from January 1, 2006, to September 30, 2007, were included. Patients were excluded if aged <2 years, if they died during their index hospitalization, or were discharged to other care facilities.

METHODS. Retrospective cohort study of Medicaid claims data taken from 12 states from 2005 to 2007. The primary outcome of interest was time to readmission for a diagnosis of asthma within 90 days of index hospital discharge. Pharmacy claims for short-acting β agonists (SABA), oral corticosteroids (OCS), inhaled corticosteroids (ICS), or a combination inhaled steroid and long-acting β agonist (ICS/LABA) between 1 day before and 3 days after hospital discharge were used as predictors.

RESULTS. Between January 1, 2006, to September 30, 2007, 31 658 children were admitted to an inpatient unit for asthma. Between the day before discharge and the 3 subsequent days, 17 363 children (55%) filled a prescription for a SABA, 18 135 (57%) for an OCS, and 11 708 (37%) for an ICS. Within 90 days of discharge, 1986 children (6.3%) were readmitted for asthma. Median time to admission was 40 days. Within 14 days of discharge, 419 children (1.3%) were readmitted, and 1567 children (5.0%) were readmitted between 15 and 90 days. Children with a SABA (hazard ratio [HR] 0.67, 95% confidence interval [CI] 0.51–0.87) or ICS (HR 0.59, 95% CI 0.42–0.85) had a lower hazard of readmission with 14 days compared with those who did not. Over the 15- to 90-day interval, only ICS fill was associated with a reduction in readmission hazard (HR 0.87, 95% CI 0.77–0.98). Patients who filled all 3 recommended medications after discharge had the lowest hazard of readmission within 14 days (HR 0.31, 95% CI 0.16–0.60).

CONCLUSIONS. Those who filled prescriptions for SABA and ICS experienced early readmission less frequently than children who did not and was associated with a decreased hazard of early readmission. Those who filled ICS experienced 15- to 90-day readmission less frequently than those who did not. This study demonstrates the effects of recommended medication classes on short-term readmission and shows an association of SABA (and borderline association of OCS fill) with lower early readmission hazard.

REVIEWER COMMENTS. The findings in this study are consistent with previous studies regarding fill rates of OCS, SABA, and ICS. Having adequate access to rescue medications at home may improve inflammatory response and symptom control if patients return to an environment with triggers or before flare resolution. Efforts to improve rates of medication fill post–hospital discharge for asthma may significantly lower the readmission rate.

The Effect of an Electronic Monitoring Device With Audiovisual Reminder Function on Adherence to Inhaled Corticosteroids and School Attendance in Children With Asthma: A Randomised Controlled Trial (Australian New Zealand Clinical Trials Registry # ACTRN12613001353785)


PURPOSE OF THE STUDY. To investigate whether using inhalers with audiovisual reminders leads to improved asthma medication adherence and asthma outcomes among school-age children who have had emergency department visits for asthma exacerbations.

STUDY POPULATION. Patients aged 6 to 15 years who presented to the regional emergency department in Auckland, New Zealand, with an asthma exacerbation and who were discharged on inhaled corticosteroid controller treatment.

METHODS. Patients were discharged on twice-daily inhaled fluticasone with an electronic monitoring device and assigned using a simple, unrestricted block randomization to have the audiovisual reminder function enabled (intervention) or disabled (control). The proportion of prescribed doses taken and days absent from school were measured every 2 months for 6 months. Asthma control was the secondary outcome. All analyses were conducted in the intention-to-treat population.

RESULTS. Patients (n = 220) were randomly assigned to the intervention (n = 110) and control (n = 110) groups. The intervention group had better adherence (median, 10th–90th percentiles: 84%, 54%–96% vs 30%, 8%–68%; P < .0001), especially for the morning dose (P = .0003), improved asthma morbidity score (P = .008) and asthma control scores at 2, 4, and 6 months (P < .0001), and fewer exacerbations at 2 months (6% vs 24%, P = .015). There were no differences in forced expiratory volume in 1 second (P = .38), asthma-related school absences (P = .096), emergency visits (P = .509), or caregiver work absences (P = .167).

CONCLUSIONS. In school-age children with asthma exacerbations requiring an emergency visit, use of an audiovisual reminder led to significant improvements in controller medication adherence and asthma control.

REVIEWER COMMENTS. This randomized control trial of audiovisual reminders for inhaled fluticasone showed improvements in objectively measured adherence and asthma outcomes, especially during the high-risk time after emergency visits, among children as young as 6 years in a population with poor baseline adherence. The increased morning-dose adherence may have represented less medication being forgotten, rather than fewer doses missed for another reason. Additional well-powered
trials are needed to evaluate longer term effects on adherence, asthma control, lung function, and school absences.

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Using Videos to Teach Children Inhaler Technique: A Pilot Randomized Controlled Trial

PURPOSE OF THE STUDY. To determine if watching a brief video at pediatric office visits would improve metered-dose inhaler (MDI) technique in children with asthma.

STUDY POPULATION. Children with persistent asthma (n = 91) from 2 pediatric practices in North Carolina completed the study. The children were 7 to 17 years old, used an MDI, and had missed or incorrectly performed at least 1 step on an inhaler technique assessment.

METHODS. Participants were randomized immediately after a medical visit to the experiment or control group. The intervention group watched a brief 3-minute video in either English or Spanish. Separate videos were available for use of MDI with or without a spacer. Both inhaler videos provided an overview of the MDI device and specific instructions on proper use of the device. Children watched the videos on a laptop and were given a Web address and login information so that they could watch the video again after leaving the clinic. The control group watched a 3-minute video about nutrition in either English or Spanish. Separate videos were available for use of MDI with or without a spacer. Both nutrition videos provided an overview of the nutrition device and specific instructions on proper use of the device. Children watched the videos at home and were given a Web address and login information so that they could watch the video again at a 1-month follow-up visit.

RESULTS. Forty-six families were randomly allocated to the intervention group and 45 to the control group. Eighty-three families of 91 (91%) completed the 1-month follow-up visit. At baseline, children most frequently performed the following 2 steps incorrectly: forgetting to shake the MDI (69% for MDI with a spacer and 57% for MDI without a spacer) and not holding their breath for 10 seconds (96% for MDI with a spacer and 94% for MDI without a spacer). In the intervention group, there was significant improvement in MDI technique postintervention (mean = 1.12, 95% confidence interval [CI] 0.73–1.5) and at 1-month follow-up (mean = 0.87, 95% CI 0.47–1.26). The control group did not show statistical significance in MDI technique postintervention (mean = 0.03, 95% CI –0.36 to 0.42) or at 1-month follow-up (mean = 0.32, 95% CI –0.09 to 0.73). The between group mean difference of 1.08 steps was statistically significant (95% CI 0.53–1.63) immediately postintervention but not at 1-month follow-up (mean = 0.55 steps, 95% CI –0.02 to 1.11).

CONCLUSIONS. In children with persistent asthma, using a 3-minute video after a regularly scheduled pediatric office visit resulted in immediate statistically significant 1-step mean improvement in MDI technique. This improvement, however, was not maintained at 1-month follow-up.

REVIEWER COMMENTS. This was the first randomized controlled trial to assess whether a brief video intervention could be used to improve inhaler techniques in children. It is recommended by national guidelines that providers assess inhaler technique at each medical visit. Given time constraints of clinicians and asthma education metrics requirements from insurance payers, brief technique videos may offer a streamlined educational approach in the office setting. Spacer technique education offers a high-yield opportunity to improve asthma medication compliance.

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Pragmatic Trial of Health Care Technologies to Improve Adherence to Pediatric Asthma Treatment: A Randomized Clinical Trial

PURPOSE OF THE STUDY. To test whether a speech recognition (SR) intervention leads to improved adherence with taking controller medications for asthma.

STUDY POPULATION. There were 1187 children, aged 3 to 12 years, with a diagnosis of persistent asthma and a prescription for an inhaled corticosteroid. This population was drawn from Kaiser Permanente Colorado, which is a large group-model health maintenance organization.

METHODS. The trial was 24 months in duration. Subjects were randomized to the computerized SR intervention or usual care. For the intervention group, SR telephone calls were made to the subjects’ parents when an inhaled corticosteroid refill was due or overdue. These calls were individually tailored using medical and demographic information from the medical record and parent’s answers to questions regarding desire to receive reminders, information about asthma, and other support. The main outcome measure was adherence to controller medications, measured as the possession ratio of medication over 24 months.
The Effect of an Electronic Monitoring Device With Audiovisual Reminder Function on Adherence to Inhaled Corticosteroids and School Attendance in Children With Asthma: A Randomised Controlled Trial (Australian New Zealand Clinical Trials Registry # ACTRN12613001353785)
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