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. Children’s inhaler technique was assessed by a research assistant at baseline as part of the video again after leaving the clinic. The control group did not show statistical significance in MDI technique postintervention (mean = 0.81 steps, 95% CI 0.53–1.12) 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.
RESULTS. In the intention-to-treat analysis, adherence with inhaled corticosteroids was 25.4% higher in the intervention group than in the usual care group (24-month mean adherence 44.5% vs 35.5%, respectively; $P < .001$). The effect of the intervention was consistent in subgroups divided by age, gender, ethnicity, BMI, and disease-related characteristics. Interestingly, asthma-related urgent care visits did not differ between the 2 groups.

CONCLUSIONS. The intervention’s significant impact on adherence demonstrates strong potential for low-cost adherence programs using SR and electronic health records. The authors also concluded that the absence of change in urgent care visits may be related to the already low number of asthma urgent care visits in patients in their health maintenance organization.

REVIEWER COMMENTS. Although the adherence rate in both groups was disappointingly low, a 25.4% rise in adherence, across a population, can equate to tremendous cost savings in asthma management along with reduced burden of disease. Other metrics, aside from urgent care visits, may have shown improvements commensurate with the increased rate of adherence. I am intrigued to see another mechanism through which EMR can be leveraged to help large groups of people.

URL: www.pediatrics.org/cgi/doi/10.1542/peds.2015–2776

Antibody Landscapes After Influenza Virus Infection or Vaccination

PURPOSE OF THE STUDY. To create an “antibody landscape” for influenza virus to better understand our immunity to this pathogen over time and create more effective influenza vaccines.

STUDY POPULATION. A subset of 69 individuals from the Ha Nam Household cohort study in Vietnam were selected based on provisional serological data. This subset of participants included 36 individuals from 6 households with high sampling compliancy, 10 individuals with polymerase chain reaction–confirmed infection, 14 with serological conversion, and 9 controls. An additional 225 individuals from 2 Australian studies were selected for pre- and postinfluenza vaccination serological analysis. Study participants were ≥5 years in age.

METHODS. Serum samples from the Ha Nam cohort were obtained annually from 2007 to 2012 and at the onset of each influenza-like illness to follow the evolution of their influenza immune profiles. Serum was collected from the additional 225 individuals pre and 26 to 33 days postvaccination with the influenza vaccine. Antigenic cartography, using specialized software, positioned sera and viruses on a map based on their $^{1}H$ titrations to 81 influenza virus strains spanning 43 years of influenza virus evolution.

RESULTS. Upon infection and vaccination, influenza $^{1}H$ titers increased broadly, including titers to previously encountered viruses far beyond the extent of cross-reactivity observed after a primary infection. Using antigenically advanced viruses (those that have only recently emerged) for vaccination had the dual benefit of inducing antibodies against both advanced and previous antigenic clusters.

CONCLUSIONS. These results indicate that preemptive vaccine updates may improve influenza vaccine efficacy in previously exposed individuals.

REVIEWER COMMENTS. Influenza is notorious for escaping immunity induced by before infection or vaccination by changing the molecular structure recognized by antibodies. Currently, vaccine strain updates are based on the analysis of circulating viruses but do not consider the influence of antibody responses to previous vaccines or infections. The authors have developed a direct visualization method to illustrate complex serological patterns, allowing basic insights into the breadth of antibody responses to influenza or other antigenically variable pathogens. Antibody landscapes will likely be useful for the evaluation of evolutionary selection pressures and could lead to the production of more effective vaccines.

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Sinusitis and Pneumonia Hospitalization After Introduction of Pneumococcal Conjugate Vaccine

PURPOSE OF THE STUDY. The purpose of the study was to evaluate the impact of pneumococcal vaccination (PCV) with PCV7 and PCV13 on the incidence of hospitalization due to sinusitis, bacterial pneumonia, and empyema.

STUDY POPULATION. The study included all children hospitalized with sinusitis, pneumonia, or empyema in Stockholm County between July 2003 and June 2012.

METHODS. This was a retrospective, population based study in which the children were identified by International
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Pragmatic Trial of Health Care Technologies to Improve Adherence to Pediatric Asthma Treatment: A Randomized Clinical Trial

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