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Randomized Controlled Trial > *Pediatr Pulmonol*. 2015 Dec;50(12):1191-9.

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Nebulized Magnesium for Moderate and Severe Pediatric Asthma: A Randomized Trial

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Abstract

Background: Intravenous magnesium sulfate, a rescue therapy added to bronchodilator and systemic steroid therapy for moderate and severe asthma, is uncommonly administered. We hypothesized that nebulized magnesium would confer benefit without undue risk.

Design and methods: Patients aged 2 to 14 y with moderate and severe asthma (PRAM severity score ≥ 4) admitted to infirmary/observation unit care were randomized double-blind on admission to receive 800 mg nebulized magnesium or normal saline placebo after all received intensive therapy with combined nebulized albuterol-ipratropium and intravenous methylprednisolone. Time to medical readiness for discharge was the primary outcome; sample size was chosen to detect a 15% absolute improvement. Improvement over time in PRAM severity score and other secondary outcomes were compared for the overall group and severe asthma subset.

Results: One hundred and ninety-one magnesium sulfates and 174 placebo patients met criteria for analysis. The groups were similar with mean baseline PRAM scores >7 . Blinded active therapy significantly increased blood magnesium level 2 hr post-treatment completion compared to placebo, 0.85 vs 0.82 mmol/L, $P = 0.001$. There were no important adverse effects. Accelerated failure time analysis showed a non-significantly shortened time to medical readiness for discharge of 14% favoring the magnesium sulfate group, OR = 1.14, 95% CI 0.93 to 1.40, $P = 0.20$. Mean times until

readiness for discharge were 14.7 hr [SD 9.7] versus 15.6 hr [SD 11.3] for the investigational and placebo groups, respectively, $P = 0.41$.

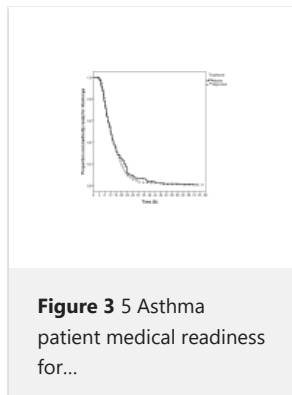
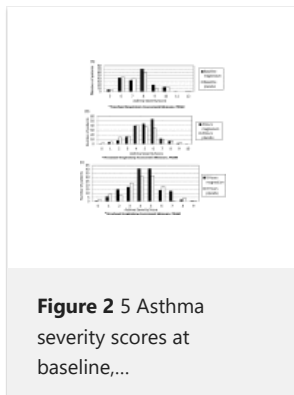
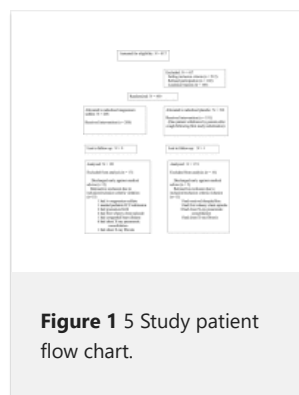
Conclusions: Adding nebulized magnesium to combined nebulized bronchodilator and systemic steroid therapy failed to significantly shorten time to discharge of pediatric patients with moderate or severe asthma.

Trial registration: ClinicalTrials.gov [NCT01584726](https://clinicaltrials.gov/ct2/show/study/NCT01584726).

Keywords: bronchodilator; nebulization; pediatric emergency.

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