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A comprehensive patient assessment and physician reminder tool for adult immunization: Effect on vaccine administration☆

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Abstract

We determined if a patient-self assessment/provider reminder tool (A/R) would increase administration of the eight vaccines that may be indicated for adults. In three family practice clinics, the A/R was completed by intervention patients and given to their provider. Control patients received an exercise reminder. On the day of the intervention, influenza, pneumococcal polysaccharide, and tetanus–diphtheria (Td) vaccines vaccine were administered significantly ($P < 0.01$) more commonly to intervention patients in one clinic, Td in the second, and none in the third. There were no additional significant differences during one year of follow-up. A number of barriers to comprehensive vaccination were encountered.

Keywords: Influenza vaccine; Pneumococcal vaccine; Measles, mumps, rubella vaccine; Tetanus vaccine; Hepatitis A vaccine; Hepatitis B vaccine; Meningococcal polysaccharide vaccine; Varicella vaccine; Reminder; Self-assessment; Education

1. Introduction

There are many recommended preventive and curative health services, and the extent to which they are delivered varies widely [1]. Even when only clinical preventive services are considered, a recent investigation suggested that practitioners lack the time to deliver the most strongly recommended services [2]. Included in the recommended clinical preventive services are up to eight different vaccines (influenza, pneumococcal polysaccharide [PPV], tetanus–diphtheria [Td], measles–mumps–rubella [MMR], hepatitis A, hepatitis B, varicella, and meningococcal polysaccharide) [3]. Determining which of the vaccines is indicated can be complex and time consuming since it requires knowledge about the patient's demographics, health conditions, occupation, avocations, travel plans, sexual behaviors, use of street-drugs, as well as the age and health condition of family members [4]. The provider must also determine if the patient has already received the correct number of doses at the appropriate intervals.

Patient/provider reminders are widely recommended to increase immunization coverage for those vaccines recommended for adults in specific ages groups [5,6]. However, as far as the authors can determine, previous evaluations of patient/provider reminders included only one [7–17] or two [18–21] and never more than three [22,23] of the eight recommended vaccines. Although provider reminders are almost always successful at increasing the use of a single vaccine [24,25], some studies have reported less effectiveness when more than one vaccine was indicated [23,26]. Combinations of interventions appear necessary to increase immunization coverage for people whose vaccination needs are defined

☆ Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily the views of the Centers for Disease Control and Prevention in Atlanta.

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by risk for or exposure to disease, as opposed to age group [27].

To simplify the process of assessing patients for all indicated vaccines, we developed and evaluated a patient self-assessment provider reminder (A/R) tool [28]. The tool uses patient-supplied responses to a series of yes/no questions to determine which of the eight vaccines for adults may be needed. By educating the patient about vaccines and reminding providers about the indicated vaccines, we hoped that it would effectively increase the coverage of vaccines targeting for specific age groups as well as risk groups. In this paper, we report the results of a controlled study in which we evaluated the ability of the tool to increase immunization coverage.

2. Methods

This study was approved by the Institutional Review Boards of the Centers for Disease Control and Prevention and Louisiana State University Health Sciences Center. Sites which did not have their own institutional review boards obtained federal wide assurance numbers and completed an authorization agreement saying that they would rely on the Centers for Disease Control's Institutional Review Board for review of the protocol.

2.1. Setting

The A/R tool was evaluated in three family practice settings—a two provider private clinic in Georgia, a six provider Federal Qualified Health Center look-alike (an organization that meets all of the federally funded Community Health Center program expectations, but does not receive federal operating grants under the Section 330 Public Health Service Act) in New Mexico, and a six provider clinic affiliated with Louisiana State University in Baton Rouge, Louisiana. Patients who received care at the clinic in Georgia were mostly covered by a variety of health care plans with varying co-payments. More patients in New Mexico were covered by Medicaid, Medicare, and other state programs. All the patients in Louisiana were covered by Medicaid, Medicare, or subsidized by the state programs for the poor; no co-payments were required.

2.2. Assessment of immunization status using the A/R tool

The A/R tool (Appendix A also available at http://www.cdc.gov/nip/recs/adult-schedule.htm#avacs) was adapted from the Immunization Action Coalition's 'Do I need any vaccinations today?' (http://www.immunize.org/catg.d/4036need.htm) [28]. The A/R tool assesses a patient's immunization needs by simplifying ACIP recommendations for each of the eight vaccines most commonly recommended for persons 18 years of age and older (influenza, PPV, hepatitis A, hepatitis B, MMR, Td, varicella and meningococcal polysaccharide) into a series of yes/no questions. The tool's function is four-fold: (1) assess the patient's vaccination risk factors and history, (2) educate the patient regarding vaccines and their indications, (3) facilitate the provider's review of indications and vaccination history, and (4) remind the provider to administer or further evaluate the need for vaccine.

In Georgia, we used a version of the A/R tool that included all eight ACIP recommended vaccines and was readable at a sixth grade literacy level. In Louisiana and New Mexico, providers requested that three changes be made to the original A/R tool. First, the wording was modified so that it was readable at a fourth grade literacy level. Second the providers requested that two vaccines, varicella and meningococcal polysaccharide, be excluded because they believed that serologic testing for varicella was too costly and that the number of people who required meningococcal vaccine did not justify its inclusion. Finally, they suggested that a summary form be developed (Appendix B). The summary form allowed paramedical personnel to summarize the results of the A/R tool in a single face sheet, which had the name of each vaccine and a column to show whether the vaccine appeared indicated or not (according to the A/R tool). The provider could thereby obtain information without reviewing the responses to specific questions on the A/R tool. The summary form also requested the providers to report the reason why vaccines that were indicated according to the A/R tool were not administered.

2.3. Design

Since the proportion of patients with indications for each vaccine and the proportion who were already vaccinated varied considerably, it was not possible to apply a single threshold for sample size in statistical power calculations. A convenience sample of 200 patients (100 control and 100 intervention) was therefore selected in each site. Sample sizes of 100 were chosen because they allow for estimation of immunization coverage ± 10 percentage points with 95% confidence. Control patients were enrolled before intervention patients to prevent provider experience with the A/R tool leading to administration of vaccines to the control group (due to increase knowledge of and attention to vaccine recommendations). This sequential enrollment allowed unbiased evaluation of the effect of the patient self-assessment and physician-reminder tool on the day of the intervention, but did not eliminate the possibility of a cross over effect during a one-year follow-up period.

Patients were eligible to participate if they were 18 years of age or older, not acutely ill, and gave written informed consent. Patients were approached in the waiting room or upon check-in for their primary care visits and invited to participate in an adult immunization study. Patients in the study intervention group were asked to complete the A/R tool and control group patients were given a fact sheet on physical activity. Investigators briefed providers about the study and the A/R tool and answered any questions they had. The A/R tool (and,