This ratio is negatively associated with adverse asthma outcomes. A cutoff of 50% each patient-year was selected as a satisfactory ratio.

RESULTS. A total of 343 520 individuals met the case definition of asthma. In 7.6% of patient-years, SABAs were prescribed inappropriately. When patient-years with no prescriptions filled were removed, this number increased to 11.9%. In 0.9% of patient years, SABAs were prescribed excessively. In 29.6% of patient-years, the ratio of ICS to total prescriptions was >50%.

CONCLUSIONS. Inappropriate prescriptions of SABAs are still prevalent but halved from 2002 to 2013, and excessive SABA prescriptions declined by more than 60%. Excessive SABA use declined over the study period but increased over the time course of asthma. Excessive SABA use was most notable in older patients and might explain higher mortality in this group.

REVIEWER COMMENTS. Asthma guidelines have been around for over 2 decades and emphasize the use of ICS as first-line treatment to control chronic inflammation in persistent asthma. This study shows that inappropriate and excessive prescriptions of SABAs are still prevalent but appear to be decreasing in this population. The major limitation in this study is use of pharmacy data to reflect actual medication usage. Patients frequently want prescriptions for multiple SABAs to have in various locations or to replace lost medications. In addition, filling a prescription does not equate to medication use. So, the number of prescriptions for SABAs is likely higher than actual usage. Devices that measure the actual number of puffs accentuated from a device are available and may more acutely reflect patient medication usage. Preparation, distribution, and implementation of guidelines is no small task. It is refreshing to see data showing the benefits of guideline usage.

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Spacers Versus Nebulizers in Treatment of Acute Asthma - A Prospective Randomized Study in Preschool Children

Mitselou N, Hedlin G, Hederos CA. *J Asthma*. 2016; 53(10):1059–1062

PURPOSE OF THE STUDY. To compare administration of bronchodilators by nebulizers with delivery by metered dose inhalers (MDIs) with spacers and to evaluate the clinical effect of the treatment of acute asthma in preschool children.

STUDY POPULATION. Children 0–6 years of age who presented to the emergency department with viral infection–associated wheezing or acute asthma flares.

METHODS. A prospective randomized clinical trial in a pediatric emergency department (PED). Preschool children who were admitted for virus-induced wheezing or acute asthma exacerbation were randomly allocated to receive bronchodilator treatment by nebulizer or by MDI. Parents completed a questionnaire during the PED visit.

RESULTS. Baseline data were similar for both groups, except for family history of asthma and atopic disease being more frequently reported in the nebulizer group. The length of stay in the PED and rate of hospitalization were similar. No significant differences were seen in heart rate, respiratory rate, and oxygen saturation at baseline and after the treatment. No difference was seen in the parents' view of ease of use and device acceptance. According to the parents, 40% of the participants had asthma diagnosis, but up to 66% were previously prescribed some kind of asthma medication.

CONCLUSIONS. The results suggest that MDIs with spacers are at least as effective as nebulizers in the delivery of β agonists to treat preschool children with virus-induced wheezing or acute exacerbations of asthma in the PED. It is important to provide adequate information to the staff and parents to treat pediatric acute asthma successfully.

COMMENTS. There are numerous studies that have addressed the efficacy of MDIs versus nebulized medication delivery in children. Despite evidence that either method is suitable for medication delivery, there remains the perception that nebulization is superior to MDI/spacer use, particularly in younger children. The authors highlight parents' perceptions in an acute setting that both methods achieve acceptance if presented correctly. This information should encourage clinicians to distribute appropriate MDIs/spacer devices to preschool-aged children without hesitation.

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The Effect of a Holding Chamber on Albuterol Metered-Dose Inhaler Product Differences

Johnson JL, Guthrie D, Hyde J, Hanson T, Karlage K, Myrdal PB. *Ann Allergy Asthma Immunol*. 2016; 117(3):246–250

PURPOSE OF THE STUDY. To investigate the differences in 3 albuterol sulfate metered-dose inhaler (MDI) products and their particle size. The study also evaluated if use of a valved holding chamber (VHC) would impact drug delivery and/or diminish systemic adverse effects.

STUDY POPULATION. The study did not use human subjects, but rather examined Ventolin hydrofluoroalkane (HFA), Proventil HFA, and ProAir HFA, the 3 racemic albuterol sulfate pressurized MDI products available in the United States.

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