

Influenza Immunization in the Elderly: Knowledge and Attitudes Do Not Explain Physician Behavior

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Abstract: The records of 847 elderly clinic patients were reviewed and the 95 primary care physicians who managed their care were surveyed to determine factors related to their ordering of influenza immunization. Overall, 41 percent of the eligible patients were offered vaccine (range 0-90 percent). Physician offering of vaccine was unrelated to patient age, sex, or race but was higher in patients seen on multiple visits (47 vs 39 percent) and in those vaccinated during the prior year (61 vs 35 percent). Physician offering of vaccine was not associated with perceived incidence of severe side effects or estimates of vaccine efficacy. (*Am J Public Health* 1989; 79:1422-1424.)

Introduction

The elderly have been shown to be at high risk of death and serious illness following influenza infection.^{1,2} The Centers for Disease Control³ and the American College of Physicians⁴ have recommended that routine annual influenza immunization be offered to all patients age 65 and older. Such immunization has been shown to be a cost-effective preventive health practice.⁵⁻⁷ However, less than 20 percent of those over age 65 or otherwise considered to be at high risk receive influenza vaccination each year.⁸

Previous studies have evaluated factors influencing patients' decisions to receive or refuse influenza vaccine,⁹⁻¹² but there is little information about what affects physicians decisions to offer vaccination. Physicians appear to know the indications for use of the vaccination, but fail to translate this knowledge into clinical practice.¹³

We studied the frequency and determinants of influenza immunization to see whether differences in physician attitudes, knowledge, or perceived side effects of the vaccine could account for the variation in immunization practices.

Methods

All patients age 65 and older seen in the Primary Care Clinic at the Milwaukee County Medical Complex from October through December of 1984 were identified and their medical records reviewed to determine if they were offered influenza vaccination. Patients were considered eligible if they had not already been vaccinated that season, had no history of egg anaphylaxis or severe reaction to prior vaccination, and did not have an acute febrile illness. Immunization was considered to have been offered by the physician if an order was written or if the patient's refusal of immunization was noted. Demographic data, history of influenza vaccination the prior year, and the type of patient visit

(continuing care or visit to a different physician) were also recorded.

Following the study period, a telephone survey was conducted by a non-medical interviewer of all 95 physicians (90 residents and five faculty) who provided direct patient care. Rates of offering influenza vaccine were calculated for the 82 physicians (77 residents and five faculty) who saw at least five eligible patients during the study period. Categorical data were analyzed using the chi square statistic and correlation coefficients (Pearson) were calculated for continuous variables.

Results

The charts of 847 (99.2 percent) of the 854 patients age 65 years and older seen during the study period were reviewed; 812 were eligible for influenza immunization. Overall, 332 (41 percent) of those eligible were offered vaccine; however, individual physicians varied widely in their rates of offering vaccine to their patients, with a range of 0-90 percent. Vaccination was refused by 9 percent of those to whom it was offered. Patient demographics, clinic visit characteristics, and their relation to being offered vaccine are shown in Table 1. Vaccination during the prior calendar year was the strongest determinant of being offered vaccine.

The telephone-administered questionnaire was completed by 88/90 residents and four of five faculty (97 percent overall). Over 80 percent knew the recommended time of year to vaccinate, that influenza vaccine can be given simultaneously with pneumococcal vaccine, and that the objective of influenza immunization is to reduce morbidity and mortality. More than 75 percent correctly responded that influenza immunization is contraindicated in the presence of an acute febrile illness or history of egg anaphylaxis. However, 40 percent incorrectly thought that use of systemic steroids contraindicated vaccination.

Many physicians overestimated the occurrence of rare or unrecognized side effects. Anaphylaxis was estimated to occur >1 percent of the time by 25 percent of physicians, and Guillain-Barré syndrome was believed to occur in >1 percent of recipients by 15 percent of physicians. No association was found between vaccine offering rates and knowledge of incidence rates for anaphylaxis or Guillain-Barré syndrome.* Most physicians (69 percent) considered influenza vaccine to be 70-90 percent effective in preventing infection, but estimates of high vaccine efficacy were not correlated with increased offering rates.

Table 2 shows physician attitudes towards immunizing individuals with various high-risk conditions. The category "age 65 or over" received fewer highest strength recommendations than categories of chronic obstructive pulmonary disease, asthma, residency in a nursing home, renal insufficiency and diabetes. The strength of conviction to immunize

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*Data available on request to author.

TABLE 1—Patient and Clinic Visit Characteristics: Relation to Vaccine Use

Category	N	N (%) Offered Vaccine	Odds Ratio (95% CI)	Adjusted Odds Ratio* (95% CI)
Sex				
Female	569	242 (43)	1.26	1.14
Male	243	90 (37)	(.91, 1.73)	(.97, 1.34)
Race				
Black	416	181 (44)	1.25†	1.09
White	376	145 (39)	(.93, 1.67)	(.94, 1.33)
Other	20	6 (30)		
Age (years)				
65–74	465	196 (42)	1.13	1.06
≥75	347	136 (39)	(.84, 1.52)	(.93, 1.22)
Number of visits				
1	601	233 (39)	.72	.85
2 or more	211	99 (47)	(.52, .995)	(.72, 1.01)
Provider seen				
Usual	639	272 (43)	1.4	1.12
New	173	60 (35)	(.97, 2.0)	(.93, 1.35)
Vaccinated in prior year				
Yes	191	117 (61)	2.99	1.73
No/unknown	621	215 (35)	(2.1, 4.2)	(1.49, 2.04)

*Adjusted by multivariate logistic regression

†Black vs all others

TABLE 2—Percentage Distribution of Strength of Physicians' Recommendations to Vaccinate by Patient Risk Factors

Risk Factor	Percent of Physicians Indicating Category of Recommendation*				
	5	4	3	2	1
Chronic Obstructive Pulmonary Disease	84	10	5	1	1
Asthma	77	11	9	2	1
Nursing Home Resident	73	15	8	1	3
Renal Insufficiency	59	16	17	7	1
Diabetes	55	24	16	1	3
Age >65 years	36	26	34	3	1
Heart Failure	29	15	35	10	11
Anemia	8	9	54	12	17

*5 = very strongly, 1 = not recommended

elderly patients was only weakly correlated with offering rates ($r = .297$, $p = .004$).

Discussion

Physicians may not use influenza vaccine because of uncertainty about its indications, doubts about its efficacy, or failure to consider vaccination during patient encounters.¹⁴ The recent report by Setia, *et al*,¹³ based on 14 physicians, found that only 33 percent of 540 nursing home patients were immunized despite their physicians' strong beliefs in the efficacy and low risk of vaccination. Our study confirms that physicians' perceptions of vaccine efficacy and their strength of conviction to offer vaccination were high but still were not strongly associated with higher rates of vaccination.

While not correlated with the use of vaccine, the perceived incidence of severe vaccine side effects was markedly higher than the actual incidence reported in the literature. Anaphylaxis is an extremely rare occurrence after influenza vaccination,¹⁵ and Guillain-Barré syndrome has not been associated with vaccination since the swine flu vaccine of 1976.^{16–18} Educational efforts should emphasize the low risk of major vaccine side effects.

The overwhelming majority of physicians understood key recommendations concerning vaccine use and accurately assessed its efficacy. Other investigators^{19,20} have noted that knowledge of the efficacy and recommended use of influenza vaccine does not guarantee its appropriate administration. Moreover, Cohen²⁰ found that educational seminars for physicians were less important than patient chart-based checklist reminders in changing vaccination behavior.

We recognize several limitations of our findings. This study was conducted in an academic hospital-based outpatient clinic and the results may not be generalizable to the community setting. Certain patients could have declined receipt of the vaccine following discussions with their physicians or have informed the physician that they received the vaccine elsewhere without documentation in the chart. However, given the relatively high offering rate and the fact that such failures would underrepresent the intent to immunize, it is unlikely that this occurred frequently. As this clinic is the sole source of care for most of this indigent population, it is unlikely that many received the vaccine from alternate sites in the community.

Attempts to increase vaccine use should focus on measures other than changing physician attitudes or increasing their knowledge about the vaccine. Strategies which do not rely on individual physician decision-making should be developed to increase appropriate vaccination of the elderly.

ACKNOWLEDGMENTS

Presented at the Midwest Regional Meeting of the Society for Research and Education in Primary Care Internal Medicine at Chicago, Illinois on October 29, 1986.

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RWJ Foundation Grants Target Children with Mental Illness

Eleven states and the District of Columbia were selected this summer to launch a national initiative to improve services for US children with serious mental illness. The grants were awarded by the Robert Wood Johnson Foundation under its \$20.4 million Mental Health Services Program for Youth.

Selected to receive one-year planning grants of \$100,000 under the initial phase of the program are: California, the District of Columbia, Kentucky, Michigan, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Vermont, Washington, and Wisconsin. Based on the strength of their plans to better coordinate and finance home- and community-based services for mentally ill children, up to eight of the projects will be awarded four-year grants of up to \$2.4 million to carry out their plans. The initiative is intended to improve care for the estimated three million US children whose mental disorders—ranging from autism to depression—typically result in long-term disability or institutionalization, foundation officials said.

Directed for the foundation by Mary Jane England, MD, vice president of medical services at the Prudential Insurance Company in Roseland, NJ, the five-year program will allow states to focus their efforts on communities or geographic areas ranging in population from 300,000 to 600,000. The grants require collaboration among the many state and local agencies responsible for planning, providing and financing mental health care for children.

Since the Foundation was established as a national philanthropy in 1972, it has awarded more than \$996 million in grants to improve the health of adolescents, children, the elderly, the homeless, the mentally ill, people with AIDS and others. For further information, contact the: Robert Wood Johnson Foundation, College Road, PO Box 2316, Princeton, NJ 08543-2316. Tel: (609) 452-8701.