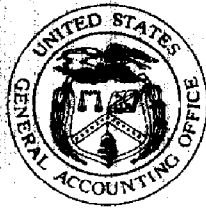


June 1995

# IMMUNIZATION

## HHS Could Do More to Increase Vaccination Among Older Adults



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United States  
General Accounting Office  
Washington, D.C. 20548

**Program Evaluation and  
Methodology Division**

B-254782

June 8, 1995

The Honorable John H. Chafee  
Chairman, Subcommittee on Medicaid and  
Health Care for Low-Income Families  
Committee on Finance  
United States Senate

The Honorable Judd Gregg  
Chairman, Subcommittee on Aging  
Committee on Labor and Human Resources  
United States Senate

Although Medicare covers pneumococcal and influenza vaccination, rates of immunization among the elderly are low and significant mortality persists. At your request, we studied these immunization rates, the resources the Department of Health and Human Services (HHS) has expended on monitoring and improving the use of these vaccines, and the types of interventions that enhance the use of these vaccines. We are pleased to present our findings in this report.

As discussed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from its date of issue. We will then send copies to the Secretary of Health and Human Services, the Administrator of the Health Care Financing Administration (HCFA), the Director of the U.S. Public Health Service (PHS), the Director of the Centers for Disease Control and Prevention (CDC), and other interested parties. We will also make copies available to others on request.

If you have any questions or would like additional information, please call me at (202) 512-3092. Other major contributors to this report are listed in appendix VI.

Kwai-Cheung Chan  
Director of Program Evaluation  
in Physical Systems Areas

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# Executive Summary

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## Purpose

Pneumococcal and influenza-associated diseases are the leading causes of vaccine-preventable death in the United States. On average, 32,800 people die from pneumococcal disease and 20,000 die from influenza each year. The elderly suffer the most from these diseases and the costs to the federal government are substantial. Annual Medicare hospital reimbursement ranges between \$500 million and \$1 billion for the treatment of influenza-associated illnesses alone. At the request of Senators Chafee and Gregg, GAO reviewed immunization rates among the elderly for flu and pneumococcal disease, the efforts and resources HHS has devoted to improving these rates, and the types of interventions that enhance the use of these vaccines.

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## Background

The PHS Advisory Committee on Immunization Practices (ACIP) and professional medical organizations recommend one-time pneumococcal vaccination and annual flu shots for all persons 65 years or older and for nonelderly persons in high-risk groups, such as persons with heart or lung disease. Safe and effective vaccines are now covered under Medicare; nonetheless, the 1993 National Health Interview Survey (NHIS) indicates that immunization rates for these diseases were below the national goals set by HHS as long ago as 1980.

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## Results in Brief

Although reported use of pneumococcal and influenza vaccines among the elderly has more than doubled in the past 10 years, immunization rates for both diseases remain low, and morbidity as well as mortality remain significant. Pneumococcal disease is associated with higher mortality than influenza, yet pneumococcal immunization rates are lower. Nonetheless, in the 14 years since authorization of Medicare coverage for pneumococcal vaccination, HHS has conducted few activities to enhance its use aside from providing Medicare payment. Antibiotic resistance of pneumococcal bacteria is increasing, yet reaching HHS' 60-percent vaccination goal for the year 2000 appears unlikely based on current trends. In contrast, in the short time since Medicare began national coverage for influenza vaccination, HHS has made significant efforts to enhance the use of this vaccine. The pace of increase in influenza vaccination rates since 1989, HHS' plans to enhance its promotional strategies, and preliminary data cited by the agency are promising, suggesting that the 60-percent flu immunization goal for the year 2000 may be attained.

Although immunization rates are low, CDC spends very little promoting pneumococcal and influenza vaccination. GAO believes that increasing promotion efforts would increase immunization rates and thus save lives. But HHS maintains that the appropriations report language pertaining to CDC strongly discourages the Department from spending more of its immunization funding on the elderly. GAO does not agree that the legislative history dictates CDC's small level of spending on adult immunization. GAO reviewed the records of appropriations hearings and found that HHS has not taken a leadership role in defining pneumococcal and influenza immunization as important public health issues for the Congress and in seeking funding commensurate with their significance.

To increase vaccination rates, GAO concludes that efforts to improve health care providers' compliance with adult immunization guidelines are more promising than attempts to influence consumers' knowledge and attitudes. Physicians have a strong impact on consumers' vaccination decisions, but they often fail to recommend vaccination to those patients for whom it is indicated. Computer-based reminder systems, checklists appended to medical records, practice-based tracking systems, and issuance of standing orders for vaccination help to remedy this problem. The broad-based implementation of a hospital policy to vaccinate eligible high-risk patients before discharge shows much promise to reduce vaccine-preventable mortality among adults.

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## Principal Findings

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### Immunization Rates Are Low

HHS currently relies principally on the National Health Interview Survey to monitor rates of vaccination. The most recent available data (from the 1993 NHIS) indicate that 73 percent of older Americans had never received the pneumococcal vaccination, despite its coverage under Medicare since 1981, and 49 percent of the elderly had not been vaccinated against influenza during the 1992-93 flu season preceding Medicare coverage.<sup>1</sup> Elderly blacks are between one-third and one-half as likely as older whites to get vaccinated, and persons with high-risk medical conditions or activity limitations or who describe their health as poor are generally somewhat more likely to get vaccinated. Also, elderly persons who had not

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<sup>1</sup>In comments on a draft of this report, HHS cites "preliminary" data from a survey of Medicare beneficiaries indicating 60.8 percent received a flu shot in the 1993-94 flu season. This is about 10 percentage points higher than the rate for the previous season, as estimated by the 1993 NHIS, but consistent with the upward trend in flu immunization rates since the mid-1980s.

visited a doctor in the last year were less than one-quarter as likely to have gotten either vaccine compared with those who had three or more doctor visits. Nonetheless, even persons with five or more doctor visits were unlikely to have received pneumococcal vaccination.

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### HHS' Vaccination Strategies and Resource Allocations Are Inadequate

HHS officials acknowledge and agency documents reflect the significance of the public health problem presented by both illnesses. However, GAO found that HHS has taken few steps to improve pneumococcal vaccine use since Medicare coverage for the vaccine was authorized in 1981. By comparison, HHS has done more in its recent efforts to improve the use of flu vaccine. When Medicare coverage for influenza vaccination began in 1993, HCFA initiated a public information campaign through the mass media. In fiscal 1995, HCFA enhanced this effort by making data on state and county immunization rates available to health care providers and beginning limited activities through the agency's peer review organizations.

Among the HHS agencies we reviewed, HCFA makes the bulk of federal expenditures directly linked to pneumococcal and influenza immunization, primarily as Medicare payments (about \$100 million in fiscal 1994). Although CDC distributed 94 percent of its \$528 million fiscal 1994 immunization budget to the National Immunization Program (NIP), less than 1 percent of these funds were dedicated to adult immunization activities. The number of NIP staff positions dedicated to adult immunization activities remained constant, at five, between 1987 and 1994, when it increased to seven.

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### Provider-Focused Strategies Show Promise for Improving Immunization

Strategies that show documented promise for enhancing pneumococcal and influenza vaccine use include physician reminder systems, the issuance of standing orders for immunizing patients, and systems for tracking patients in need of immunization. Well-designed reminders to potential vaccinees were also found to be effective. Although vaccination clinics and public information campaigns have been part of successful efforts to improve vaccination rates, the independent effects of these strategies have not been rigorously evaluated.

Research suggests that a policy to vaccinate eligible patients before hospital discharge shows significant promise for reducing pneumococcal disease. Studies conducted in the United States, Canada, and the United Kingdom show that a majority of patients admitted to hospitals with

pneumococcal disease had been discharged from a hospital within the previous 5 years (and had thus missed an important vaccination opportunity). ACIP has recommended that pneumococcal vaccine be offered routinely to hospitalized patients in high-risk groups before discharge to prevent future admissions for pneumococcal disease, but the data suggest that this policy has not been widely implemented.

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## Recommendations

GAO recommends that the Secretary of HHS take a more active leadership role in promoting pneumococcal and influenza vaccination among elderly persons by (1) seeking, in the annual appropriations process, to clarify what proportion of immunization funding should be allocated for such activities; and (2) directing HCFA and PHS to focus their efforts on promoting or supporting promising strategies, such as patient and physician reminder systems, development of standing order policies, and broad-based use of a hospital policy to vaccinate eligible patients before discharge.

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## Agency Comments

Responsible officials from HHS provided written comments on a draft of this report, which are reproduced in appendix V. The Department also provided technical comments, which are addressed in the body of the report as appropriate.

The Department generally agreed with GAO that more effort is needed to increase rates of immunization among the elderly. Following their review of our report, HHS officials told us that in fiscal 1997, CDC plans to propose an initiative in this area. However, the Department did not agree with our first recommendation. HHS stated that the Congress has previously guided CDC to place priority on childhood immunization. However, GAO concluded that one reason why the Congress has not emphasized a public health role in adult immunization is because HHS has not taken a leadership role in promoting its importance.

With respect to the second recommendation, HHS does not question the effectiveness or practicality of the strategies GAO identified. However, the Department does not specify what steps it will take to support or encourage use of these strategies, instead emphasizing its plans to enhance provider and beneficiary awareness of the benefits of vaccination. Yet, GAO found that such efforts are not among the most promising means of increasing immunization rates against these diseases.

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# Contents

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<b>Executive Summary</b>		2
<b>Chapter 1</b>		10
<b>Introduction</b>	Background	10
	Scope and Methodology	15
<b>Chapter 2</b>		17
<b>Methods and Results of Monitoring Immunization Rates</b>	Methods of Monitoring Immunization Rates	17
	Immunization Rates: Trends and Correlates	19
	Summary	25
<b>Chapter 3</b>		27
<b>Agency Immunization Strategies</b>	Activities to Improve Immunization Rates	27
	Resources	31
	Summary	32
<b>Chapter 4</b>		34
<b>Factors That May Explain Low Immunization Rates</b>	Influences on Vaccine Consumers' Behavior	34
	Influences on Providers' Behavior	36
	Summary	41
<b>Chapter 5</b>		43
<b>Promising Immunization Strategies</b>	Reminder Contacts With Potential Vaccinees	43
	Physician Reminder Systems	43
	Standing Orders for Vaccination	44
	Practice-Based Tracking Systems	45
	Other Strategies	45
	Summary	46
<b>Chapter 6</b>		48
<b>Conclusions and Recommendations</b>	Conclusions	48
	Recommendations	50
	Agency Comments and Our Response	50
<b>Appendixes</b>	Appendix I: HHS Data Collection on Factors That Influence Vaccine Consumers' Behavior	54

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Appendix II: HHS Data Collection on Factors That Influence Vaccine Providers' Behavior	56
Appendix III: Sample Notice of Medicare Coverage for Influenza Vaccine Incorporated in Mailings Associated With Medicare Claims	58
Appendix IV: Administrator's Letter to Beneficiaries During the Medicare Influenza Demonstration	59
Appendix V: Comments From the Department of Health and Human Services	60
Appendix VI: Major Contributors to This Report	66

## Tables

Table 1.1: Annual Prevalence of Pneumococcal Disease and Death	11
Table 2.1: Surveys Used to Monitor Adult Immunization Rates	17
Table 2.2: 1991 Immunization Rates by Demographic and Health Characteristics of Vaccinees	22
Table 2.3: Logistic Regression Predicting Pneumococcal and Influenza Vaccination Among Persons Age 65 and Older	24
Table I.1: HHS Data Collection on Factors That Influence Vaccine Consumers' Behavior	54
Table I.2: Medicare Beneficiaries' Reasons for Not Receiving Influenza Vaccine	55
Table II.1: HHS Data Collection on Provider-Based Influences on Vaccination	56

## Figures

Figure 2.1: Influenza Vaccination Rates for Persons Age 65 and Older	20
Figure 2.2: Cumulative Pneumococcal Vaccination Rates for Persons Age 65 and Older	21
Figure 4.1: Relationship Between Physician Recommendation and Immunization Rates	39

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**Abbreviations**

ACIP	Advisory Committee on Immunization Practices
BRFSS	Behavioral Risk Factor Surveillance Survey
CDC	Centers for Disease Control and Prevention
HCFA	Health Care Financing Administration
HHS	Department of Health and Human Services
HMO	Health maintenance organization
NCHS	National Center for Health Statistics
NCID	National Center for Infectious Diseases
NHIS	National Health Interview Survey
NIA	National Institute of Aging
NIP	National Immunization Program
NVAC	National Vaccine Advisory Committee
NVPO	National Vaccine Program Office
ORC	Opinion Research Corporation
OTA	Office of Technology Assessment
PHS	Public Health Service
USIS	United States Immunization Survey
VA	Department of Veterans' Affairs



# Introduction

Medicare covers vaccines against two types of disease that are hazardous to the health of elderly persons—pneumonia (and other pneumococcal infections) and influenza. Although these vaccines are officially recommended for all persons over 65 and for younger persons with high-risk conditions, large proportions of those at risk of morbidity and mortality from these diseases do not receive inoculations against them. Consequently, Senators Chafee and Gregg asked us to assess HHS' efforts to improve these vaccination rates. Below, we describe these diseases, the safety and efficacy of the vaccines, and our approach to assessing HHS' activities to improve pneumococcal and influenza vaccination rates.

## Background

### Pneumococcal Disease and Influenza

Pneumonia and influenza are the sixth most common cause of death in the United States. Between 15 and 50 percent of all adult pneumonias are caused by pneumococcal bacteria, and these infections are the leading cause of pneumonia requiring hospitalization. In addition to pneumonia, pneumococcal bacteria can cause serious infections of the bloodstream (bacteremia) and the covering of the brain or spinal cord (meningitis).

Influenza is a highly contagious viral disease that is spread by direct contact with an infected person or through contact with the airborne virus. The public health significance of influenza vaccination derives from the rapidity with which flu epidemics evolve, the widespread morbidity associated with these epidemics, and the seriousness of complications (notably, pneumonias) that may result from the flu. Influenza viruses continually change over time; thus, people are susceptible to influenza infection throughout life.

### Health Consequences

Despite antibiotic therapy, pneumococcal disease remains a leading cause of morbidity and mortality.<sup>1</sup> CDC estimates that there are 268,000 cases of pneumococcal disease per year in the United States among the approximately 36 million persons 65 years old or older and that, on average, 32,800 elderly persons die each year from pneumococcal disease. People older than 65 are more likely to contract pneumococcal disease than the general population. (See table 1.1.)

<sup>1</sup>According to case studies by the Office of Technology Assessment (OTA) published in 1979, early enthusiasm for pneumococcal vaccines waned with the introduction of antibiotics, which allowed doctors to treat disease, thereby alleviating dependence on prevention. Recently, however, antibiotic resistance of certain types of pneumococci has accelerated significantly.

**Table 1.1: Annual Prevalence of Pneumococcal Disease and Death<sup>a</sup>**

Disease	Number of	
	Cases	Deaths
Pneumonia	250,000	25,000
Bacteremia	17,000	7,300
Meningitis	1,000	500
Total	268,000	32,800

<sup>a</sup>Estimates for persons 65 years of age and older provided by the Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC, 1994.

The incidence of influenza varies from year to year depending on the type of viral outbreak and its level of activity.<sup>2</sup> The highest illness rate occurs with the A(H3N2) virus, which has caused epidemics every other year in the last decade. According to CDC, 5 to 10 percent of the elderly population become ill with influenza during A(H3N2) outbreaks. On average, type A and B viruses caused 20,000 deaths per year in the last two decades, with 80 to 90 percent of deaths occurring among the elderly.

#### Disease Costs

Precise annual costs for treating pneumococcal disease and influenza are not available. However, HCFA researchers have estimated that Medicare reimburses hospitals \$750 million to \$1 billion for the treatment of influenza-associated illness during epidemic periods and almost a half billion dollars in a nonepidemic year. The majority of cases of pneumococcal disease and influenza are treated in outpatient settings, and these estimates do not include the medical costs associated with outpatient treatment. In fiscal 1994, HHS officials reported expending approximately \$100 million on Medicare coverage for pneumococcal and influenza vaccines and their administration.

#### Vaccine Safety and Efficacy

##### Pneumococcal Vaccine

Mild side effects, such as swelling and pain at the injection site, occur in about half of the people who are given the pneumococcal vaccine. However, fever, muscle pain, and more serious local reactions have been reported in less than 1 percent of recipients.

<sup>2</sup>There have been three influenza pandemics this century: "Spanish flu" (1918-19), which caused 500,000 deaths in the United States and 20 million deaths worldwide; "Asian flu" (1957-58), which caused 70,000 deaths in the United States; and "Hong Kong flu" (1968-69), which caused 34,000 deaths in the United States.

The efficacy of pneumococcal vaccine has increased over the years as new vaccines were introduced to protect against a larger number of pneumococci (83 types are known). The current pneumococcal vaccine, which became available in 1983, protects against 23 types responsible for approximately 90 percent of the pneumococcal bacteremic infections found in U.S. residents.

Randomized controlled trials have demonstrated that the vaccine protected against pneumococcal infections in healthy young adults in settings outside the United States where there were high rates of pneumococcal disease. Recently, a large randomized controlled trial conducted in France found that the vaccine was 77-percent effective in reducing the incidence of pneumonia in persons living in geriatric hospitals and homes for the aged.

In contrast, three major trials with older U.S. adults—in a prepaid medical plan in San Francisco, in a chronic disease hospital, and in a Department of Veterans' Affairs (VA) study—have not demonstrated pneumococcal vaccine efficacy in preventing pneumococcal pneumonia in the absence of bacteremia. However, because the rate of pneumococcal infection is quite low, it is difficult to demonstrate vaccine efficacy in a randomized trial.<sup>3</sup>

Owing to the difficulties inherent in assessing pneumococcal vaccine efficacy for older persons from randomized trials, findings from case-control studies and cohort analyses have become the standard from which CDC scientists and other experts judge vaccine efficacy. Together, these studies indicate an overall protective efficacy against invasive pneumococcal infection of 60 percent to 70 percent in elderly persons with normal immune response, regardless of such high-risk conditions as heart or lung disease.

## Influenza Vaccine

Although most individuals have no side effects from influenza vaccines, some may have soreness at the injection site or may experience fever or body aches for a day or two. Unlike the 1976 "swine flu" vaccine, recent flu shots have not been linked to Guillian-Barré syndrome. According to CDC,

<sup>3</sup>For example, the frequently cited VA study has received three main criticisms. First, critics argue that the randomization process was flawed because the experimental group was significantly different from the control group on several important study variables. Second, they note that bronchitis (which accounts for almost half of all pneumococcal infections the study considered as outcome events) was an inappropriate outcome variable because pneumococcal vaccine is not generally expected to protect against bronchitis—only pneumonia and bacteremia are well-accepted outcome measures. Third, given infection rates of 60 per 100,000 persons age 65 or older for bacteremia and between 300 and 600 per 100,000 persons for pneumonia, very large samples are needed to derive statistically meaningful conclusions. Because the size of the sample used in the VA study was relatively small, the study had only a 6-percent chance to detect a vaccine efficacy of 65 percent against pneumococcal bacteremia.

the vaccines produced before the mid-1960s were not as purified as today's vaccines, and they sometimes produced fever, headache, muscle ache, and fatigue. These symptoms are similar to those occurring with influenza, thus some people believed that the vaccine had caused them to get the flu. Contrary to myth, it has never been possible to get the flu from influenza vaccines licensed in the United States because they have only been made from killed (inactivated) viruses, which cannot cause infection.

Influenza vaccine efficacy depends on many factors, including the age and health status of the recipient and the match between the prevalent flu strain and the strains addressed in the year's vaccine. Studies of healthy young adults have shown influenza vaccine to be 70- to 90-percent effective in preventing illness. However, in the elderly, the vaccine is often more effective in reducing the severity of illness and the risk of serious complications and death than in preventing illness altogether. Studies have shown the vaccine to reduce hospitalization by about 70 percent and death by about 85 percent in noninstitutionalized elderly. Among nursing home residents, vaccine can reduce the risk of hospitalization for flu by about 50 percent, the risk of pneumonia by about 60 percent, and the risk of death by 75 to 80 percent.

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## Vaccination Recommendations

Both pneumococcal and influenza vaccinations are recommended for elderly persons by U.S. public health authorities. Since 1963, CDC's Advisory Committee on Immunization Practices has recommended annual vaccination against influenza for persons age 65 and older. In 1984, ACIP began recommending a one-time pneumococcal vaccination for older persons. In 1989, ACIP also recommended revaccination of persons at highest risk of fatal pneumococcal infection and those with rapid loss of pneumococcal antibody levels for whom 6 or more years had passed since initial vaccination.

Both vaccinations are also recommended for nonelderly persons with medical conditions that make them vulnerable to severe complications from influenza infections or that put them at increased risk of pneumococcal disease. Moreover, ACIP, noting research that shows that two-thirds of persons with serious pneumococcal disease had been hospitalized in the 5-year period before the illness, recommends that pneumococcal vaccine be given to hospitalized patients in high-risk groups before discharge in order to prevent future admissions for pneumococcal disease.

Consistent with these professional recommendations, HHS has established goals for increasing these vaccination rates by the year 2000 to 60 percent of the population defined by ACIP, which includes all persons age 65 and older, and at least 80 percent of institutionalized chronically ill or older persons. The goal of immunizing 60 percent of the elderly with influenza vaccine is carried over from a 1990 target set by the Surgeon General in 1980.

### Legislative Authorization for Immunization Activities

In July 1981, coverage for pneumococcal vaccine and its administration became one of the first primary preventive services added to the Medicare program. It was incorporated in title XVIII of the Social Security Act following a 1979 study by the Office of Technology Assessment that indicated pneumococcal vaccination would be cost-effective for persons age 65 and over.<sup>4</sup>

OTA issued another report, in 1981, that found that influenza vaccination for persons age 65 and older would be cost-effective.<sup>5</sup> In Public Law 100-203, the Congress mandated that HCFA conduct a demonstration project regarding Medicare coverage of influenza vaccination, which subsequently yielded mixed findings on the cost-effectiveness of flu coverage.<sup>6</sup> According to legislative mandate, HCFA initiated Medicare coverage for the vaccine and its administration in May 1993. Consequently, today Medicare Part B covers both the cost and the administration of vaccines against pneumococcal disease and influenza for both elderly and disabled beneficiaries. Unlike most other part B services, for which beneficiaries must pay 20 percent of allowed charges, no copayment is required for these two services.<sup>7</sup> Providers' claims for delivering these services are processed by a network of carriers and intermediaries contracted to HCFA, who are also responsible for educating providers about covered services.

In addition to HCFA, which administers Medicare, two other HHS units within the Public Health Service have major legislative authority for immunization activities: the National Vaccine Program Office and the

<sup>4</sup>OTA. A Review of Selected Federal Vaccine and Immunization Policies: Based on Case Studies of Pneumococcal Vaccine. Washington, D.C.: Sept. 1979.

<sup>5</sup>OTA. Cost-Effectiveness of Influenza Vaccination. Washington, D.C.: Dec. 1981.

<sup>6</sup>Abt Associates, Inc. Medicare Influenza Vaccine Cost-Savings Study: Evaluation Report. Cambridge, Mass.: Mar. 22, 1993.

<sup>7</sup>Providers who do not accept assignment may bill beneficiaries for 15 percent more than the Medicare allowance.



Centers for Disease Control and Prevention. NVPO was established within the Office of the Assistant Secretary for Health by the National Childhood Vaccine Injury Act of 1986 (P.L. 99-660), which added title XXI to the Public Health Service Act. The office's responsibilities extend to coordination of the various federal agencies involved in immunization activities, including the CDC, and its prescribed roles include coordinating and directing federal activities relating to vaccine research, distribution, and use. As authorized by section 317 of the Public Health Service Act, CDC provides immunization assistance in the form of grants to states and other public entities and conducts research activities.

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## Scope and Methodology

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### Scope

We limited our review of HHS' immunization strategies to pneumococcal and influenza vaccination because both are covered under Medicare, both are recommended for all persons 65 years of age or older, and both cause significant morbidity and mortality among elderly persons.

Federal responsibilities and activities related to utilization of pneumococcal and influenza vaccines among the elderly are spread across a number of departments, agencies, and offices. We focused our review principally on three HHS units:

- the Health Care Financing Administration, which administers the Medicare program;
- the National Vaccine Program Office within the PHS' Office of the Assistant Secretary for Health, which has been charged with coordinating the immunization activities of many federal agencies, offices, and departments to achieve optimal prevention of infectious diseases through immunization; and
- the CDC's National Immunization Program, which conducts research and provides grants and other assistance for state and local immunization activities.

### Methodology

To assess the methods and resources HHS uses to monitor and improve levels of immunization among Medicare beneficiaries, we conducted interviews with officials at NIP, NVPO, and relevant HCFA offices. We also

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attended meetings of the NVPO's National Vaccine Advisory Committee and examined relevant promotional materials, reports, budgets, and enabling legislation.

We examined HHS' analyses of characteristics of immunized and nonimmunized elderly persons, including published and unpublished papers, technical documents, conference presentations, and statistical results from computer runs. To determine why pneumococcal and influenza immunization levels are low, we reviewed literature and consulted immunization experts. We used standard statistical and scientific principles to evaluate HHS' methods and to assess the strength of evidence supporting various interventions.

We conducted our review in accordance with generally accepted government auditing standards. We did not independently verify or statistically process the data CDC provided to us.

# Methods and Results of Monitoring Immunization Rates

## Methods of Monitoring Immunization Rates

HHS has relied principally on household surveys to estimate national rates of pneumococcal and influenza immunization among noninstitutionalized adults. Other information bearing on pneumococcal and influenza vaccine use is available from CDC's collection of manufacturers' quarterly reports of doses distributed and from records of vaccination claims submitted to HCFA for Medicare reimbursement.<sup>1</sup>

## Past and Present Survey Methods

As shown in table 2.1, since 1964, HHS has used a sequence of three different surveys to monitor pneumococcal and influenza immunization rates at various intervals: a supplement to the Current Population Survey known as the United States Immunization Survey (USIS), the Behavioral Risk Factor Surveillance Survey (BRFSS), and supplements to the National Health Interview Survey. The NHIS data come from respondents' reports of their own and family members' immunization status when asked, "During the past 12 months—that is, since (date) a year ago—have any adults in the family received a flu shot?" and "Have any adults in the family ever received a pneumonia vaccine?"

**Table 2.1: Surveys Used to Monitor Adult Immunization Rates**

Survey	Years data were collected		Sampling frame
	Influenza	Pneumococcus	
USIS	1964 1969-85	1985	Civilian, noninstitutionalized U.S. population
BRFSS	1987 1993	1993	31 states and D.C. in 1987 and 49 states in 1993
NHIS	1989 1991 1993	1989 1991 1993	Civilian, noninstitutionalized U.S. population

Source: CDC/NIP, 1993.

## Survey Limitations

The survey data from the NHIS are currently the best available national information on pneumococcal and influenza immunization rates. However, we did identify some limitations of HHS' current survey methodology. For reasons of economy and efficiency, information on different medical conditions is collected from different subsets of the NHIS sample. Data on

<sup>1</sup>Since completion of our review, HCFA has gathered information on Medicare beneficiaries' receipt of influenza immunization during the 1993-94 flu season through its 1994 Current Beneficiary Survey. However, these data were described as "preliminary" on Mar. 27, 1995, when the agency provided comments on our draft report. We did not review these data and the precision of estimates produced by the survey. Agency officials told us that preliminary findings indicated that the flu immunization rate for Medicare beneficiaries has topped 60 percent, but that the pneumococcal immunization rate remains at 28 percent.

the two major high-risk conditions for pneumococcal and influenza disease—heart and lung disease—are collected from separate subsamples, each comprised of one-sixth of the total sample. This design limits the factors that may be included in analyses to improve understanding of the root causes of underimmunization among elderly persons with high-risk conditions or multiple risk factors. We raised this issue in a meeting with HHS officials in August 1994 and were told that the 1995 NHIS would be modified to address this problem.

A second potential limitation of HHS' method of monitoring immunization rates concerns the lack of information on the accuracy with which respondents report their own or household members' vaccination status.<sup>2</sup> Insofar as trends in NHIS data are generally consistent with trends in other indicators of vaccine use (discussed below), we do not view this as a serious problem for current applications. However, the extent of downward or upward bias in self-reported rates might be assessed by examining self-reports for a sample of individuals whose immunization status is known through other means.

Finally, HHS lacks recent data on the immunization status of the institutionalized elderly, such as nursing home residents, who are an important segment of the 85 and older age group and who are also at high risk of complications from pneumococcal and influenza disease. Such data could be useful, not only in monitoring immunization objectives, but also in assessing the quality of care offered by particular facilities. In response to our draft report, Department officials noted that the National Center for Health Statistics will begin to collect data on influenza and pneumococcal vaccination from a sample of nursing homes in 1995 and every other year thereafter.

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## Supplemental Data

HHS maintains two data systems that can be used to supplement its survey-based estimates of immunization rates. CDC's vaccine surveillance system, based on manufacturers' quarterly reports of vaccine distributed and returned, provides a rough indicator of national vaccine use. In addition, HCFA's National Claims History File contains information on Medicare reimbursement for pneumococcal and influenza vaccinations.

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<sup>2</sup>NIP and National Center for Health Statistics (NCHS) researchers have also noted the lack of studies assessing the accuracy of self-reported immunization status for pneumococcal and influenza disease. See Desiree Rodgers et al., Division of Immunization, CDC and NCHS, "Influenza and Pneumococcal Vaccination in the Elderly: Results of the 1989 National Health Interview Survey," presentation made to the 1991 annual meeting of the American Public Health Association and to the 1992 CDC Epidemic Intelligence Service Conference.

Although these claims data are not susceptible to the limitations of self-reported survey data, they suffer from other limitations that restrict their utility for calculating immunization rates.<sup>3</sup>

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## Immunization Rates: Trends and Correlates

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### Trends in Vaccine Use

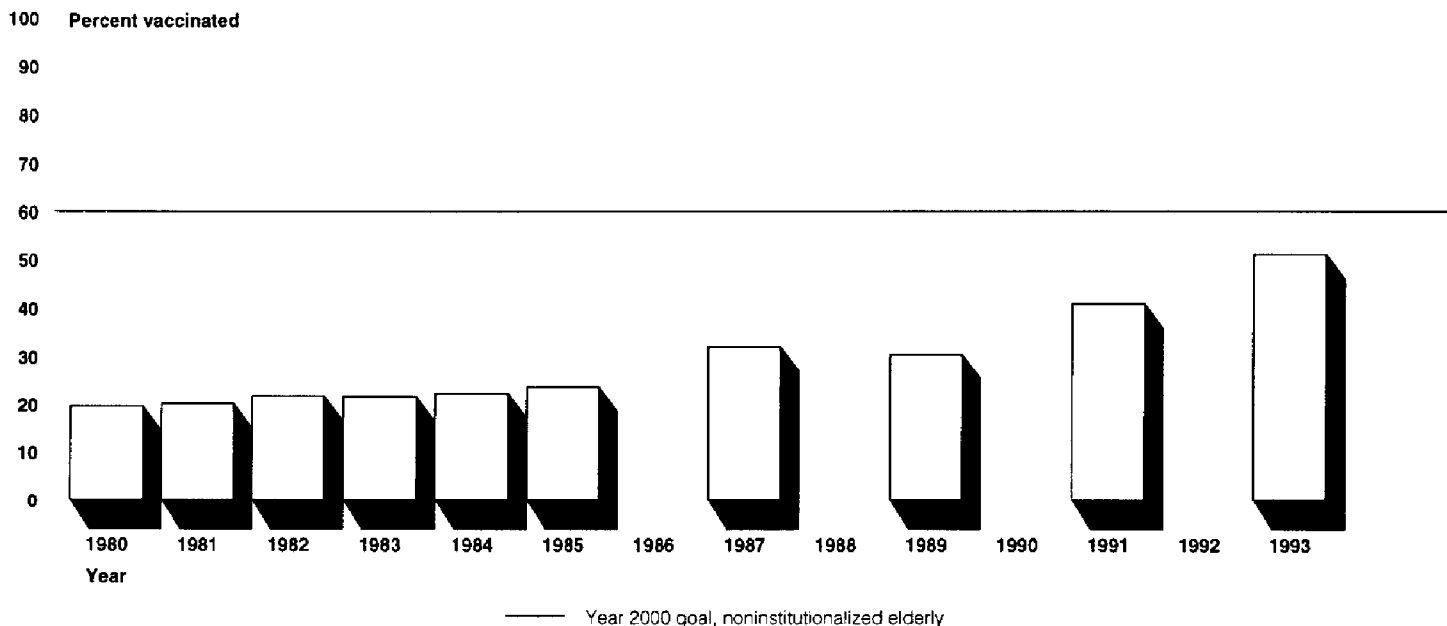
The three national surveys HHS has used to monitor changes in immunization rates—USIS, BRFSS, and NHIS—are the sources of data used in figures 2.1 and 2.2 to portray trends in pneumococcal and influenza vaccine use.<sup>4</sup>

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<sup>3</sup>Medicare claims data are incomplete for the following reasons: (1) about 5 percent of the elderly are not enrolled in Medicare, (2) as of 1991, approximately 7 percent of Medicare beneficiaries were enrolled in prepayment plans (such as HMOs), and HCFA does not have records on the services utilized by enrollees of these plans, and (3) the data for each calendar year are collected from claims processed through March 31 of the following year, and HCFA estimates that up to 8 percent of potential claims are processed after March 31. Reflecting these gaps, HCFA has estimated that 10-20 percent of Medicare beneficiaries got flu shots in 1993 that were not reimbursed by HCFA (i.e., for which no Medicare claim was submitted).

<sup>4</sup>Because BRFSS data are not strictly generalizable to the U.S. population, the immunization rates for 1987 are not strictly comparable to those for earlier and later years. The 1993 data in figures 2.1 and 2.2 represent findings from the NHIS, which were in close agreement with those from the 1993 BRFSS.

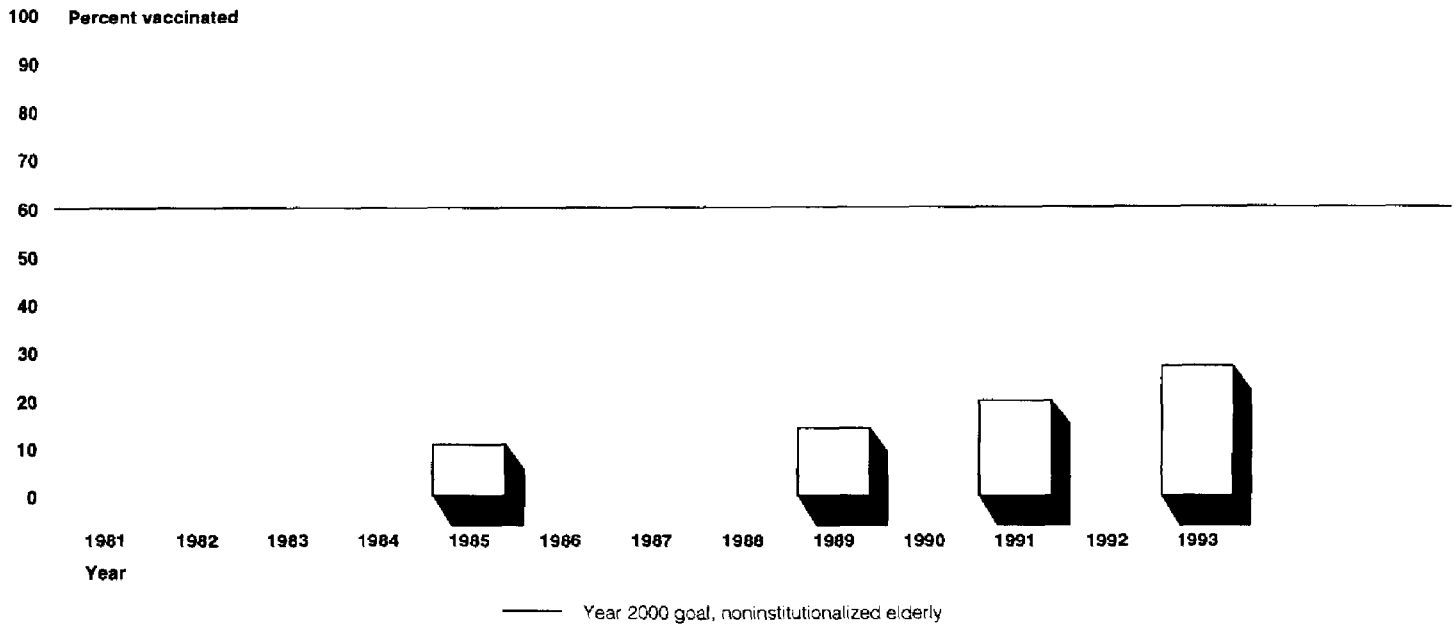
Figure 2.1: Influenza Vaccination Rates for Persons Age 65 and Older<sup>a</sup>



<sup>a</sup>Immunization rates were not estimated in 1986, 1988, 1990, and 1992. As shown, the year 2000 goal for noninstitutionalized elderly is 60 percent.

Taken together, these data suggest that annual use of influenza vaccine and cumulative use of pneumococcal vaccine more than doubled in the decade preceding 1993. Annual influenza vaccine use among the elderly has increased from about 20 percent in 1964 (not shown in figure 2.1) to about 51 percent in 1993. After a period of relative stability throughout most of the 1980s, influenza vaccine use increased approximately 10 percentage points from 1989 to 1991 and 10 more percentage points from 1991 to 1993. Cumulative pneumococcal vaccine use was about 11 percent in 1985 and had grown to about 27 percent in 1993.

Figure 2.2: Cumulative Pneumococcal Vaccination Rates for Persons Age 65 and Older<sup>a</sup>



<sup>a</sup>Pneumococcal vaccine became a Medicare-covered benefit in July 1981. The pneumococcal immunization rate was not estimated in 1981-84, 1986-88, 1990, and 1992. As shown, the year 2000 goal for noninstitutionalized elderly is 60 percent.

### Vaccine Use Among Elderly Persons With High-Risk Conditions

For all years before and including 1985 (except 1976, the year the swine flu epidemic was expected), the rate of influenza immunization among the high-risk elderly remained below 30 percent. By 1991, this rate had increased to 46 percent for persons with cardiovascular disease and 52 percent for persons with pulmonary disease. In 1991, the cumulative pneumococcal immunization rate was 21 percent for persons with cardiovascular disease and 32 percent for persons with pulmonary disease. (CDC analyses of 1993 NHIS data had not been completed at the time this report was prepared.)

### Characteristics of Immunized and Nonimmunized Persons

We identified three analyses of the characteristics of immunized and nonimmunized persons: (1) CDC's study of trends in influenza vaccine coverage using USIS data collected from 1969 to 1985, (2) an investigation of the utilization of pneumococcal vaccine among elderly Medicare beneficiaries from 1985 to 1988, and (3) CDC's analysis of pneumococcal

**Chapter 2  
Methods and Results of Monitoring  
Immunization Rates**

and influenza immunization status using 1989 and 1991 NHIS data.<sup>5</sup> We concentrated our discussion on CDC's analyses of 1989 and 1991 NHIS data because they provided the most current and methodologically rigorous investigation of elderly persons' pneumococcal and influenza vaccine use that was available during our review.

CDC staff examined immunization rates among persons with various demographic characteristics, health status indicators, and measures of health behavior. (See table 2.2.) They found that, in 1991, pneumococcal and influenza immunization rates for **all** subgroups in the elderly population were well below HHS' goal of 60-percent immunization among noninstitutionalized elderly persons.

**Table 2.2: 1991 Immunization Rates by Demographic and Health Characteristics of Vaccinees<sup>a</sup>**

Variable	Immunization rate	
	Pneumococcal	Influenza
<b>Demographic characteristic</b>		
Gender		
Male	19.9%	41.2%
Female	20.0	40.7
Race		
Black	13.4	26.5
White	20.6	42.4
Asian	14.3	28.4
Other	19.9	36.8
Poverty status		
Below poverty index	15.8	35.5
Above poverty index	21.0	42.1
Education		
Less than high school	17.2	36.0
High school or more	21.8	44.2
Region		
Northeast	16.8	36.5
South	19.4	40.6
Midwest	20.0	42.7

(continued)

<sup>a</sup>(1) Information supplied by CDC/NIP; (2) A. Marshall McBean, J. Daniel Babish, and Ronald Prihoda, "The Utilization of Pneumococcal Polysaccharide Vaccine Among Elderly Medicare Beneficiaries, 1986 Through 1988," *Archives of Internal Medicine*, 151 (Oct. 1991):2009-16; and (3) Desiree Rodgers et al., Division of Immunization, CDC and NCHS, "Results of the 1989 National Health Interview Survey" and K.S. Heath et al., "Influenza and Pneumococcal Vaccination Among Older Adults: Results of the 1991 National Health Interview Survey [Abstract]," in *Program and Abstracts of the CDC Epidemic Intelligence Service 43rd Annual Conference* (Atlanta: CDC, 1994), p. 33.



**Chapter 2  
Methods and Results of Monitoring  
Immunization Rates**

Variable	Immunization rate	
	Pneumococcal	Influenza
West	24.6	44.4
Residential setting		
Urban	21.2	40.3
Suburban	21.5	41.0
Rural	20.8	44.3
<b>Health status</b>		
Self-reported health assessment		
Fair or poor	23.0	42.8
Very good or good	19.9	42.4
Excellent	15.0	32.6
High-risk condition		
Cardiovascular	21.0	46.0
Pulmonary	32.0	52.0
Activity limitations		
Some	24.2	44.4
None	17.4	38.9
<b>Health behavior</b>		
Doctor visits in past year		
Zero	8.3	17.1
One	16.5	35.1
Two to four	20.7	43.5
Five or more	25.4	50.1

<sup>a</sup>For U.S. noninstitutionalized population age 65 years and older. Immunization rates for those under 65 years are 5.4 percent (pneumococcal) and 7.9 percent (influenza).

Source: 1991 NHIS Immunization Supplement and CDC analyses.

At the time of our review, CDC staff had completed multivariate analyses using 1989 NHIS data only. They developed two logistic regression models, one predicting pneumococcal vaccine use and the other predicting influenza vaccine use. Of all the variables listed in table 2.2, those that were significantly related to vaccination status were included in the regression models (only region and residential setting were thus excluded.)<sup>6</sup> Results from these analyses are summarized below. All findings pertain only to the U.S. population of noninstitutionalized persons

<sup>6</sup>In contrast, CDC's earlier analyses of USIS data indicated that from 1973 to 1985, among all adults, rural dwellers had higher influenza vaccination coverage than their urban counterparts. However, the possible reasons for this apparent difference are unclear because age, race, income, education, and use of medical care are not included in the analyses.

65 years old or older, and all relationships are adjusted for other variables in the model. (See table 2.3.)

**Table 2.3: Logistic Regression Predicting Pneumococcal and Influenza Vaccination Among Persons Age 65 and Older<sup>a</sup>**

Variable	Referent group	Variable category	Odds ratio	
			Pneumococcus	Influenza
Race	Black	White	2.67	2.06
Education	Less than high school	More than high school	Not significant	1.36
Health status	Excellent	Poor	1.77	1.36
Cardiovascular condition	None	Some	1.6	Not significant
Pulmonary condition	None	Some	2.5	1.9
Activity limitations	None	Some	Not significant	1.23
Doctor visits	None	Three or more	4.14	4.35

<sup>a</sup>Using 1989 NHIS data.

Source: CDC/NIP, 1994.

### Demographic Characteristics

Even controlling for education, income, health status, and use of medical care, elderly persons who were white had almost three times the odds of receiving pneumococcal vaccine and twice the odds of receiving influenza vaccine as elderly persons who were black. Although having attained at least a high school education was not significantly related to receiving pneumococcal vaccine, it was associated with slightly higher odds of receiving influenza vaccine. CDC found that when all other variables were controlled, poverty and gender were not related to vaccination status, so they were consequently dropped from the model reported in table 2.3. These analyses did not address differences in immunization rates among various elderly age groups.<sup>7</sup>

### Health Status

In general, lower health status is related to higher odds of being vaccinated. Elderly people who reported their overall health as poor had about 1.8 times the odds of receiving pneumococcal vaccine and about 1.4 times the odds of receiving influenza vaccine as those who described their health as excellent. Elderly persons with a pulmonary condition had 2.5 times the odds, and those with a cardiovascular condition had 1.6 times the odds of receiving pneumococcal vaccine, as compared to those

<sup>7</sup>In the previously cited study of pneumococcal vaccine use based on claims among Medicare beneficiaries between 1985 and 1988, findings indicated that persons 85 and older and those between 65 and 69 are somewhat less likely to get vaccinated than the remainder of elderly persons.

without these high-risk conditions. Similarly, those with a pulmonary condition had almost twice the odds, and those with activity limitations had 1.2 times the odds of receiving influenza vaccine, as compared to those without lung disease or activity limitations, respectively.

However, we note that CDC also found that older people with cardiovascular disease (the leading cause of death in the United States) were **not** significantly more likely to receive influenza vaccine than persons without cardiovascular disease. This finding is important because elderly persons with such conditions are at greater risk of dying from pneumococcal disease and influenza.

#### Physician Contacts and Health Behavior

The frequency of seeing a doctor is by far the best predictor of pneumococcal and influenza vaccination status. Compared to elderly persons who had not seen a doctor during the previous year, those with three or more doctor visits had at least four times the odds of getting vaccinated. Nonetheless, even among persons with five or more doctor visits in the past year, half reported no influenza vaccination and three quarters reported no pneumococcal vaccination.<sup>8</sup>

In a published report of multivariate analyses of 1987 BRFSS data, CDC also found that such health risk-taking behaviors as smoking, obesity, lack of seat-belt use, and sedentary lifestyle are related to decreased likelihood of influenza vaccine use.<sup>9</sup>

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## Summary

HHS relies principally on the National Health Interview Survey for tracking trends in immunization rates. This strategy has some disadvantages, but currently provides the best available information on pneumococcal and influenza immunization rates. Importantly, more than a decade after Congress made pneumococcal vaccination almost universally available to elderly persons through Medicare coverage, survey data indicate that about 73 percent of older Americans have not received this one-time-only vaccination. Moreover, in the 1993 flu season, just before Medicare began coverage of flu shots, 49 percent of elderly Americans had not been vaccinated against influenza. HHS officials report that preliminary data from a survey of beneficiaries conducted for the 1993-94 flu season found

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<sup>8</sup>In chap. 4, we discuss the significance of recommendations by physicians, and in chap. 5, we discuss hospital-based immunization strategies.

<sup>9</sup>Paul A. Stehr-Green et al., "Predictors of Vaccination Behavior Among Persons Ages 65 Years and Older," *American Journal of Public Health*, 80:9 (Sept. 1990), 1127-29.

a higher rate of flu vaccine use (60.8 percent), but roughly the same low level of use for pneumococcal vaccine (28 percent).<sup>10</sup>

Among elderly persons with high-risk conditions, immunization rates tend to be higher, but they are still below HHS goals set as long ago as 1980. In 1991, surveys indicated 21 percent of persons with heart disease and 32 percent of those with lung disease had received pneumococcal vaccination, while 46 percent of persons with heart disease and 52 percent of those with lung disease had received influenza vaccination.

According to CDC's analyses of 1989 NHIS data, although all major subgroups of the U.S. elderly population are undervaccinated, some are less likely to get vaccinated than others. Two such cases stand out. First, elderly persons who are black are two to nearly three times less likely to receive pneumococcal and influenza vaccines than elderly persons who are white, even after adjusting for other factors. Second, elderly people with no doctor visits in the previous year are over four times less likely to receive these vaccinations than those who have visited a physician three or more times. Even so, 75 percent of elderly persons with five or more physician visits report failing to receive pneumococcal vaccination.

Persons who reported poor health status or lung conditions were more likely than persons without these conditions to be immunized for flu or pneumococcal disease. However, CDC's analyses show that elderly persons with a cardiovascular condition are no more likely to receive influenza vaccine than those without a cardiovascular condition.

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<sup>10</sup>We did not independently examine the methodology of this survey, the response rate, or the precision of the estimate. It is not strictly comparable to earlier surveys, which used a broader sampling frame and different methods for obtaining data.

# Agency Immunization Strategies

In this chapter, we describe HHS activities undertaken to increase pneumococcal and influenza immunization in the respective periods since these vaccines became Medicare benefits. We also provide information on the resources that major departmental units have applied to improving these immunization rates.

## Activities to Improve Immunization Rates

### Health Care Financing Administration

Since pneumococcal vaccination became a Medicare-covered service over 13 years ago, HCFA has made only a few attempts to encourage the use of this vaccine among the elderly. HCFA announced the availability of the pneumococcal vaccine benefit in Medicare carrier and intermediary manuals, but did not require carriers and intermediaries to inform providers of the new benefit. To inform beneficiaries of the new benefit, HCFA has included brief statements in Medicare handbooks, Social Security check inserts sent to beneficiaries in January 1982, and flu vaccine promotional flyers produced and distributed during its fiscal year 1994 campaign.

HCFA's promotion of influenza vaccination since it became a Medicare-covered benefit in 1993 consists of four major activities: (1) requiring that carriers and intermediaries notify physicians, providers, and suppliers of Medicare coverage of the influenza vaccine and its administration; (2) simplifying certain billing procedures; (3) conducting a public information effort in fiscal year 1994 known as the Medicare Flu Shot Campaign; and (4) implementing a targeted public information effort and supplementary activities known collectively as the Consumer Information Strategy in fiscal year 1995. Each of these activities is explained more fully below.

In July 1993, HCFA instructed its carriers and intermediaries to notify physicians, providers, and suppliers of the new influenza vaccine benefit. HCFA did not specifically evaluate compliance with this routine request; however, judging from the activities of a nonrepresentative sample of 11

carriers and intermediaries summarized by HCFA, the form of this notification effort varied widely.<sup>1</sup>

To remove inconveniences to providers claiming reimbursement for immunization services, HCFA began to allow those public health centers that do not use electronic billing systems to submit a "roster" of vaccinees rather than bill for each beneficiary separately. HCFA also permitted providers or suppliers to bill separately for vaccine or vaccine administration, rather than require that both claims be submitted together. This policy change responds to situations in which providers receive free vaccine (from states or organizations) and need to bill only for its administration.

HCFA's Office of Public Affairs coordinated the HHS fiscal year 1994 Medicare Flu Shot Campaign with staff from PHS and the Administration on Aging. A number of activities were conducted as part of this campaign, including a press conference by the Secretary; incorporation of brief announcements in Medicare claims forms sent to beneficiaries who had had claims (see appendix III); and distribution of public service announcements, video and audio news releases, op-ed pieces, flyers, and supermarket displays. According to information provided by HCFA's Office of Public Affairs, by December 1993, 8 percent of the nation's newspaper and radio stations and 28 percent of television stations had aired HHS flu benefit information.

The fiscal 1995 Medicare Flu Shot Campaign—which HCFA describes as the first initiative in its new Consumer Information Strategy—built on the public information strategy of the fiscal 1994 campaign. Data dissemination, another component of the 1995 strategy, entails making available to consumers and providers claim-based calculations of states' and counties' flu immunization rates tabulated by age, gender, and race. Finally, a local intervention component of the 1995 strategy consists of peer review organizations' and carriers' collaboration with local health care organizations in seven geographic areas to increase immunization rates in their parts of the country. The agency also reported it was considering increasing the vaccine administration fee (\$3.71, regionally then adjusted) and simplifying billing procedures for institutions.

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<sup>1</sup>Some carriers and intermediaries announced the flu benefit in provider bulletins, some sent letters to public health centers, and some also sponsored clinics or seminars, usually at health fairs or conferences, at which they distributed information on influenza immunization to providers or beneficiaries. The number of persons contacted was typically in the hundreds. At the extreme, one carrier reported that it mailed 275,000 flyers to seniors in Florida.

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National Vaccine Program  
Office

In its role as coordinator of immunization activities across the federal government, NVPO has developed the National Vaccine Plan, which defines the PHS strategic framework for fiscal years 1994 and 1995. The major goals cited in this document include better educating the public and members of the health professions on the benefits and risks of immunization and achieving better use of existing vaccines to prevent disease, disability, and death. The Plan observes that vaccination coverage in adults over 65 years of age is low, cites estimates of the cost of vaccine-preventable diseases exceeding \$10 billion each year, and acknowledges that over 27,400 deaths per year are preventable through increased use of influenza and pneumococcal vaccines.<sup>2</sup> However, even though the National Vaccine Plan adopts the objective of increasing "immunization coverage levels among older adolescents, adults, and the elderly," efforts to improve childhood immunization constitute its top priority.

The fiscal 1994-95 National Vaccine Plan states that the "NVPO with other agencies will identify steps that federal agencies can take to implement the National Advisory Committee report on 'Adult Immunization.'"<sup>3</sup> However, the plan does not state what level of priority or resources might be accorded such steps.

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Centers for Disease  
Control and Prevention

CDC's activities for increasing the use of flu and pneumococcal vaccines are concentrated in the National Immunization Program, which in 1994 dedicated 5 of its 289 full-time staff to the agency's Adult Immunization Initiative.<sup>4</sup> Since late 1994, the number of NIP staff working directly on adult immunization issues has increased to seven. These staff have provided information and educational materials to professional and lay groups by publishing articles on pneumococcal and influenza immunization in professional journals and participating in CDC-supported forums, conferences, and presentations on related immunization topics. In

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<sup>2</sup>Pierce Gardner and William Schaffner, "Immunization of Adults," New England Journal of Medicine, 328:17 (Apr. 29, 1993), 1252-58.

<sup>3</sup>(1) NVPO, Disease Prevention Through Vaccine Development and Immunization: The National Vaccine Plan (Washington, D.C.: PHS 1994), p. vii; and (2) National Vaccine Advisory Committee, Adult Immunization (Washington, D.C.: PHS, Jan. 1994).

<sup>4</sup>Epidemiologic and laboratory research on pneumonia and influenza is conducted at CDC's National Center for Infectious Diseases. According to officials there, staff from the viral and bacterial branches dedicate the equivalent of about one full-time staff per year to answer telephone calls about pneumonia and influenza from the public, health care providers, and the media. NCID's Influenza Branch of the Division of Viral and Rickettsial Diseases monitors influenza strains and conducts research on vaccine development, evolution of flu strains, and viral resistance to amantadine (an oral drug that reduces influenza A symptoms). The Division of Bacterial and Mycotic Diseases investigates the epidemiology of pneumococcal disease and conducts research on pneumococcal vaccine efficacy, diagnostic tests for pneumococcal disease, and antibiotic resistance of pneumococci.

addition to these general informational activities, CDC has printed and distributed an adult immunization pamphlet, a promotional kit, and a guidebook on managing influenza vaccination programs in nursing homes. CDC has also collaborated with HCFA on major research and demonstration projects related to pneumococcal and influenza vaccination, such as the Hawaii Pneumococcal Disease Initiative (Feb. 1988-Feb. 1989) and the Medicare Influenza Demonstration (fiscal years 1989-92). Finally, the agency is responsible for vaccination recommendations, guidelines, and standards for immunization.

CDC has not used its grant support of state and metropolitan immunization projects to mount a broad effort to increase pneumococcal and influenza immunization rates, citing the emphasis on childhood immunization responsibilities in fiscal 1990-95 legislative documents. CDC and NVPO officials indicated that expenditure of further resources on activities to improve pneumococcal and influenza immunization rates would have been inconsistent with congressional guidance.

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### National Institute on Aging

In 1993, NIA initiated a provider-focused informational campaign to encourage pneumococcal vaccine use. NIA consulted infectious disease experts, conducted a literature review, and ran focus groups with physicians and elderly persons to identify barriers to higher immunization rates. Subsequently, NIA held a conference with members of health care specialty groups and, in spring 1994, mailed 120,000 informational kits to members of six medical associations.

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### Office of Disease Prevention and Health Promotion

In early fall 1994, PHS' Office of Disease Prevention and Health Promotion launched a national effort to improve the delivery of preventive services in primary care settings. This initiative, called "Put Prevention Into Practice," makes materials available for sale to providers, patients, and professional organizations that are based on tested interventions. They include aids in flagging the charts of patients for whom various preventive interventions are indicated and forms for improving provider and patient records of preventive services.<sup>5</sup> Pneumococcal and influenza vaccination feature prominently in these materials, and assuming they are widely used, they appear promising for improving vaccination levels.

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<sup>5</sup>HHS/PHS, "Put Prevention Into Practice" Education and Action Kit, GPO Stock Number 017-001-00492-8 (Pittsburgh: Government Printing Office, 1994).



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## Resources

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### Health Care Financing Administration

Medicare expenditures for fiscal year 1994 included about \$100 million for influenza and pneumococcal vaccine and vaccine administration. HCFA spent about \$95,000 conducting the fiscal 1994 Medicare Flu Campaign.

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### National Vaccine Program Office

National Vaccine Program funding began in fiscal year 1988. In fiscal years 1992 and earlier, the budget included both discretionary and NVPO operation expense funds, and during this time, the vast majority of program funds were dedicated to discretionary spending.<sup>6</sup> These discretionary funds were distributed to three PHS agencies (CDC, Food and Drug Administration, and National Institutes of Health) for emerging high-priority vaccine projects.<sup>7</sup> In fiscal year 1993, the total National Vaccine Program budget declined sharply; the operating budget was actually higher than in previous years, but none of the discretionary spending in fiscal years 1993 and 1994 was administered by NVPO. Under fiscal year 1995 appropriations, staffing and resource allocations for the NVPO have been substantially reduced.

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### Centers for Disease Control and Prevention

According to the Director of the National Immunization Program at CDC, adult immunization is a "top, but unfunded, priority." In making this statement, the Director relies on language in the House Appropriations Committee report on the PHS appropriation for fiscal 1994. In the report, the Committee emphasizes childhood immunization. However, we found that the law permits CDC to increase its spending on pneumococcal and influenza immunization activities, and these activities are, of course, consistent with its public health mission. But CDC believes that an increase in resources for these activities would be inconsistent with the priority the Committee has given to childhood immunization.

CDC's congressional appropriations for immunization activities increased more than sixfold between fiscal years 1987 and 1994, with a 55-percent increase in 1994 over the previous year. CDC distributed 94 percent of its

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<sup>6</sup>The highest priority for these funds was to accelerate the development of a new whooping cough vaccine. Other high-priority areas for discretionary spending were measles vaccine, vaccine safety and adverse events, the Children's Vaccine Initiative, the Sexually-Transmitted Disease Initiative, and research on development of a new influenza vaccine.

<sup>7</sup>These discretionary funds are also described as seed money "to nurture promising vaccine initiatives and encourage the development of new and innovative ideas to improve vaccine development and delivery."

\$528 million fiscal year 1994 immunization budget to NIP, but less than 1 percent (less than \$1 million) was dedicated to adult immunization activities.

The majority of CDC's immunization funds—\$423 million in fiscal year 1994—are distributed to public health agencies throughout the country in Immunization Program Grants. Although the promotion of adult immunization is one of the grant program's eight goals and CDC recommends these activities, they have not been among the 26 requirements that potential grantees must meet.

Like its budget, CDC's staff positions for immunization activities have also increased substantially, having more than doubled (from 125 to 289 full-time equivalents) between 1987 and 1994. However, the number of staff positions dedicated to adult immunization activities—five—remained constant during this period, increasing to seven in late 1994.

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## Summary

In the 1993-94 flu season, HHS conducted varied activities to increase flu immunization rates and inform Medicare beneficiaries of the new coverage for flu immunization. Specifically, HHS published research articles, conducted public information campaigns, distributed informational kits and pamphlets, held immunization conferences, and asked Medicare carriers and intermediaries to inform providers of the new flu benefit. In the present flu season, HCFA has augmented these strategies with the dissemination of data on state and county flu immunization rates, and PHS has developed materials to assist providers and consumers in recording and implementing preventive services.

In contrast, from 1981 until 1993, HHS did little apart from routine carrier notification to inform providers of Medicare coverage for pneumococcal immunization. Moreover, the Department did little during this period to educate beneficiaries of vaccine availability, apart from briefly announcing vaccine availability in Medicare Handbooks and a 1982 Social Security check insert.<sup>8</sup> Supplementing these efforts, NIA has conducted activities to educate health care providers on the vaccine and its indications by sending printed material to members of several medical associations. PHS recently launched its "Put Prevention Into Practice" initiative, which will publish potentially effective materials on the vaccine, but providers must purchase these materials.

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<sup>8</sup>HHS officials believe, and we agree, that Social Security check inserts are costly and would not reach the large portions of beneficiaries who use direct deposit.

Among the agencies we reviewed, the bulk of expenditures related to influenza and pneumococcal immunization were made by HCFA in the form of reimbursements to providers for immunization services. We found that only modest sums were spent on supplementary activities to promote use of these benefits. NVPO and CDC clearly acknowledge the scope of the public health problem associated with influenza and pneumococcal disease, but HHS refers to language in the legislative history of fiscal 1990-95 appropriations in explaining PHS' low expenditures on activities related to improving these immunization rates. We reviewed the record of appropriations hearings and found that HHS has not taken a leadership role in defining pneumococcal and influenza immunization as critical public health issues for the Congress.

# Factors That May Explain Low Immunization Rates

This chapter discusses what is known from HHS analyses, and from the literature more generally, about potential reasons for the low levels of adult immunization against pneumococcal disease and influenza. Although the data are limited, they suggest both reasons for the current rates and ways to increase them. Below, we distinguish between explanations linked to consumer behavior and explanations based on provider behavior.

## Influences on Vaccine Consumers' Behavior

Among the factors that may explain consumers' low demand for pneumococcal and influenza vaccination are their awareness of vaccine availability; attitudes about disease susceptibility and severity; and concerns about vaccine side effects, safety, and efficacy. In appendix I, we briefly describe the information HHS has collected on influences on consumer behavior that may have led to low immunization rates and note the limitations of these data.

Recent evidence indicates that consumers lack awareness of pneumococcal vaccine. For influenza vaccine, we found that consumers reported misconceptions about vaccine efficacy and safety, disease severity, and their own susceptibility to the disease. These factors may help explain low immunization rates, but it is not clear how much of an impact on those rates can be achieved by addressing these factors alone.

## Awareness of Vaccine Availability

A Gallup poll conducted in the fall of 1993 found that only 25 percent of all adults 55 years old or older were aware that a safe, effective pneumococcal vaccine exists.<sup>1</sup> However, a high level of vaccine awareness does not necessarily ensure high vaccination rates: a 1987 CDC study of elderly residents in two Georgia counties found that 90 percent were aware of the flu vaccine, yet only 55 percent said they had received it within the past year.<sup>2</sup>

## Beliefs About Susceptibility to Disease

Consumers are probably more likely to seek a particular preventive service if they believe they may be susceptible to the disease it prevents. National surveys conducted in 1977-78 by Opinion Research Corporation (ORC) indicate that adults of all ages tended to see themselves as more

<sup>1</sup>Voluntary Hospitals of America/Gallup Poll, fall 1993.

<sup>2</sup>This vaccination rate is more than 20 percentage points higher than the 1987 national rate for elderly people, but the sample is representative only of certain counties in Georgia.

susceptible to influenza than to any other vaccine-preventable disease.<sup>3</sup> Nonetheless, survey data from persons who did not receive immunization in the recent Medicare Influenza Demonstration revealed that the most common reason for not getting the flu vaccine was the belief that one was healthy and did not need it. (See appendix I, table I.2.)

Data on beliefs about susceptibility to pneumonia are more sparse. However, almost 70 percent of elderly Hawaiians who responded to a 1988 survey recognized that pneumonia is a more common cause of illness in people over 65 than in younger people.

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### Beliefs About Disease Severity

Research also suggests that consumers may be more likely to seek a preventive service if they view the disease it prevents as a serious matter. With respect to flu, the ORC survey found that adults of all ages tended to perceive influenza as the **least** serious vaccine-preventable disease of adulthood. Survey data from the 1988 Hawaii Pneumococcal Disease Initiative indicated that 78 percent of elderly respondents viewed pneumonia as a serious disease, and 57 percent viewed influenza as a serious disease. According to CDC, influenza-attributable death is 90 percent higher than reported in current vital statistics (that is, nearly twice as high as current reports).

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### Beliefs About Vaccine Side Effects, Safety, and Efficacy

Concerns about vaccine side effects, safety, and efficacy were frequently cited reasons for not receiving influenza vaccination by elderly residents of the 10 communities that participated in the Medicare Influenza Demonstration. (See appendix I, table I.2.) Similarly, CDC's 1987 survey in Georgia found that 73 percent of respondents who were aware of the flu vaccine believed that it caused illness, did not protect against influenza, or was unnecessary.<sup>4</sup> Of those who were aware of the pneumococcal vaccine, 36 percent believed that it would not prevent pneumonia or would make them sick.

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<sup>3</sup>Pneumonia was not included in the list of diseases that respondents considered.

<sup>4</sup>This includes many people who received the vaccine, since 55 percent of respondents reported having been immunized. However, as we note in chap. 5, beliefs may be a less important influence than the behavior of providers on the elderly's receipt of immunization.

Negative attitudes lingering from the 1976 swine flu vaccine initiative may color current perceptions about flu shots in general.<sup>5</sup> When respondents were asked in a 1977 ORC survey whether there are “any specific vaccinations . . . which you feel are unsafe,” fully 78 percent of those who said “yes” mentioned “swine flu,” whereas only 11 percent said “flu” without mentioning a specific type. Six months later, 59 percent mentioned “swine flu” and fully 30 percent mentioned “flu” without indicating a specific type.

Negative perceptions about the flu vaccine may also be related to misconceptions about its efficacy. In NIA’s focus groups with elderly adults, most participants reported having had a negative experience with the flu vaccine or said they knew someone who had. Although a flu-like, winter respiratory illness may be coincident to, rather than caused by, influenza vaccination, people may conclude that the flu vaccine either failed to work or, worse, induced the illness.<sup>6</sup>

## Influences on Providers’ Behavior

In this section, we examine potential explanations of low pneumococcal and influenza immunization rates that focus on providers’ knowledge or behavior. Evidence suggests that physician recommendation is a strong motivator to accept vaccination, regardless of patient attitudes. Thus, we consider physicians’ knowledge, attitudes, and practices, as well as institutional practices within hospitals, health maintenance organizations, and nursing homes. We find evidence that suggests missed opportunities to offer vaccine to elderly persons in physicians’ practices and institutional contexts and failure in many cases to maintain immunization records. In appendix II, we briefly describe the information HHS has

<sup>5</sup>In Feb. 1976, an influenza virus was isolated that was antigenically similar to the virus implicated in the 1918 influenza pandemic, which took over 500,000 lives in the United States alone. The federal government initiated a massive immunization program, and between Oct. 1, 1976, and Dec. 16, 1976, nearly 43 million doses of swine flu vaccine (influenza A/New Jersey/1976) were administered. However, the program was stopped when an increasing number of reports of vaccine-related Guillain-Barré Syndrome were reported. This is a neurologic condition that is associated with a variety of viral, bacterial, and other infections; toxins and drugs; disorders of various kinds; and some vaccines. By Jan. 10, 1977, 581 cases had been reported, of which 295 had received the swine flu vaccine. Researchers found that the relative risk of Guillain-Barré syndrome in influenza-vaccinated persons was 8.8 times greater than in unvaccinated persons. (See Schonberger et al., “Guillain-Barré Syndrome Following Vaccination in the National Immunization Program, United States, 1976-77,” *American Journal of Epidemiology*, 110 (1979), 105-23.)

<sup>6</sup>In its 1986 monograph entitled *New Vaccine Development: Establishing Priorities*, the Institute of Medicine discusses “the mistaken concept that influenza vaccines should prevent all winter respiratory tract illnesses. Any acute illness that is experienced in the winter following receipt of an influenza vaccine may be attributed [erroneously] to vaccine failure. In fact, there are other acute virus infections that cause illness in all members of the community, including those vaccinated against influenza.”

collected on provider-based factors that have been linked to low immunization rates and note the limitations of these data.

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## Physician Knowledge and Attitudes

The available literature suggests that most primary care physicians know about the seriousness of pneumococcal and influenza disease and that half or more of these providers are familiar with the recommendations for vaccination. Moreover, most tend to have favorable attitudes about vaccine safety and efficacy, though some doubts about vaccine efficacy linger among a minority of physicians. For example, in 1980, CDC found that about 90 percent of primary care physicians were aware and supportive of flu vaccination recommendations for the elderly.<sup>7</sup> Fewer physicians knew the indications for pneumococcal vaccination. However, two-thirds of general and family practitioner respondents and just over one-half of responding internists believed that elderly people should get pneumococcal vaccination. CDC also found that most primary care physicians (over 70 percent) believed that influenza vaccine is very safe, and that it is effective for at least 60 percent of patients. Fewer than 10 percent expressed concerns about pneumococcal vaccine safety or effectiveness.

These findings are consistent with more recent results from focus groups run by the National Institute on Aging in 1993 and findings from the 1988 Hawaii Pneumococcal Disease Initiative, which found that among the 35 percent of physicians responding to a survey, roughly half recognized age over 65 as an indication for flu and pneumococcal immunization. HHS officials commenting on this report noted a continuing need for provider education, but agreed with our conclusion that physicians' vaccination practices should be the major focus of attention.

Medical education in adult immunization and vaccine-preventable disease is brief but widespread. In a 1991 survey of U.S. medical schools and primary care residency programs, CDC found that almost 90 percent of medical schools reported teaching about influenza, spending an average of 30 minutes to 1 hour on the subject. In addition, about one-third of internal medicine residency programs reported teaching about vaccine-preventable disease in adults, prevention of these diseases, and vaccination indications. Although HHS officials argued that current instructional practices are insufficient, it remains unclear whether or to what extent

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<sup>7</sup>Market Facts, "Attitudes and Practices of Private Physicians Related to Influenza and Pneumococcal Immunization, 1980, Volume I." Final report submitted to CDC, Jan. 30, 1981.

enhancement of routine medical instruction would affect provider practices.<sup>8</sup>

## Physician Practices

### Recommendations to Patients

The significance of a physician's vaccination recommendation has been clearly demonstrated. Its absence acts as a barrier to vaccine receipt; its presence is a motivator to get vaccinated. Figure 4.1 shows the relationship between physician recommendations and the immunization rates for patients with positive and negative attitudes toward vaccination.

Most surveyed physicians report that they recommend vaccination to their patients for whom it is indicated (i.e., elderly persons and those with high-risk conditions). Evidence shows, however, that neither physicians' knowledge nor their self-reported implementation of vaccination recommendations is a reliable predictor of their actual immunization practices. For example, although almost all primary care physicians surveyed by ORC in 1980 believed and recommended that high-risk patients should be vaccinated and reported recommending the flu vaccine to their high-risk patients, they reported vaccinating only about one-half of these patients, on average, and only about one-third of their non-high-risk elderly patients. An unknown number of patients may have refused their physician's recommendation.

Stronger evidence of a discrepancy between physicians' immunization knowledge or attitudes and their practices comes from a study conducted at a primary care clinic in Milwaukee in the mid-1980s.<sup>9</sup> Of the 92 physicians practicing at this clinic, over 75 percent knew flu vaccine recommendations, contraindications, and objectives, and two-thirds believed the vaccine was between 70- and 90-percent effective. Yet when medical records were examined from 3 peak months of the 1984-85 flu season, only 41 percent of these physicians' eligible patients had been offered vaccine. Rates of offering vaccine varied widely across physicians,

<sup>8</sup>A Minnesota study on influenza immunization in hospital settings recently compared the effect of physician education to that of physician reminders and standing orders for immunization by a nurse. It found that education was the least effective of the three approaches, both in terms of the percentage of patients offered vaccine and the percentage who received it. See R.J. Krouse et al., "Hospital-Based Strategies for Improving Influenza Vaccination Rates," *Journal of Family Practice*, 38 (Mar. 1994), 258-61.

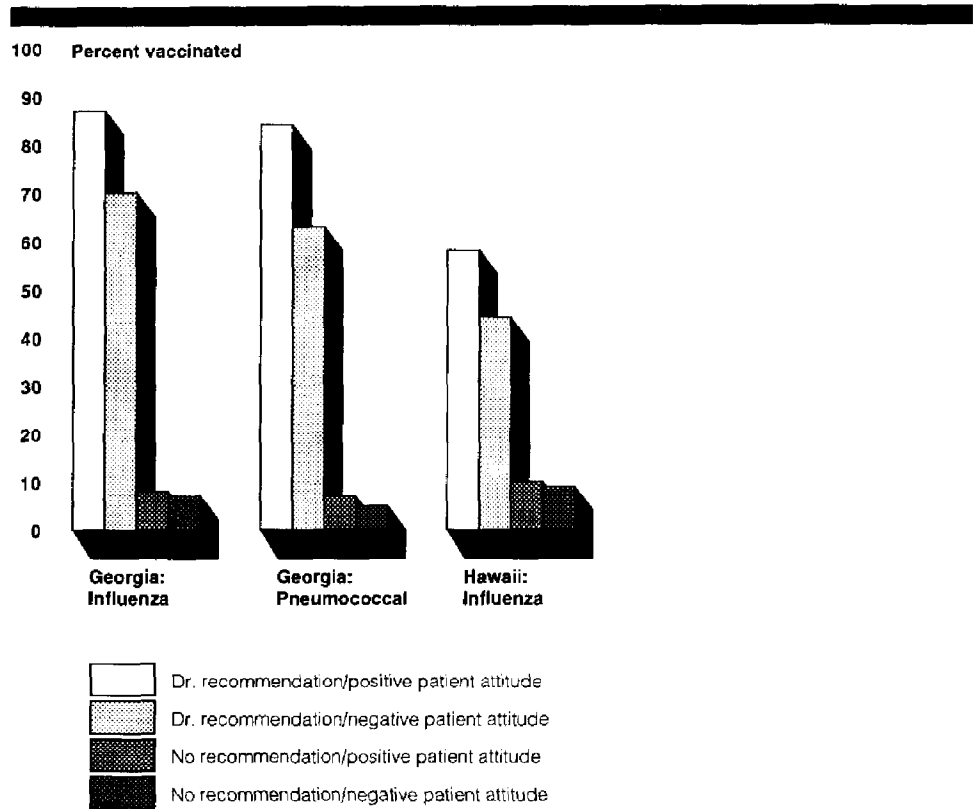
<sup>9</sup>Paul W. McKinney and Gary P. Barnas, "Influenza Immunization in the Elderly: Knowledge and Attitudes Do Not Explain Physician Behavior," *American Journal of Public Health*, 79:10 (Oct. 1989), 1422-24.



**Chapter 4  
Factors That May Explain Low  
Immunization Rates**

from zero to 90 percent, with vaccination refused by only 9 percent of those to whom it was offered.

**Figure 4.1: Relationship Between  
Physician Recommendation and  
Immunization Rates**



Source: "Adult Immunization: Knowledge, Attitudes, and Practices - DeKalb and Fulton Counties, Georgia, 1988," *Morbidity and Mortality Weekly Report*, CDC, 37:4 (Nov. 4, 1988), 657-61; and Walter W. Williams, "Hawaii Pneumococcal Disease Initiative: Surveys of Consumer and Physician Knowledge, Attitudes, and Practices," *26th National Immunization Conference Proceedings*, St. Louis, June 1-6, 1992.

**Record-Keeping**

Maintaining an immunization record is a basic aspect of providing vaccine-related care. However, only 42 percent of internists surveyed in 1987 by the American College of Physicians reported maintaining immunization data for their patients. Among the types of preventive and diagnostic data covered by the survey, immunization status was among the least frequently recorded, outranking only information on sexual activities and seat-belt use.

Interestingly, most of the internist participants in NIA's focus groups mentioned **forgetting** as an important reason why they had not administered the pneumococcal vaccine to more patients. Physicians explained that patients usually are in the office for other reasons, and vaccination is relatively low on their list of priorities.<sup>10</sup>

Another factor that apparently contributes to suboptimal immunization practices is that, according to a 1988 CDC survey of all physicians practicing in Hawaii, most of those responding did not consider vaccination to be a part of their practice.

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## Institutional Practices

### Hospitals

Several studies have shown that hospitals admit patients at high risk of pneumococcal and influenza disease and miss opportunities to vaccinate them before their discharge. An analysis of the medical records of 1,633 Medicare beneficiaries in the Shenandoah region of Virginia with any type of pneumonia admission to hospitals in 1983 showed that 62 percent of these beneficiaries had been discharged at least once from a hospital (often from the same hospital) in the same region in the previous 4 years. Almost 90 percent of these patients had high-risk medical conditions listed on their previous discharge summaries.<sup>11</sup> Additional research, conducted in the United States and the United Kingdom, showed that approximately two-thirds of patients hospitalized with pneumococcal bacteremia during the study period had been discharged at least once in the preceding 3 to 5 years.<sup>12</sup> Similarly, a Canadian study found that although only 8 percent of the elderly in Manitoba had been discharged from a hospital during the 1982-83 vaccination season, this group accounted for almost 45 percent of subsequent influenza-associated hospitalizations and fully two-thirds of all hospital deaths from influenza-associated illness. Moreover, HHS officials reported that a survey of medical/surgical hospitals completed in 1994 found that over 60 percent of responding hospitals had no policy for vaccinating inpatients or outpatients against pneumococcal disease or influenza.

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<sup>10</sup>Chap. 5, on effective vaccination strategies, presents strong evidence that methods of reminding physicians to vaccinate eligible patients significantly increase vaccination rates.

<sup>11</sup>David S. Fedson, "Clinical Practice and Public Policy for Influenza and Pneumococcal Vaccination of the Elderly," *Clinics in Geriatric Medicine*, 8:1 (Feb. 1992), 183-99.

<sup>12</sup>John S. Spika, David S. Fedson, and Richard R. Facklam, "Pneumococcal Vaccination: Controversies and Opportunities," *Infectious Disease Clinics of North America*, 4:1 (Mar. 1990).

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## Health Maintenance Organizations

The Health Maintenance Organization Act of 1973 (as amended) mandates immunizations as one of the basic services to be included in the benefits offered by federally qualified HMOs. In 1987-88, CDC commissioned a survey of HMOs with 25,000 members or more that had at least 3 years of operational experience, but received responses from less than 25 percent of them.<sup>13</sup> Among those HMOs responding to the survey, fewer than 50 percent had written policies specifying use of vaccines for adults, fewer than 20 percent issued an immunization record to members, high-risk members were not consistently identified, reminder systems were generally unavailable to physicians or members, administrative encouragement was lacking, promotion of vaccine use was limited, and data management systems were not adequate to monitor immunization levels.

## Nursing Homes

HHS has not routinely monitored immunization rates in nursing homes. Available data on influenza immunization in nursing homes suggest that vaccination rates may have improved between the 1980s and 1990s, but that they are still quite variable across facilities. In the early and mid-1980s, findings from CDC's studies of 67 nursing homes in six states showed that, on average, only 55 to 65 percent of nursing home residents were vaccinated against influenza in any given year. However, when Abt Associates surveyed over 500 nursing homes as part of the Medicare Influenza Demonstration from 1990 to 1992, it found higher overall vaccination rates of about 70 percent, on average. The studies found that having a vaccination policy, not requiring a physician's order for vaccination, and not requiring patient consent were associated with slightly higher vaccination rates. CDC also found a significant difference in vaccination rates between homes requiring consent from family members, which had vaccinated an average of 57 percent of patients, and homes that did not require familial consent, which had vaccinated 90 percent.

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## Summary

We identified several factors that may help explain why pneumococcal and influenza immunization rates are below HHS goals. We found that consumers lack awareness of the availability of pneumococcal vaccine. In the case of influenza vaccination, public awareness is high, but elderly people tend to underestimate the seriousness of, and their susceptibility to, influenza-related disease. Moreover, recent data suggest that consumers may have exaggerated concerns about influenza vaccine side effects, safety, and efficacy. However, it is difficult to accurately predict

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<sup>13</sup>See also John P. Mullooly et al., "Influenza Vaccination Programs for Elderly Persons: Cost-Effectiveness in a Health Maintenance Organization," *Annals of Internal Medicine*, 121 (Dec. 1994), 947-52.

the extent to which addressing attitudinal factors alone might increase vaccination rates above current levels.

Regardless of the patient's personal attitudes about the vaccine, a physician's recommendation appears to be a strong motivator for a patient to get vaccinated. However, evidence suggests that physicians' actual immunization practices are often inconsistent with their intentions or self-reported practices. Forgetting to offer vaccine and the perceived limits or demands of a physician's practice are more plausible explanations for this than lack of knowledge; available evidence suggests that most physicians know basic facts about pneumococcal and influenza disease and that half or more are familiar with vaccine recommendations.

With respect to the role of health care organizations, limited data from the late 1980s suggest poor immunization practices in HMOs, and data from the mid-1980s imply uneven immunization practices in nursing homes. Importantly, we found strong evidence of missed opportunities to offer vaccination to high-risk patients before their discharge from hospitals.

# Promising Immunization Strategies

We identified four interventions that show some promise of increasing pneumococcal and influenza immunization: (1) reminder contacts with potential vaccinees, (2) physician reminder systems, (3) issuance of standing orders in hospitals for immunizing patients before discharge, and (4) practice-based tracking systems. Although public information campaigns and vaccination clinics have been associated with successful immunization efforts, their independent impact on immunization rates has not been rigorously tested.

## Reminder Contacts With Potential Vaccinees

Findings from controlled studies and randomized clinical trials show that providing a reminder to potential vaccinees is an effective means of increasing adult immunization rates.<sup>1</sup> Two studies have shown 100-percent greater immunization rates among patients who are sent well-designed postcard reminders, as compared with "neutral" postcard reminders or no reminder. Such reminders establish direct patient contact; come from an authoritative source; state vaccination recommendations; provide information about disease susceptibility and risk, and about vaccine cost, safety, and efficacy; and provide information about where to obtain vaccination. This finding is consistent with the views of most project coordinators from the Medicare Influenza Demonstration, who concluded that a letter to beneficiaries from the HCFA Administrator was the most effective immunization strategy employed. (See appendix IV.)<sup>2</sup>

## Physician Reminder Systems

The effectiveness of interventions that remind physicians to offer vaccine supports the notion that physicians' failure to carry out preventive health measures results from oversight rather than intentional disregard. Several carefully controlled studies have demonstrated that physician reminder systems effectively increase preventive health practices in general, and pneumococcal and influenza vaccination in particular.

One study tested the effect of incorporating an age- and gender-specific checklist of preventive health guidelines into ambulatory care patients' medical records. Physicians who were randomly assigned checklists had

<sup>1</sup>See, for example, Eric B. Larson et al., "Do Postcard Reminders Improve Influenza Vaccination Compliance? A Prospective Trial of Different Postcard 'Cues,'" *Medical Care*, 20:6 (June 1982), 639-48; Eric B. Larson et al., "The Relationship of Health Beliefs and a Postcard Reminder to Influenza Vaccination," *Journal of Family Practice*, 8:6 (1979), 1207-11; and Ronald Brimberry, "Vaccination of High-Risk Patients for Influenza: A Comparison of Telephone and Mail Reminder Methods," *Journal of Family Practice*, 20:4 (1988), 379-400.

<sup>2</sup>"Medicare Influenza Vaccine Cost-Savings Study: Evaluation Report" (Cambridge, Mass.: Abt Associates, Mar. 22, 1993), p. 30.

significantly higher compliance across a range of preventive measures, their utilization of influenza vaccine doubled, and their utilization of pneumococcal vaccine increased fourfold over physicians without checklists.<sup>3</sup> In another study, physicians and patients were randomly assigned to medical clinics that either did or did not append checklists of recommended preventive guidelines to patient charts. After 4 months, 42 percent of patients seen in checklist clinics had received pneumococcal vaccine, whereas only 5 percent of patients seen in clinics that did not use checklists had received the vaccine during the same period. Similarly, at the end of the intervention, 36 percent of the "checklist patients" had received influenza vaccine, and only 4 percent of the others had.<sup>4</sup>

Other research has demonstrated the effectiveness of computer-based physician reminder systems. In a study where medical records were electronically stored and reminders generated for each patient, physicians who had been reminded were twice as likely to provide influenza vaccine and over four times as likely to provide pneumococcal vaccine to their eligible patients, as compared to physicians who were not reminded.<sup>5</sup> Finally, the effectiveness of another type of computer-based physician reminder system has also been demonstrated. In this study, before a physician could order discharge papers from a hospital's computer, two data screens would come up to remind the physician of pneumococcal vaccine recommendations, ask about the patient's immunization status, and inquire whether the physician wished to order vaccine for the patient before discharge. Fewer than 4 percent of eligible patients received pneumococcal vaccine before this system was implemented, as compared with 45 percent afterward.<sup>6</sup>

## Standing Orders for Vaccination

Another immunization strategy that lessens reliance on physician compliance with adult immunization guidelines involves the issuance of standing orders. Following implementation of standing orders, an urban hospital in New York increased its pneumococcal vaccination rate from zero to 78 percent of patients for whom the vaccine was indicated. First, the head of the Infectious Diseases Division and the director of the

<sup>3</sup>Carol Cheney and Joe W. Ramsdell, "Effect of Medical Records Checklists on Implementation of Periodic Health Measures," *American Journal of Medicine*, 83 (July 1987), 129-36.

<sup>4</sup>David I. Cohen et al., "Improving Physician Compliance With Preventive Medicine Guidelines," *Medical Care*, 20:10 (Oct. 1982), 1040-45.

<sup>5</sup>Clement J. McDonald et al., "Reminders to Physicians From an Introspective Computer Medical Record: A Two-Year Randomized Trial," *Annals of Internal Medicine*, 100:1 (Jan. 1984), 130-38.

<sup>6</sup>Carolyn M. Clancy, Daniel Gelfman, and Roy M. Poses, "A Strategy to Improve the Utilization of Pneumococcal Vaccine," *Journal of General Internal Medicine*, 7 (Jan.-Feb. 1992), 14-18.

medical service issued standing orders to immunize all eligible patients. Then, a nurse was assigned to make daily rounds, identify target patients, place presigned order sheets in medical records, obtain consent, and vaccinate eligible patients before discharge.<sup>7</sup> Similar results were recently obtained in community hospitals in Minnesota, in a study which also indicated that standing orders for immunization were more effective than physician reminders or physician education.<sup>8</sup>

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## Practice-Based Tracking Systems

The promise of another strategy has been demonstrated in private practice settings. This strategy builds on a target population-based model that has been used successfully in childhood immunization programs and in the Medicare Influenza Demonstration. Rather than rely on the number of doses of vaccine distributed in a previous vaccination season to define current goals, providers maintain posters showing the total number of elderly patients in their practice who should be vaccinated and graph the proportion who get immunized as the season progresses. A 1989 study conducted in Monroe County, New York, showed that this strategy increased the utilization of influenza vaccine among private practice physicians assigned to an intervention group by 30 percent over those assigned to a control group.<sup>9</sup>

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## Other Strategies

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### Vaccination Clinics

Large numbers of vaccinations can be administered through public vaccination clinics. However, there is less definitive information on the factors that optimize this strategy's success. In 1988, CDC, HCFA, and the Hawaii Department of Health established the Hawaii Pneumococcal Disease Initiative, which employed advertised mobile vaccination clinics to increase vaccine use among older state residents. Before the initiative, from 1982 to 1986, Medicare paid for an average of 1,103 doses of pneumococcal vaccine per year. When the initiative began statewide in

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<sup>7</sup>Robert S. Klein and Nora Adachi, "An Effective Hospital-Based Pneumococcal Immunization Program," *Archives of Internal Medicine*, 146 (Feb. 1986), 327-29.

<sup>8</sup>R.J. Crouse et al., "Hospital-Based Strategies for Improving Influenza Vaccination Rates," *Journal of Family Practice*, 38 (Mar. 1994), 258-61.

<sup>9</sup>Joanna Buffington et al., "A Target-Based Model for Increasing Influenza Immunizations in Private Practice," *Journal of General Internal Medicine*, 6 (May-June 1991), 204-09. When surveyed, a majority of physicians in the intervention group felt that using the posters created intra-office competition that had a "moderate to high influence on immunization performance." Physicians also attributed their enhanced utilization of influenza vaccine to increased awareness of the actual number of elderly patients in their practice.

1987, Medicare paid for almost three times as many doses as in the previous years. Moreover, in each of the following 2 years, when CDC and HCFA joined the initiative, Medicare paid for almost 13 times as many doses as in the years before the initiative. The fact that the number of Medicare-reimbursed doses returned to the earlier levels when the statewide initiative was over suggests that the vaccination clinics were responsible for the observed increase in doses. However, like the increases in immunization that accompanied the use of vaccination clinics in California and Arizona, these changes may be partly attributable to advertising or other events that coincided with the campaign.<sup>10</sup>

## Public Information Campaigns

Public health initiatives often use the mass media to disseminate information. This strategy is frequently employed because it has the potential to alert a broad audience relatively inexpensively by leveraging the resources of the mass media. Assessing the effectiveness of public information campaigns for the purposes of increasing immunization rates is difficult.<sup>11</sup> Nevertheless, such initiatives have been an integral part of successful efforts to increase pneumococcal and influenza immunization rates.<sup>12</sup>

## Summary

This chapter focused on four promising pneumococcal and influenza immunization strategies: direct reminders to potential vaccinees, physician reminder systems, standing orders for immunization in hospitals, and practice-based tracking systems. The evidence in support of the independent impact of public information campaigns and vaccination clinics is somewhat less well developed.

Well-designed reminders, sent directly to consumers, have markedly enhanced vaccine use. Mailing a letter or postcard to a potential consumer is an opportunity to address specific vaccination-related concerns and, possibly, to correct misperceptions. Evidence suggests that the most effective reminders address a set of specific concerns (e.g., disease

<sup>10</sup>See "Successful Strategies in Adult Immunization," *Morbidity and Mortality Weekly Report*, 40:41 (Oct. 18, 1991), 700-03, 709; and "Pneumococcal Immunization Program - California, 1986-1988," *Morbidity and Mortality Weekly Report*, 38:30 (Aug. 4, 1989), 517-19.

<sup>11</sup>There is evidence that public information campaigns in combination with other strategies (such as vaccination clinics and Medicare reimbursement) are effective in increasing the levels of pneumococcal and influenza immunization. However, we found no study that assessed the net effect of a public information campaign on adult immunization rates.

<sup>12</sup>See *AIDS Education: Reaching Populations at Higher Risk*, (GAO/PEMD-88-35, Sept. 1988), especially Chap. 2: A Model for Health Education.



susceptibility, vaccine safety, and efficacy); however, they may also influence consumer decision-making through the same mechanism responsible for the observed impact of physicians' recommendations for vaccination.

Physician reminder systems—whether checklists in medical charts or computer-based reminders—are used to remedy physicians' tendency to omit preventive health care practices. Similarly, the use of standing orders in hospitals reduces the dependence on physicians' remembering to provide vaccinations. Higher vaccination rates also have been achieved by transferring vaccination responsibilities to nonphysician health care providers. Finally, population-based tracking systems have been used in private practice settings to increase adult immunization rates by identifying patients in need of vaccination.

Although evaluating their direct impact on vaccination rates is difficult, public information campaigns and vaccination clinics have been part of successful immunization strategies.

# Conclusions and Recommendations

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## Conclusions

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### Monitoring Adult Immunization Rates

To monitor trends in both influenza and pneumococcal immunization rates in noninstitutionalized elderly populations, HHS has relied primarily on the National Health Interview Survey. These self-reported data represent the best available information on national immunization rates. The Department's existing alternate methods for monitoring vaccine use (manufacturers' vaccine distribution reports maintained by CDC and Medicare claims data maintained by HCFA) currently have substantial limitations for calculating immunization rates.

Although HHS has conducted some research on immunization in nursing homes, it has not routinely monitored immunization rates in these settings. In response to our report, HHS noted that the National Center for Health Statistics would begin collecting immunization data from nursing homes as part of its survey efforts in fiscal year 1995 and will continue every other year thereafter. As an indicator of quality of care, such information could be valuable not only in monitoring immunization rates in this high-risk population, but also in assisting state surveyors who review nursing homes that participate in Medicare and Medicaid. Although HHS officials note that HCFA's guidance to states indicates that infection control practices should be evaluated as part of reviews of nursing homes that participate in Medicare and Medicaid, this designation refers generally to the use of proper hygienic practices rather than emphasizing specific disease prevention efforts. Reviewers might be assisted in evaluating particular nursing homes' provision of appropriate preventive services by more systematic information on immunization practices in these facilities.

Death resulting from pneumococcal and influenza disease is much more likely in persons with risk factors such as heart or lung disease. Thus, monitoring of vaccination rates among these persons must allow for more detailed analysis of potential causes for their underimmunization. Agency officials told us that NCHS' fiscal year 1995 survey methodology was changed to permit such analyses by collecting data on both heart and lung conditions from a larger portion of respondents.

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### Correlates of Immunization Status

Multivariate analyses of 1991 data indicate that pneumococcal and influenza vaccination rates were low across all subgroups in the elderly population. However, controlling for other factors included in CDC's

analyses, elderly persons who were black or who had not visited a physician in the past year were markedly less likely to have received either vaccination, while those with pulmonary disease or poor health status were slightly more likely to have been vaccinated. Notably, although a heart condition is a risk factor for complications from influenza, it was not associated with increased likelihood of influenza immunization.

### HHS Immunization Strategies

In the 13 years since authorization of Medicare part B coverage for pneumococcal vaccine, neither PHS nor HCFA has done much to enhance its use among the elderly. Through its reimbursement of health care providers for immunization services, HCFA makes the bulk of HHS expenditures related to pneumococcal and influenza immunization. PHS dedicates few resources to improving pneumococcal or influenza immunization rates. Responsible officials of PHS' NVPO, which is charged with establishing federal vaccine priorities, indicated that they did not anticipate increasing pneumococcal and influenza vaccination activities or resources. CDC officials explained that their congressional appropriations committees have focused on child immunization activities and that increased expenditures on pneumococcal and influenza immunization would be inconsistent with that focus. However, we believe that HHS has not assumed a leadership role in seeking funding for an adult immunization promotional effort commensurate with the significance of this public health problem.

### Explanations for Low Immunization Rates

The tenable patient-based explanations for low levels of pneumococcal vaccination are different from those for influenza vaccination. The elderly are far less aware of pneumococcal vaccine than they are of influenza vaccine. Though generally aware of influenza vaccine, the elderly tend to underestimate the seriousness of influenza and their susceptibility to it. In contrast, those elderly who are aware of pneumococcal vaccine tend to have more accurate perceptions about the seriousness of pneumonia and their susceptibility to this disease. Also, among those who are aware of the vaccines, concerns about side effects, safety, and efficacy are more prevalent for influenza than for pneumococcal vaccine.

Among potential health care provider-based explanations for low immunization rates, those that focus on gaps in providers' knowledge are not as compelling as those addressing provider behavior. Data show that most physicians are familiar with recommendations and indications but—perhaps owing to limited record-keeping or various demands of

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medical practice—physicians do not consistently offer immunization to elderly patients.

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## Strategies to Improve Vaccine Use

Among the steps that could improve rates of immunization, we believe that measures related to vaccine provision are probably more important than measures related to consumer demand. We base this conclusion on three principal findings: (1) regardless of consumers' attitudes about pneumococcal and influenza vaccines, physicians' recommendations are a strong motivator for patients to get vaccinated; (2) the hospital setting appears to provide important but largely missed opportunities for vaccinating persons at high risk of complications from influenza or pneumonia; and (3) the strategies we identified as promising means of improving immunization rates generally either incorporated a recommendation for vaccination or increased the likelihood that a physician would make such a recommendation. We found relatively strong evidence for the impact of physician and patient reminder systems, use of standing orders in hospitals, and practice-based tracking systems.

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## Recommendations

We recommend that the Secretary of HHS take a more active leadership role in promoting pneumococcal and influenza vaccination among elderly persons by (1) seeking, in the annual appropriations process, to clarify what proportion of immunization funding should be allocated for such activities; and (2) directing HCFA and PHS to focus their efforts on promoting or supporting promising strategies, such as patient and physician reminder systems, development of standing order policies, and broad-based use of a hospital policy to vaccinate eligible patients before discharge.

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## Agency Comments and Our Response

Responsible officials from the Department of Health and Human Services provided written comments on a draft of this report. (See appendix V.) The Department provided additional, technical comments, which we addressed in the body of the report as appropriate.

The Department generally agreed with us that more effort is needed to increase rates of immunization among the elderly, particularly against pneumococcal disease and in high-risk elderly and black populations. Following review of our report, Department officials indicated that in fiscal year 1997, CDC plans to propose an initiative in this area.

In addition to specific comments on our recommendations, the Department made several general comments on the report. First, HHS officials noted that we should use the Healthy People 2000 goals to measure progress on these immunization rates. These are the criteria against which we display the most current immunization data in both chapter 1 and the executive summary. However, Department officials have publicly described these goals as “modest.” Moreover, as the National Vaccine Advisory Committee has indicated, current goals for these immunizations were originally established in 1980 to target levels of achievement for 1990, but were then carried forward to the year 2000 when they were not reached by 1990. It is also important to note that these goals are identified as reasonable targets, not as optimal levels of immunization.<sup>1</sup> If the preliminary data from HCFA’s beneficiary survey are borne out in the forthcoming NHIS, it does appear that the year 2000 goal of 60-percent immunization for influenza could be attained, but it does not appear that the year 2000 goal for immunization with pneumococcal vaccine will be met. We observe that the Department agreed with us that meeting the goal for pneumococcal immunization will require greater efforts at promoting and supporting successful vaccination strategies.

The Department also commented that we had not provided a detailed analysis of the recommendations made by PHS’ National Vaccine Advisory Committee. We acknowledge that such an analysis was not included in the scope of our evaluation. However, we did thoroughly review the NVAC Report on Adult Immunization issued in January 1994 and the recommendations made by the NVAC Subcommittee on Adult Immunization in 1990. We found that the National Vaccine Plan does not indicate what level of priority will be given to any of the NVAC’s 18 recommendations and 72 suggested strategies or what funds would be used to implement any or all of them.

The Department quoted from the NVAC subcommittee report that, “Programs to increase awareness must not focus simply on content knowledge. . . . They must go further and address behaviors that affect vaccine delivery.” However the Department’s comment did not specify what steps it will take to effect such behavioral change. We agree that the highest priority should be attributed to strategies to change the immunization behavior of vaccine providers. However, much of the Department’s comment suggests that emphasis will continue to rest on the

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<sup>1</sup>The Healthy People 2000 Review 1993, which documented progress toward year 2000 disease objectives, noted that the rate of epidemic-related pneumonia and influenza deaths among persons over 65 and the rate of their restricted-activity days because of pneumonia-related illness actually increased between 1987 and 1992—moving away from established goals.

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use of mass-media rather than more targeted approaches capable of addressing provider behavior toward high-risk populations.

The Department did not agree with our recommendation to the Secretary to seek clarification from the Congress as to the proportion of immunization funding that should be allocated to activities to improve these immunization rates. The Department stated that the Congress had clearly guided CDC to place priority on childhood immunization. However, our recommendation was based on our finding that an important reason why the Congress had not emphasized the need for a public health role in promoting immunization against pneumococcal disease and influenza was that HHS had not taken a leadership role in promoting adult immunization to the Congress.

With respect to our second recommendation, the Department has indicated that it plans to continue its current activities to increase provider and beneficiary awareness of the benefits of immunization. Although the Department is correct that increasing such awareness is among the goals cited by the NVAC's Subcommittee on Adult Immunization, the subcommittee has also identified the importance of support for specific strategies, such as those included in our second recommendation. We found that these strategies—patient and provider reminder systems, use of standing orders for vaccination, and hospital policies to vaccinate high-risk patients before discharge—are likely to be more effective than the awareness promotion activities that HHS has indicated it will continue to pursue.

Although the Department apparently agrees, it does not specify what will be done to support or encourage the recommended strategies. Moreover, given HHS' conclusion regarding congressional priorities for immunization funding, it is unclear how the Department could substantially increase its promotion of pneumococcal and influenza immunization among older adults without addressing our first recommendation—that it seek congressional clarification about what proportion of immunization funding should be allocated for this purpose.



# HHS Data Collection on Factors That Influence Vaccine Consumers' Behavior

## Data Collection Efforts

Between the late 1970s and 1994, HHS undertook five studies to collect data on consumer-based influences on receipt of immunization. Table I.1 identifies data collection agencies, describes major characteristics of study designs, shows when studies were conducted, and indicates whether information was collected on pneumococcal vaccination, influenza vaccination, or both.

**Table I.1: HHS Data Collection on Factors That Influence Vaccine Consumers' Behavior**

Organization	Study design	Year	Pneumococcus	Influenza
Opinion Research Corporation	Two nationally representative surveys of adults of all ages	1977-78	No	Yes
Centers for Disease Control	Survey using a nonrandom sample of 700 elderly in two counties in Georgia	1988	Yes	Yes
CDC and Hawaii Department of Health	Survey using a nonrandom sample of 14,000 elderly Hawaiians	1988	Yes	Yes
Abt Associates	Three surveys using random samples of residents from 10 communities that participated in the Medicare Influenza Demonstration Project	1990-92	No	Yes
National Institute on Aging	Four focus groups with elderly men and women	1992	Yes	No

Source: ORC, CDC, Abt Associates, and NIA.

In 1977 and 1978, adults of all ages were surveyed by the Opinion Research Corporation about six vaccine-preventable diseases, including influenza but not pneumococcal infections. The survey (1) examined the relationship between past experiences with vaccinations and current desires to receive, or to have one's children receive, them; and (2) established baseline data on a variety of perceptions about vaccines.

HHS did not collect information on consumer-based barriers to pneumococcal vaccination until 1987 and 1988, when CDC conducted two studies of elderly respondents, one in two counties in Georgia and the other in Hawaii. Both studies assessed vaccine awareness and various related attitudes; however, the findings from these studies are not generalizable beyond the study participants owing to the use of nonrepresentative samples and the studies' coverage of limited geographic areas.

Each year from 1990 through 1992, HHS sponsored an Abt Associates survey of Medicare beneficiaries living in 10 communities that participated



**Appendix I**  
**HHS Data Collection on Factors That**  
**Influence Vaccine Consumers' Behavior**

in the Medicare Influenza Demonstration. Respondents who had not received a flu shot during the last fall or winter were asked whether any of 11 potential reasons for not getting the flu shot had applied to them. (See table I.2.) This is the only time HHS has directly assessed Medicare beneficiaries' reasons for not getting vaccinated.

**Table I.2: Medicare Beneficiaries' Reasons for Not Receiving Influenza Vaccine**

<b>Reason</b>	<b>Number</b>	<b>Percent</b>
Was healthy and didn't need it	2,463	55
Heard you can still get the flu after getting the shot	1,703	38
Heard the shot can cause flu	1,670	37
Worried about the side effects	1,667	37
Never thought about it	1,292	29
Had a flu shot in the past and got the flu anyway	774	17
Doesn't like the shots or needles	657	15
Doctor did not mention it	612	14
Doctor recommended against it	416	9
Didn't want to spend the money	333	7
Has vaccine allergy	133	3

Source: Medicare Community-Dwelling Beneficiary Survey, Abt Associates, 1992.

In 1992, the National Institute on Aging commissioned four focus groups on pneumococcal vaccination. Most participants were 65 years old or older, and they were asked to discuss their attitudes toward preventive health care and vaccinations, their familiarity with the pneumococcal vaccine, and their reactions to information about it.

**Limitations of the Data**

We found that all of the studies we reviewed are limited in at least one respect that is important to our review. Only the ORC survey is nationally representative, but it omits pneumococcal vaccine and was conducted before Medicare coverage of pneumococcal and influenza vaccination. CDC's studies are more current, but they are not nationally representative, and they do not examine why individuals failed to get vaccinated. The Abt surveys inquire about reasons for not receiving influenza vaccination, but they do not include pneumococcal vaccine, nor are they nationally representative.

# HHS Data Collection on Factors That Influence Vaccine Providers' Behavior

## Data Collection Efforts

Between 1980 and 1994, HHS undertook numerous studies to collect data on a variety of factors that may influence providers' immunization behavior. Table II.1 describes these studies and indicates whether data were collected on pneumococcal vaccination, influenza vaccination, or both.

**Table II.1: HHS Data Collection on Provider-Based Influences on Vaccination**

Organization	Study design	Year	Pneumococcus	Influenza
Market Facts	Survey of a nationally representative sample of 1,000 primary care physicians	1980	Yes	Yes
CDC, state health departments, HCFA, and Abt Associates	Surveys of between 31 and 688 nursing homes	1982-83, 1984-85, 1990-92	No	Yes
CDC and Hawaii Department of Health	Survey of all physicians practicing in Hawaii (n=2,152)	1988	Yes	Yes
CDC and American Managed Care and Review Association	Survey of a representative sample (220 of 650) of HMOs with 25,000 members or more	1987-88	Yes	Yes
CDC and Association of Teachers of Preventive Medicine	Survey of medical students, medical schools, and primary care residency programs	1991	Yes	Yes
National Institute on Aging	Focus groups with primary care physicians	1992	Yes	No
Centers for Disease Control and Prevention	Survey of immunization program grantees	1993	No	Yes

Source: CDC/NIP and NIA, 1994.

In 1980, CDC commissioned Market Facts to conduct a national survey of primary care physicians to assess their knowledge of vaccine recommendations, attitudes about vaccine safety and efficacy, sources of vaccine information, and vaccination practices. Sixty-six percent of the sample responded. Since 1982, CDC has directed several studies of immunization policies and practices in nursing homes; none has been nationally representative. The data collected include immunization rates and descriptive information on the organization of influenza programs in nursing homes and factors associated with varying rates of vaccine use across homes.

As part of the Hawaii Pneumococcal Disease Initiative, CDC collaborated with HCFA and the Hawaii Department of Health in 1988 to conduct a survey of all physicians in active practice in Hawaii. Approximately 35 percent responded to the questionnaire, which assessed their intentions to recommend pneumococcal and influenza vaccines, their attitudes about

vaccine safety and efficacy, and their use of immunization records in patients' charts and vaccination reminder systems.

In the winter of 1987-88, CDC commissioned a study of HMO adult immunization policies. About 24 percent of those surveyed provided information on pneumococcal and influenza vaccine coverage, adult vaccination policy, promotion of adult vaccination, and immunization practices. In 1991, CDC commissioned a survey of U.S. medical schools and primary care residency programs to assess the existence, duration, and content of education about adult immunization and vaccine-preventable diseases of adulthood.<sup>1</sup>

In November 1992, NIA commissioned four focus groups with primary care physicians in public clinics and private practice in Richmond and Philadelphia. The groups discussed their thoughts on routine vaccination of adults, awareness and assessment of pneumococcal vaccine, communication with patients about the vaccine, and barriers to administering the pneumococcal vaccine.

CDC provided us with some preliminary information from its 1994 survey of immunization program grantees on their experiences in providing influenza immunization as a Medicare benefit through state and local health departments. In addition, CDC recently compiled a survey of hospitals' flu and pneumococcal immunization policies and provided major findings in comments on our draft report.

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## Limitations of the Data

In addition to the limitations mentioned above in connection with individual studies, we note that HHS lacks recent information from a representative sample of physicians, including specialists such as cardiologists and pulmonary doctors who regularly see patients at high risk for pneumonia and influenza. (Although the Department conducted a detailed and informative national survey of primary care physicians in 1980, it was completed before Medicare coverage was offered for either vaccine.) HHS has also lacked information on vaccination policies and practices from a national sample of nursing homes. Finally, the low response rates to physician and HMO surveys also present a barrier to a fuller understanding of the reasons for low immunization rates.

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<sup>1</sup>At the time of our review, CDC was planning another physician survey, but it was not designed to be nationally representative.



# Administrator's Letter to Beneficiaries During the Medicare Influenza Demonstration



DEPARTMENT OF HEALTH & HUMAN SERVICES

Health Care Financing Administration

6325 Security Boulevard  
Baltimore, MD 21207

Dear Medicare Beneficiary:

Flu can be a serious illness in older people. With this year's flu season rapidly coming up, we urge Medicare beneficiaries to get a **free flu shot** this Fall. This is an important way to protect your health.

The shots are being paid for by Medicare (this year and in 1991) as part of a special study going on in your county. You can get a **free flu shot** if you have Medicare Medical Insurance coverage. (Compare your Medicare card with the sample card on the back of this letter to see if you have Medical Insurance.)

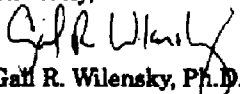
Where can you get your **free flu shot**? Call your doctor to find out if he or she is part of this Medicare study. Or call your local health department to get the location of the flu shot clinic nearest you. The best time to get your flu shot is in October or November.

Why do you need a flu shot? Flu isn't just a "bad cold." Flu can lead to more serious health conditions, such as pneumonia. Pneumonia is a leading cause of death in the United States, especially among the elderly. That is why the U.S. Public Health Service recommends that you get a flu shot every year if you are age 65 or older (even if you are generally healthy) or if you have chronic conditions, including heart and lung disease or diabetes.

Some people worry that a flu shot will give them the flu. You may have a sore arm for a day or two after a flu shot, but ***the shot cannot give you the flu.*** As is true with all vaccines, flu vaccine cannot totally prevent you from getting the flu. There is a chance that you may still get the flu after the shot, but you should not become as sick.

Get your **free flu shot** this Fall and again in the Fall of 1991. Safeguard your health.

Sincerely,

  
Gail R. Wilensky, Ph.D.  
Administrator

P.S. When you come for your **free flu shot**, be sure to bring your Medicare card with you!

# Comments From the Department of Health and Human Services



DEPARTMENT OF HEALTH & HUMAN SERVICES

Office of Inspector General

Washington, D.C. 20201

MAR 27 1995

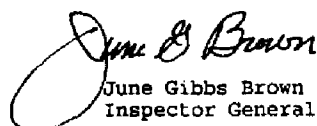
Mr. Kwai-Cheung Chan  
Director, Program Evaluation in  
Physical Systems Areas  
United States General  
Accounting Office  
Washington, D.C. 20548

Dear Mr. Chan:

Enclosed are the Department's comments on your draft report, "Immunization: HHS Could Do More to Increase Pneumococcal and Flu Vaccination Among Older Adults." The comments represent the tentative position of the Department and are subject to reevaluation when the final version of this report is received.

The Department appreciates the opportunity to comment on this draft report before its publication.

Sincerely yours,

  
June Gibbs Brown  
Inspector General

Enclosure

Appendix V  
Comments From the Department of Health  
and Human Services

COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES  
ON THE GENERAL ACCOUNTING OFFICE (GAO) DRAFT REPORT  
"IMMUNIZATION: HHS COULD DO MORE TO INCREASE  
PNEUMOCOCCAL AND FLU VACCINATION AMONG OLDER ADULTS,"  
JANUARY 1995

General Comments

The Department is concerned with the scope of the public health problem associated with influenza and pneumococcal disease. While more needs to be done, much has already been accomplished. We believe that GAO should use the Healthy People 2000 goals as the criteria to measure progress in this area. The Healthy People 2000 National Health Promotion and Disease Prevention objectives were the result of a national effort to set disease prevention objectives and involved 22 expert working groups, a consortium of almost 300 national organizations, every State health department, the Institute of Medicine, and others.

We believe that the Department is on track to exceed the Healthy People 2000 goal for influenza vaccination of adults 65 years or older. Preliminary data from a Health Care Financing Administration (HCFA) survey indicate that 60.8 percent of Medicare beneficiaries aged 65 or older reported receiving a flu shot during the 1993-94 flu season. However, significant progress is still needed among certain populations with substantially lower coverage, including African Americans and elderly persons with certain high-risk conditions.

The HCFA's administrative claims data confirm important differences in the influenza immunization rates of particular groups of Medicare beneficiaries. Claims data show that African American beneficiaries were only one-half as likely as whites to have received flu shots paid for by Medicare during the Fall of 1993, the first year of Medicare's flu shot benefit.

The Department agrees with GAO that it has made significant efforts to enhance the use of influenza vaccine. Despite steady progress in increasing vaccination in some groups, the Department continues to be concerned with preventing influenza and will continue working to increase vaccination for those at risk.

The Department has also made substantial progress toward the pneumococcal vaccination goal. Coverage with pneumococcal vaccine has increased from 14 percent in 1989 to 27 percent in 1993, according to the National Health Interview Survey. If we are to sustain this rate of increase and meet the year 2000 coverage goal, greater efforts at patient and provider education, and at promoting and supporting successful vaccination strategies will be needed. In addition, it will

Appendix V  
Comments From the Department of Health  
and Human Services

2

be necessary to assure an adequate supply of pneumococcal vaccine to meet possible demand.

Considerable effort has been devoted to examining the issues surrounding adult immunization in a comprehensive and systematic fashion. In this respect, the recent report by the National Vaccine Advisory Committee (NVAC) on adult immunization is given little coverage in the GAO draft report. The NVAC report offers a thorough exploration of low levels of adult immunization and a more complete analysis of recommendations for improving immunization rates. The report focuses on policy issues which underpin research and development, safety and efficacy, availability, cost, distribution and use of vaccines by adults, including special needs populations. We believe that the GAO final report should discuss the substance of the NVAC report and provide an analysis of its recommendations. The NVAC report includes the following major goals for adult immunization in the United States:

- increase the demand for adult vaccination by improving provider and public awareness;
- assure the health care system has an adequate capacity to deliver vaccines to adults;
- assure adequate financing mechanisms to support the expanded delivery of vaccines to adults; and,
- assure adequate support for research on (1) vaccine-preventable diseases of adults, (2) adult vaccines, (3) adult immunization practices (4) new and improved vaccines, and (5) international programs for adult immunization.

The NVAC report has 18 recommendations (and 72 strategies) for achieving the goals of its analysis on adult immunization. The findings associated with these recommendations are also provided.

The GAO report also gives little coverage to the level of effort expended by both the National Vaccine Program Office (NVPO) and the Centers for Disease Control and Prevention (CDC) in the Medicare Influenza Demonstration. With Public Health Service (PHS) assistance, HCFA assembled a panel of public health experts to provide direction for the Medicare Influenza Demonstration Steering Committee. The expertise added by PHS helped HCFA conclude that coverage of influenza vaccine by Medicare would be cost effective. The HCFA has also undertaken important initiatives to address these serious public health problems. In both 1993 and 1994, HCFA, PHS, and



Appendix V  
Comments From the Department of Health  
and Human Services

3

the Administration on Aging (AOA) cooperated in an unprecedented joint program to publicize Medicare-covered influenza and pneumococcal immunizations.

To promote Medicare's new flu shot benefit in 1993, the Department coordinated a variety of activities involving HCFA, AOA, CDC and other PHS agencies. The Department organized a Secretarial press conference and prepared and distributed television and radio public service announcements, a national news release, a video news release, an audio news release in English and Spanish, opinion pieces, editorials, information kits, flyers, and supermarket displays. The Department also coordinated 1993 activities with the National Lung Association, the American Association of Retired Persons (AARP), and other private organizations.

The Department's 1994 Medicare flu shot campaign built upon the successes of the 1993 campaign by utilizing partnership activities and national media networks to reach the largest possible number of beneficiaries in a cost-effective manner. As the first phase of HCFA's Consumer Information Strategy (CIS), the campaign used HCFA's administrative claims data to assess influenza immunization rates, target areas with low rates, and help State public health departments expand awareness of the benefit at the local level. The campaign began with a media briefing (jointly conducted by HCFA, CDC, and AOA), the issuance of a national news release, televised public service announcements, radio news releases in English and Spanish, and partnership activities with beneficiary, provider, and news organizations. The centerpiece of this consumer-driven campaign was the HCFA brochure, "Medicare Pays for Flu Shots." This brochure, written in both English and Spanish, primarily focused on the flu shot benefit but also prominently publicized the pneumonia prevention benefit. The AOA's national network of State and area agencies on aging in every State and hundreds of other partner organizations helped distribute six million copies of the brochure in English and 750,000 in Spanish. The Consumer Information Center (CIC) of the General Services Administration made HCFA's flu shot brochure available through its 1994 winter catalog. The CIC also distributed 10,000 news releases to major media on the brochure's availability. As a result, such high-circulation media as Parade magazine publicized the Medicare flu shot benefit and the brochure.

The Department will continue to aggressively promote Medicare-covered influenza and pneumonia prevention benefits. We will continue to build awareness through enhanced private and public partnership networks (including field staff of HCFA's regional offices, contractors, and grantees in every State) and HCFA's CIS. Through these efforts, the Department will

help realize the Healthy People Year 2000 Goal of at least a 60 percent immunization rate for all of HCFA's Medicare customers, including African Americans and others with low immunization rates.

GAO Recommendation

GAO recommends that the Secretary of HHS take a more active leadership role in promoting pneumococcal and influenza vaccination among elderly persons by:

- (1) seeking, in the annual appropriations process, to clarify what proportion of immunization funding should be allocated for such activities; and

Department Comment

We do not believe GAO's recommendation would necessarily lead to improved adult immunization rates. The Congress has consistently provided clear guidance to CDC and HCFA on immunization priorities. Congressional documents clearly direct childhood immunization as the CDC key immunization priority. For example, in the Fiscal Years (FY) 1990-1995 House and Senate Appropriations Committee reports related to CDC, childhood immunization was directly addressed repeatedly while adult immunization was addressed only once. On the other hand, HCFA presently addresses the medical needs of elderly Americans through its Medicare program. In FY 1994, HCFA expended about \$100 million for influenza and pneumococcal immunizations.

The CDC will continue to collaborate with HCFA, AOA, and other agencies to improve adult immunization. For instance, CDC plans to propose a FY 1997 initiative which will focus on improving immunization of all adults through implementation of strategies defined in NVAC's report on adult immunization, and those reviewed in the GAO report.

The Department would be pleased to react to further congressional guidance in this area.

GAO Recommendation

- (2) directing HCFA and PHS to focus their efforts on promoting or supporting promising strategies, such as patient and physician reminder systems, development of standing order policies, and broad-based use of a hospital policy to vaccinate eligible patients before discharge.

Appendix V  
Comments From the Department of Health  
and Human Services

5

Department Comment

The Department will continue to focus efforts on effective strategies to further improve adult immunization rates, as documented by the recent increases in these rates. The GAO has noted that the Department's recent efforts to improve use of flu vaccine have been "comparatively brisk."

One of the major recommendations in the NVAC report on adult immunization is to conduct an evaluation of health care provider information systems to encourage adult immunization. The NVAC made this recommendation because it has been widely recognized that increasing adult vaccination levels must begin with improving the awareness of both health care providers and the general public of the health and economic impact of vaccine-preventable diseases and the benefits of vaccination. However, this knowledge must be used in such a way that it leads to changes in behavior--health care providers offering vaccines to their patients when indicated and adults expecting, asking for, and accepting recommended vaccines. Programs to increase awareness must not focus simply on increasing content knowledge, i.e., that the diseases are "bad" and the vaccines "good," they must go further and address behaviors that affect vaccine delivery.

The HCFA has taken aggressive action to support promising strategies that will reduce disease incidence. For example, HCFA staff prepared and distributed 10,500 information kits to high membership consumer and provider organizations who, in turn, used the materials included in the kits to publicize Medicare-covered flu shots through their newsletters and other publications. These organizations included the American Medical Association, AARP, Group Health Association of America, and the American Hospital Association. In addition, HCFA provided immunization data releases to members of Congress, State officials, and others to promote awareness of low utilization rates in their States. As noted earlier, HCFA also prepared and distributed, through AOA's national network of State and area agencies on aging and hundreds of other partner organizations, the brochure "Medicare Pays for Flu Shots." Finally, HCFA engaged contractors in every State in a promotional campaign with hundreds of local organizations to promote influenza vaccination benefits.

# Major Contributors to This Report

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## Program Evaluation and Methodology Division

Sushil K. Sharma, Assistant Director  
Betty A. Ward-Zukerman, Assignment Manager  
Jason S. Lee, Project Manager  
Venkareddy Chennareddy, Referencer  
Elizabeth W. Scullin, Communications Analyst

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