

BRIEF REPORTS

Pneumococcal Vaccination in General Internal Medicine Practice: Current Practice and Future Possibilities

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BACKGROUND: Pneumococcal vaccine (PPV) is recommended for adults ≥ 65 years and those with chronic illness, but there are potential advantages of universal vaccination of adults age 50–64 years.

OBJECTIVE: To assess reported (1) recommendations and administration practices of general internists for PPV, (2) barriers to vaccination, and (3) willingness to expand vaccination to all adults ≥ 50 years.

METHODS: National survey of general internists representative of the American College of Physicians.

RESULTS: Response rate was 74% (N=326). Although 99% reported giving PPV, less than 20% used a computerized database to identify eligible patients by age or diagnoses and only 6% recalled patients. Major barriers included acute problems taking precedence over preventive care (39%), difficulty determining vaccination history (30%), not thinking of it/not a priority (20%), and inadequate reimbursement for vaccine (19%). If ACIP expanded recommendations, 60% would definitely and 37% would probably institute this change.

CONCLUSIONS: Most general internists reported giving PPV, but delivery was hindered by competing demands, lack of systems to identify patients needing vaccination, and reimbursement issues. Barriers might be decreased by a policy of universal vaccination of adults ≥ 50 years, and the majority of physicians reported they would follow such a recommendation if it were made.

KEY WORDS: immunization delivery; pneumococcal vaccine; pneumococcus; pneumonia.

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INTRODUCTION

Streptococcus pneumoniae bacteria cause approximately 40,325 cases of invasive disease and 4,425 deaths in the US annually¹. Pneumococcal polysaccharide vaccine (PPV) is recommended for all persons ≥ 65 years of age and those less than 65 with chronic medical conditions^{2,3}. Although Healthy People 2010 goals call for 90% PPV coverage for persons >65 years and 60% coverage for persons aged 18–64 years with chronic medical conditions, recent national coverage rates for patients ≥ 65 were 63%⁴ and, for persons 18–64 with chronic conditions, 37%⁵. To increase these rates, one suggestion has been to lower the recommended age for universal vaccination to 50, thereby incorporating some patients with unrecognized chronic medical conditions⁶ and aligning pneumococcal and influenza vaccine recommendations⁷. It has also been suggested that this change would be cost effective^{8,9}. We conducted a survey to assess general internists' reported (1) recommendations and administration practices for PPV, (2) perceived barriers to PPV delivery, and (3) willingness to comply with a possible expansion of vaccine recommendations.

METHODS

Study Setting and Population

Between July and September of 2005, we conducted a survey (available to view online) in a nationwide sample of general internal medicine (GIM) physicians. This study was approved by the Colorado Multiple Institutional Review Board. Participants were part of a network of 438 primary care general internists established by the Vaccine Policy Collaborative Initiative. They were recruited to be representative of the American College of Physicians (ACP) with respect to region of

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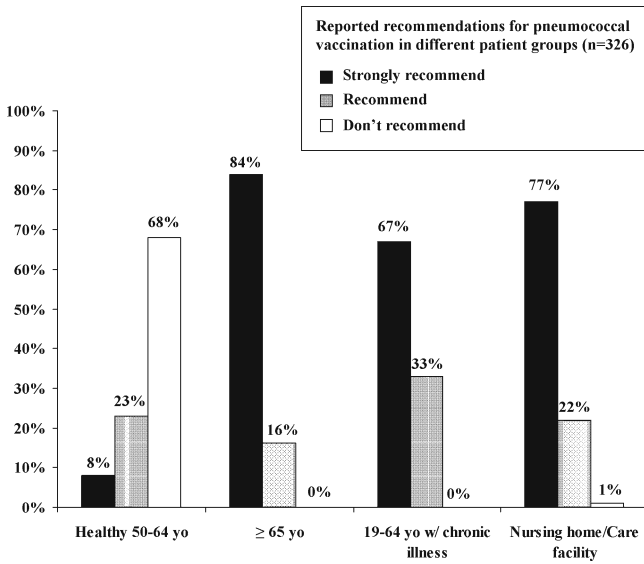


Figure 1. Reported recommendations for pneumococcal vaccination in different patient groups (n = 326).

the country, practice location, and practice setting. As described previously¹⁰, the representativeness of the sentinel provider network was established by direct comparison with the more traditional method of a mail survey of a randomly selected sample from the American Medical Association (AMA). Results from the sentinel physician survey and the random AMA survey yielded demographically comparable samples and responses on the same survey.

Survey Design and Administration

A survey tool, based conceptually on the Health Belief Model¹¹, was developed and piloted with GIM physicians from different regions of the country. Questions were asked of both physicians who give PPV in their offices and those who refer patients to another location for receipt of the vaccine. Physicians were asked to respond to questions about recommendations or practices based on what they currently do with patients in different age or risk groups in their practice. Physicians were surveyed by internet or by mail based on preference following methodology previously described in the literature¹⁰.

Analytical Methods

A multivariate model was developed predicting the outcome variable of planning to “definitely institute” the proposed change to recommendations versus all other responses and including variables we hypothesized would affect vaccine adoption. Factors significant at p<0.25 in bivariate analyses were tested using standard multivariate modeling techniques with retention of only those factors that were significant at p<0.05 in the final model¹². All statistical analyses were performed using SAS software (SAS 9.1, SAS Institute, Cary, NC).

RESULTS

Our response rate was 74% (N=326). Respondents and non-respondents were similar with respect to demographic factors, with the exception that respondents were more likely to work in a Managed Care Organization setting (6% vs 0%) and less likely to work in a private practice (68% vs 80%, p=0.006) than were non-respondents.

Of respondents, 99% reported giving pneumococcal vaccine to at least some patients during the past year. Respondents estimated that 80% of their patients received PPV at their practice, with hospitals (8%) and public health sites (5%) being the next most common sites of receipt. Only 17% used a computerized database to identify patients eligible for PPV by age and 12% for identification based on the presence of a high-risk condition. Six percent reported doing either mail or phone reminders to patients for PPV. Figure 1 demonstrates the strength of reported recommendation for patients in different risk groups. Physicians reported they were more likely to strongly recommend the vaccine in the elderly as compared to adults <65 with chronic medical illnesses (84% vs 67%, p <.0001). Eight percent reported strongly recommending and 23% recommending PPV to healthy adults 50–64 years of age.

The factors reported as interfering with delivery of PPV are shown in Table 1. Few factors were judged to interfere “a lot” with delivery, with identified barriers usually judged as interfering “some” or “a little.” The vaccine was judged to be “very effective” in different high-risk groups by 37–40% of physicians and “somewhat effective” by 57–58%. Estimates of effectiveness for healthy 50–64 year olds were lower (23% “very” and 50% “somewhat” effective).

When asked about the likelihood of adopting a policy of universal vaccination at age 50 years if it were recommended

Table 1. Reported Barriers to Use of Pneumococcal Vaccine in Primary Care Practice

Barrier	A lot, %	Some, %	A little, %	Not at all, %
How much do the following interfere with your use of pneumococcal vaccination? (n=326)				
Acute problems taking precedence over preventive care	10	29	44	17
Difficulty determining vaccination history	6	24	51	19
Not thinking of it and/or not a priority	1	19	41	39
Patient refusal because insurance does not cover vaccine	6	13	37	44
Lack of adequate reimbursement for vaccination	7	12	18	64
The upfront costs of purchasing vaccine	6	8	19	67
Patient concerns regarding side effects	0.9	12	55	32
Difficulty in ordering the vaccine	2	5	15	79
Physician belief that the vaccine is not very effective in preventing morbidity from pneumococcal disease	0.9	3	10	86
Difficulty storing vaccine	0.6	2	11	87

by the CDC/ACIP, 60% reported they would definitely institute, 37% would probably institute, and 3% would either probably or definitely not institute. In multivariate analyses, practicing in an urban location (OR 2.17, 95% CI 1.28–3.70) and perceiving the vaccine as very effective (OR 2.13, 95% CI 1.27–3.57) were positively associated with willingness to definitely institute this change if recommended, while perceiving that acute problems taking precedence over preventive care as a barrier to vaccination was negatively associated.

DISCUSSION

This national survey demonstrates that virtually all general internists reported recommending PPV to their high-risk patients, but were more likely to recommend it strongly to the elderly than to the non-elderly with chronic conditions. This could be explained by the greater difficulty of identifying vaccine candidates based on diagnoses rather than age. Although internists reported the intention of vaccinating high-risk patients, they had little capacity at the practice level to systematically accomplish this. Few reported using methods that have been shown to increase immunization rates in children, such as immunization registries or computerized reminder/recall¹³. The most frequently cited barriers to PPV included competing demands in primary care, difficulty determining patients' vaccination status, not remembering to vaccinate, and patient and physician concerns regarding reimbursement or insurance coverage of the vaccine. Although there has been some controversy in the literature about the strength of the efficacy data supporting the use of PPV vaccine^{14,15}, only 14% of internists surveyed reported concerns about efficacy as a barrier to their use of the vaccine.

The vast majority of respondents reported that they would be willing to vaccinate all adults ≥ 50 years, if such a recommendation were made. There are a number of reasons why such a change has been proposed. It is estimated that half of individuals 50–64 years of age already fall into a high-risk group either because of chronic medical conditions or risk factors for invasive pneumococcal disease, such as being of African-American, Native American, or Alaskan Native race or because they are smokers^{7,16}. Cost-effectiveness assessments have demonstrated that for individuals 50–64 with high-risk conditions, vaccination saves costs and improves health⁹. In addition, for vaccination in the 50–64 year age group, the cost per added year of healthy life would be below that of well-established preventive measures such as colon cancer screening⁹. Finally, lowering the age of universal immunization would harmonize the influenza and pneumococcal schedules, mitigating one of the major barriers cited by the National Vaccine Advisory Committee¹⁷. Universal vaccination beginning at age 50 years would decrease the need to identify chronic conditions and could enhance the use of standing orders for PPV delivery^{18,19}.

There are important limitations of our data. Despite the demonstrated similarity of our survey network to random samples from the AMA, respondents may not express similar views as those who chose not to join the network or did not respond. Our study sample slightly over-represented those working in managed care settings and underrepresented those in private settings. In addition, all data were based on self-report of current or future practices rather than measurement of actual practice.

This study demonstrates some barriers to optimal implementation of PPV recommendations despite support for the vaccine by most general internists. Some are not easily remedied, such as multiple competing demands in primary care or inadequate vaccine reimbursement. Changing to age-based criteria for PPV would eliminate the need to identify high-risk patients among those >50 years, potentially decreasing the time required for screening and enhancing the practicality of using standing orders in vaccine delivery. Harmonization of the influenza and PPV immunization criteria at age 50 would have obvious benefits in simplifying the screening demands and saving time. However, some respondents believed that the vaccine is less effective in healthy 50–64 year olds. The subgroup who identified acute problems taking precedence over preventive care as a barrier to vaccination were less likely to institute such a change and, if the decreased need to screen did not lead to greater efficiencies in vaccination delivery, this group might not be as willing to comply with an expansion of recommendations. Finally, the reimbursement barriers identified by our respondents might be additionally complicated by expansion, as vaccines would not automatically be covered by Medicare in patients 50–64 years. Despite these potential drawbacks, our data indicate that the majority of general internists would be willing to routinely vaccinate 50–64 year olds if changes were made to national recommendations, and almost a third report they are currently recommending the vaccine in this age group.

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