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Thien F. Review: Spacers and nebulizers for delivery of β_2 -agonists do not differ for clinical outcomes in acute asthma. *Annals of Internal Medicine* [serial online]. February 18, 2014;160(4):JC9. Available from: Academic Search Complete, Ipswich, MA. Accessed April 5, 2014.

Clinical Question: In acute asthma what is the relative efficacy of holding chambers (spacers) and nebulizers for delivery of Beta2-agonist?

Objective: To assess the effects of holding chambers (spacers) compared to nebulizers for the delivery of beta-agonists for acute asthma.

Introduction: In acute asthma inhaled beta-agonists are often administered by nebulizer to relieve bronchospasm, but it has been argued that metered-dose inhalers with a holding chamber (spacer) can be equally effective. In addition, nebulizers require a power source, need regular maintenance, and are more expensive in the community setting than spacers.

Selection criteria: randomized trials in children (2 years and greater) and adults with asthma where spacer beta 2 – agonist delivery was compared with wet nebulization.

Search methods: Cochrane Airways Group Specialised Register of trials (2008 to Feb 2013), searches of respiratory journals and meeting abstracts and reference lists were searched. Authors were also contacted and eligible studies published before 2008 were extracted from a previous literature search. 39 studies met the inclusion criteria. These studies were comprised of 1,897 children and 729 adults. This article focused on reporting analyses for adults only.

Statistical analysis: Data were analyzed using IBM Statistics 19.0 software package. Baseline patient characteristics in the before group and the after group were compared using t-tests and chi-squared tests. Logistic regression and stratified chi-square analyses were used to explore the impact of differences in characteristics of the before and after groups on mortality and in-hospital intubation

Results: In multiple treatment adult studies, spacers and nebulizers did not differ for hospitalizations, use of steroids, emergency department length of stay, or FEV1. Of note, in the pediatric studies there was a significant difference between ED length of stay between the spacer and nebulizer groups.

Conclusion: Holding chambers and nebulizers for delivery of β_2 -agonist do not differ for clinical outcomes in acute asthma in the adult population.

Limitations: The treatment protocols, type of spacers, nebulizers, and Beta 2 agonist used in the studies reviewed differed depending on the location of the trial. Only 4 new studies (newer than 2008) were added for the review update while the large majority of articles (35) came from previously reviewed articles (2008 and older). Controlling for different sources of bias in the 39 included studies was variable (selection bias, performance bias, detection bias, attrition bias). The studies reviewed did not account for treatments that could have been administered before presentation to the ED or before admission.
