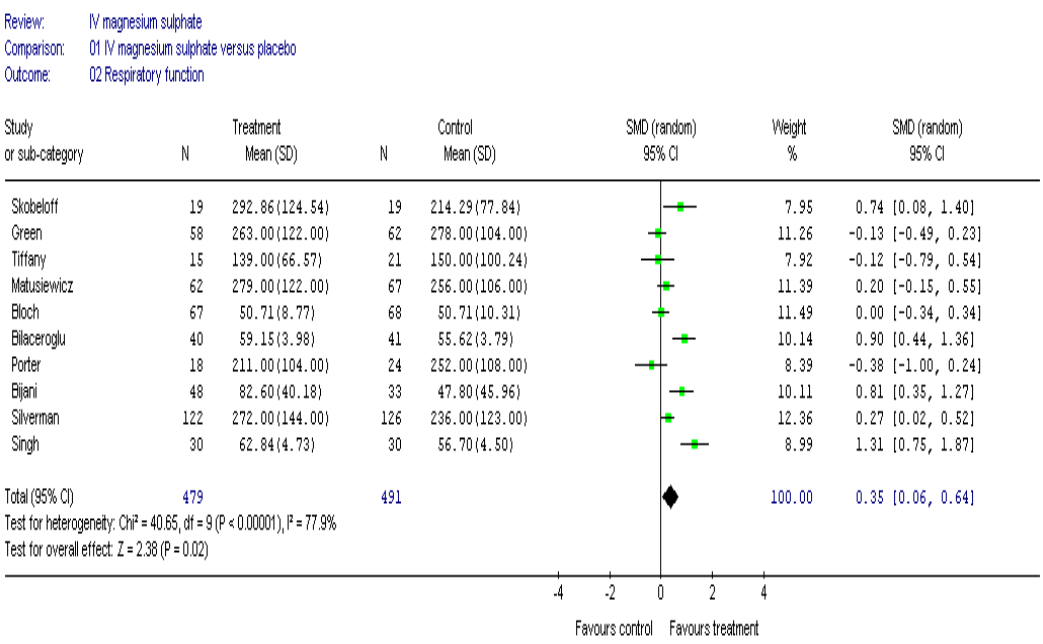

Figure 3: Original forest plot for the effect of IV magnesium sulphate upon hospital admission

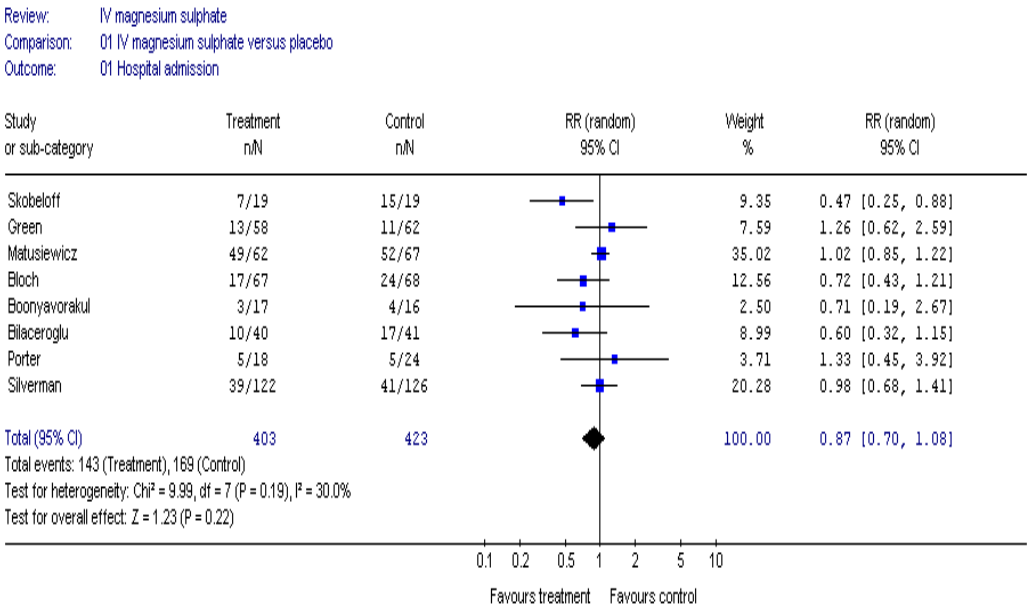

Figure 4: Updated forest plot for the effect of IV magnesium sulphate upon hospital admission