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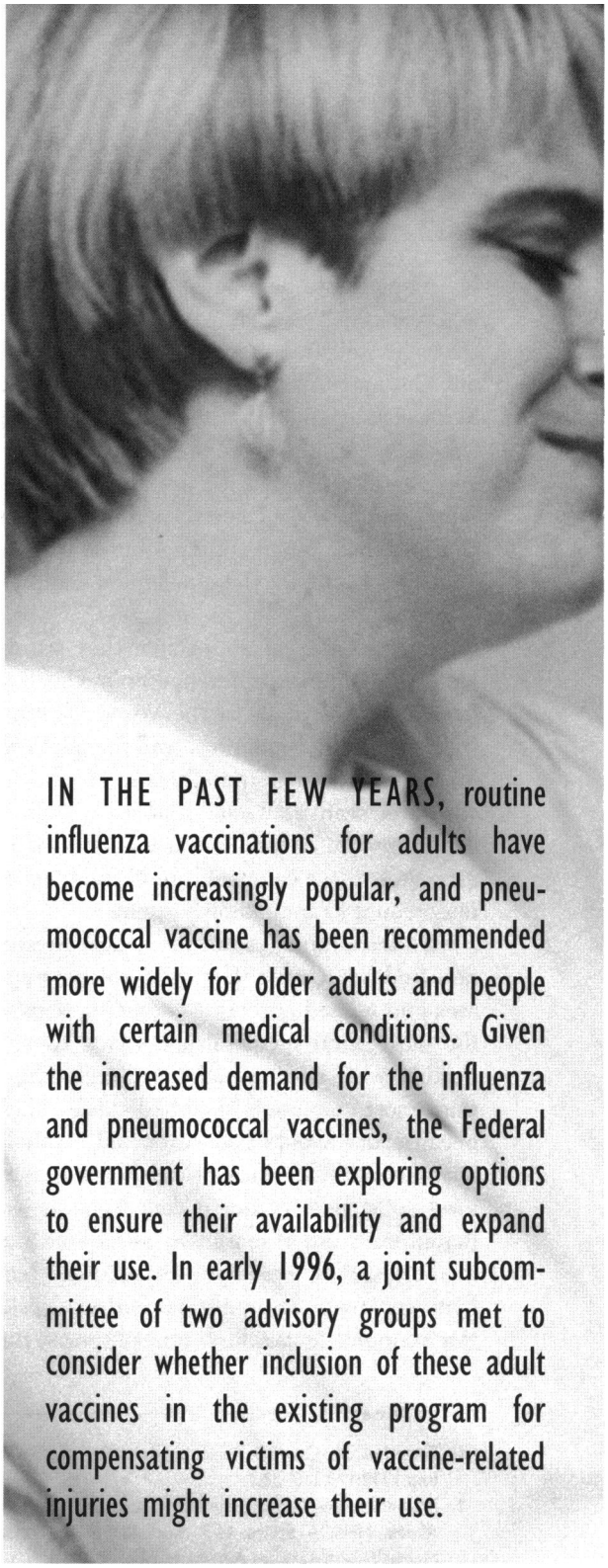


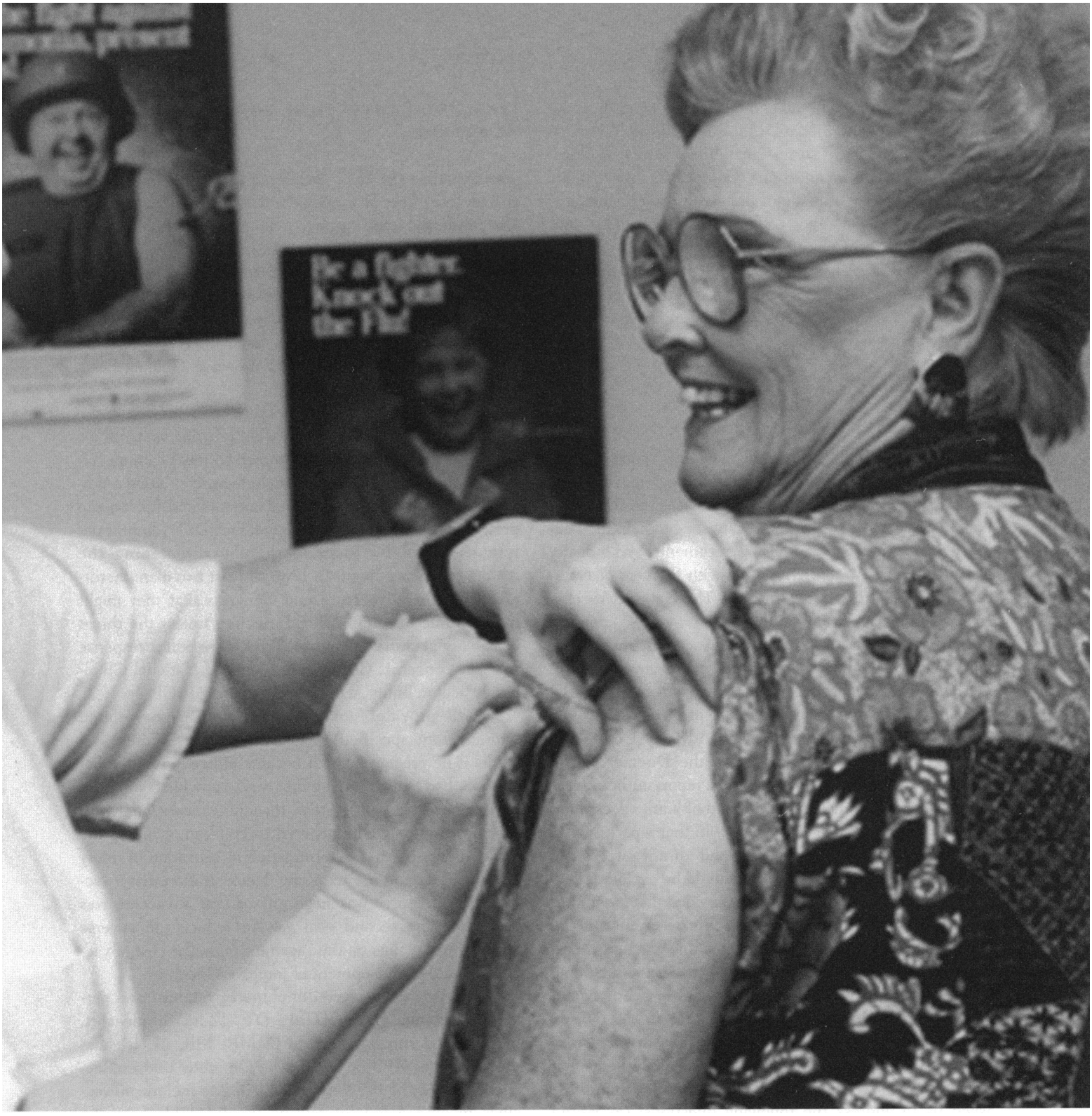
SYNOPSIS

In 1996, the National Vaccine Advisory Committee (NVAC) asked for a review of the pros and cons of including adult influenza and pneumococcal vaccines in the Vaccine Injury Compensation Program (VICP). The authors, as staff to the subcommittees charged with undertaking this assessment, looked at the following questions: (a) Would inclusion in VICP of these two vaccines, used primarily for adults, increase adult vaccination levels? (b) Is this Federal involvement warranted based on the liability burden for these vaccines? (c) Does the risk of adverse events following vaccinations warrant inclusion of these vaccines? (d) Is there a consensus among stakeholders favoring their inclusion?

To address these questions, the authors reviewed information on adult vaccines, including data on lawsuits filed and reports of injuries, and sought input from interested groups. They found no evidence that the use of influenza and pneumococcal vaccines would increase if they were included in VICP. They found a low liability burden for these vaccines, that serious adverse events were rare, and that no consensus existed among stakeholders. After considering the staff report, NVAC chose, in 1996, not to advise the Department of Health and Human Services to include adult vaccines in VICP.

IN THE PAST FEW YEARS, routine influenza vaccinations for adults have become increasingly popular, and pneumococcal vaccine has been recommended more widely for older adults and people with certain medical conditions. Given the increased demand for the influenza and pneumococcal vaccines, the Federal government has been exploring options to ensure their availability and expand their use. In early 1996, a joint subcommittee of two advisory groups met to consider whether inclusion of these adult vaccines in the existing program for compensating victims of vaccine-related injuries might increase their use.

Should the Vaccine Injury Com BE EXPANDED TO



pensation Program

COVER ADULTS?

As staff to the joint subcommittee, we carried out an investigation to determine to what extent the adult vaccine market was facing pressures created by the fear of litigation. To answer this question, we looked at the liability burden (rate of lawsuits) associated with these vaccines as well as the rate of reports of adverse events. Our staff report was reviewed by the joint subcommittee, and the National Vaccine Advisory Committee did not recommend any action, choosing not to vote on the question of including adult vaccines in the Federal program for compensating vaccine-related injuries.

BACKGROUND

In 1986, Congress passed the National Childhood Vaccine Injury Act, creating the National Vaccine Program and the National Vaccine Injury Compensation Program within the Department of Health and Human Services (DHHS). The National Vaccine Program was established to help the Federal government, state and local governments, and industry allocate resources more effectively with the goal of eradicating vaccine-preventable diseases. The National Vaccine Injury Compensation Program (VICP) provides compensation for injuries related to childhood vaccines, shifting liability from the manufacturers to the Federal government in the hope that doing so would remove disincentives for the development, manufacturing, and use of vaccines.

In 1994, the National Vaccine Advisory Committee (NVAC), an advisory committee to the Director of the National Vaccine Program, prepared a report outlining recommendations for increasing the rate of adult vaccination to reach *Healthy People 2000* goals.[1,2] In that report, NVAC suggested that the "advantages and disadvantages" of including adult vaccines in VICP should be explored.

In January 1996, NVAC recommended that a comprehensive study be undertaken of the adverse events and liability associated with adult influenza and pneumococcal vaccines to guide policy decisions with regard to including these vaccines in VICP. Toward this end, in February and May 1996, the Vaccine Safety Subcommittee of NVAC met with the parallel subcommittee of the Advisory Commission on Childhood Vaccines (the advisory body that oversees VICP). Members of the joint subcommittee asked us to address the following questions: (*a*) Would inclusion under VICP of adult influenza and pneumococcal vaccines increase adult vaccination levels? (*b*) Is this Federal involvement warranted based on the liability burden for these vaccines? (*c*) Does the risk of adverse events following vaccinations warrant inclusion of these vaccines? (*d*) Is there a consensus among stakeholders favoring their inclusion?

In addressing these issues, we first looked at the background of VICP and its role in stabilizing the supply of childhood vaccines.

LIABILITY PROTECTION UNDER FEDERAL PROGRAMS

The first time the U.S. government assumed liability for the adverse effect of a vaccine was in 1976. When a swine flu epidemic threatened, the Federal government launched the National Swine Flu Immunization Program. Under the program, vaccine manufacturers were protected from liability for injuries related to the vaccine. The vaccination program was later suspended when suspicions arose that there might be an association between the swine flu vaccine and a paralysis known as Guillain-Barré syndrome.

Between 1980 and 1985, another crisis brewed in the vaccine industry. Some parents were refusing vaccines for their children because of the perceived risk of injury following vaccination, and some manufacturers, citing a dramatic increase in the number of lawsuits and inadequate protection from liability, stopped making DTP (diphtheria-tetanus-pertussis) vaccine, thereby threatening the national vaccine supply.[3] In 1986, at least two manufacturers of childhood vaccines told Congress that they might not continue to sell childhood vaccines unless the threat of liability claims was controlled. In large part a response to these concerns, Congress enacted the National Childhood Vaccine Injury Act of 1986,[4] creating VICP.

VICP provides compensation for vaccine-related injuries from specified vaccines for both children and adults. The program, which became effective on October 1, 1988, had two goals. The first was to provide compensation, under a no-fault system, for injuries associated with vaccines routinely administered to children, avoiding the difficult case-by-case determination of causation of injury in most cases and not requiring demonstration that a vaccine manufacturer was negligent or that a vaccine was defective. The second goal was to reduce the adverse effect of tort claims on the vaccine supply, the cost of vaccines, and the development of improved vaccines.

VICP originally covered diphtheria, tetanus, and pertussis vaccines (DTP, DTaP, DT, TT, Td); measles, mumps, and rubella vaccines (MMR, MR, M, R); and polio vaccines (IPV or OPV). The Omnibus Budget Reconciliation Act of 1993[5] extended VICP to include all vaccines recommended for routine use in children by the Centers for Disease Control and Prevention (CDC); as a result, VICP has been expanded to include vaccines for hepatitis B, *Haemophilus influenzae* type b, and varicella.[6,7] VICP covers these childhood vaccines regardless of the age of the recipient. Therefore, adding influenza and pneumococcal vaccines would expand coverage under VICP to include all routinely recommended *childhood* and *adult* vaccines.

Liability protection under VICP differs from the protection provided in 1976 for the swine flu vaccine. VICP

gives limited immunity for specific injuries to vaccine manufacturers and those who give vaccines, the law removes the burden of proof for demonstrating that an injury was vaccine-caused, and compensation is paid from a fund accumulated through an excise tax on covered vaccines. In contrast, the swine flu program's immunity was absolute, the law offered no guidance regarding burden of proof, and awards were paid out of Federal appropriations. VICP has the advantages of no-fault provisions, a diminished burden of proof, and funding from dedicated taxes. It has the disadvantages of making vaccines more expensive and allowing claimants to opt out of the compensation program and sue manufacturers and those who gave the vaccine.

Since the creation of VICP, the marketplace for childhood vaccines has stabilized, new vaccines have been introduced, and litigation against manufacturers has diminished.[8] We decided to examine the litigation climate and the evidence of adverse reactions related to adult vaccines to see if some of the pressures leading to the creation of VICP might support its expansion.

It is hard to predict whether including influenza or pneumococcal vaccine under VICP would increase the likelihood that physicians will recommend these vaccines.

THE LITIGATION CLIMATE

We wanted to determine whether the level of litigation over adverse side effects from adult vaccines in the 1990s paralleled the level experienced for childhood vaccines in the early 1980s. To this end, we developed a "litigation index," the rate of litigation as calculated by dividing the number of lawsuits filed by the net doses distributed during the same time period. We used net doses distributed (doses supplied minus those returned) as a surrogate for total doses administered because no precise data are collected in this country on doses administered. For 1990–1995, approximately 195 million net doses of influenza vaccine and 18 million net doses of pneumococcal vaccines were distributed, according to CDC's National Immunization Program (Unpublished data, August 1996).

The five current U.S. influenza and pneumococcal vaccines manufacturers reported the number of lawsuits filed for the years 1990–1995 (although not the monetary claims or what the manufacturers paid to defend or settle them).

We compared these totals to the number of lawsuits filed against DTP vaccine manufacturers in 1980–1985. A House of Representatives report cited the actual number of lawsuits filed against the five manufacturers for January 1980 through March 1985 and estimates through the end of 1985.[3] We used the figures cited in the House report for 1980–1984 and the actual numbers of DTP lawsuits for 1985, as reported to CDC (Unpublished data, CDC, National Immunization Program, August 1996).

We used National Immunization Program estimates for the total number of doses of DTP distributed; for the years 1980–1985, approximately 113 million doses of DTP vaccine were distributed in the United States (Unpublished data, August 1996).

We also calculated the litigation index for the DTP vaccine for the years 1978–1981, prior to 1982 when the press began to focus public attention on vaccine safety and manufacturers responded by creating a supply crisis. For the denominator, we used the National Immunization Program's estimate that approximately 80 million doses of DTP vaccine were distributed from 1978 to 1981 (Unpublished data, August 1996).

The Physician Insurers Association of America, which insures 200,000 physicians through 55 member companies, provided data on influenza vaccine-related suits filed for 1985–1995. (Pneumococcal vaccine was not included in their database). Adult recipients filed four of the six claims and six of the seven lawsuits over that period. Insurers made only three payments, among them one for $4620 and one for $100,000 (Unpublished data, Physician Insurers Association of America, February 1996).

The litigation index of 31.5 lawsuits per 10 million doses for DTP vaccine during 1980–1985 was more than 15 times the index of two lawsuits per 10 million doses for both influenza vaccine and pneumococcal vaccine in 1990–1995. For 1978–1981, prior to the public controversy about DTP vaccine safety, we calculated a litigation index of one lawsuit per 10 million doses for DTP vaccine—slightly lower than the recent litigation rate for pneumococcal and influenza vaccine. (See Table 1.)

Vaccine-related liability is not restricted to lawsuits against manufacturers. Little information is available, however, about lawsuits and claims against health care professionals who give the vaccines. No central registry collects information on vaccine lawsuits or claims filed against those giving vaccines, and no published studies exist on whether concern about liability is a factor in physicians' failure to recommend vaccinations. Thus it is hard to predict whether including influenza or pneumococcal vaccine under VICP would increase the likelihood that physicians will recommend these vaccines.

In an unpublished 1996 survey of 225 primary care physicians in Minnesota, respondents listed liability along

Table 1. Lawsuits reported by vaccine manufacturers

Vaccine	Years	Number of doses distributed (in millions)	Number of lawsuits	Litigation index[a]
DTP	1978–1981	80	9	1
	1980–1985	113	357	31.5
Influenza	1990–1995	195	45	2
Pneumococcal	1990–1995	18	4	2

SOURCE: National Immunization Program, Centers for Disease Control and Prevention

[a]Lawsuits per 10 million net doses. Net doses equals the number of doses supplied by manufacturers minus the number of doses returned to manufacturers.

DTP = diphtheria, tetanus, and pertussis vaccine

with the cost of vaccine and storage difficulties as reasons for referring their patients to public health clinics to be vaccinated (Personal communication, Gregory Poland, MD, Chief, Mayo Vaccine Research Group, November 1996).

In contrast, the CDC and others have reported that when questioned in 1980 well after the end of the swine flu vaccine program, physicians did not indicate that concern about liability was a reason for failing to recommend the influenza vaccine.[9] Changes in the liability environment over the last 17 years probably explain the higher level of concern expressed by the respondents to the 1996 Minnesota survey. More research is needed on whether liability concerns influence provider recommendations for vaccination and consequently affect vaccination levels.

These litigation rate findings led us to believe that from the manufacturer's perspective, a crisis of liability over the adult vaccines similar to that experienced in the early 1980s in childhood vaccines was not occurring.

RATE OF ADVERSE EVENTS

Inclusion of the adult influenza and pneumococcal vaccines in VICP could also be justified by a high incidence of injuries associated with these vaccines. Was the occurrence of vaccine-related adverse events so high that adults were discouraged from being vaccinated? At the February 1996 meeting of the Vaccine Safety Subcommittees of NVAC and the Advisory Commission on Childhood Vaccines, data from the Vaccine Adverse Events Reporting System (VAERS) were presented and the adverse effects reported in the medical literature were reviewed.

VAERS is a voluntary national system for reporting medical events associated temporally with vaccination—that is, occurring within 30 days after vaccination.[10,11] Flaws inherent in such a passive surveillance system—including under-reporting, uneven reporting by region, and biased reporting—make VAERS an inappropriate tool to determine causation;[10,11] VAERS reports of adverse events occurring after vaccination rarely *prove* causality, but they can serve as a sentinel for generating hypotheses about cause.

VAERS reports are categorized based on severity: (*a*) *death*; (*b*) *serious* (the person had a life-threatening illness, the person required an emergency room or doctor's visit, the person was hospitalized because of the event, or the person suffered a permanent disability); or (*c*) *nonserious* (nonfatal events not meeting the criteria for *serious*).

We reviewed VAERS reports from 1990 through 1995 for adults 18 years of age and older. To eliminate the confounding effects of simultaneously administered vaccines, we restricted our comparisons to those individuals receiving either pneumococcal or influenza vaccine alone. Each report describes an average of four events or symptoms. VAERS data do not permit calculation of rates because numerator data are incomplete and precise data on doses administered (denominator data) are lacking. To obtain a rough estimate of the frequency of reported adverse events associated with particular vaccines, however, we used the number of doses distributed as a denominator to calculate an adverse event rate—reports per 10 million doses distributed.

For both influenza and pneumococcal vaccines, the majority of events reported to VAERS in 1990–1995 fell into the nonserious category. The relatively small number of deaths and serious injuries were investigated by VAERS staff and thought not to be caused by either vaccine.

For 1990–1995, 3323 people (170 per 10 million doses distributed) were reported to have experienced one or more adverse events following influenza vaccine (Table 2). Per 10 million doses distributed, 135 events were nonserious, 30 events were serious, and 5 were deaths.

The most common events or symptoms reported to VAERS following influenza vaccination were fever, myalgia, and local hypersensitivity reactions. Less common events or symptoms included Guillain-Barré syndrome and neuropathy. The adverse reactions to the influenza vaccine reported in the medical literature include soreness at the injection site (in approximately one-third of vacci-

nees), fever, myalgia, and malaise.[12] Immediate reactions, presumably allergic, occur extremely rarely.[12]

For pneumococcal vaccine there were 513 reports to VAERS in 1990–1995, with 1917 different events or symptoms reported, or 285 adverse events per 10 million doses distributed (Table 2). Per 10 million doses distributed, there were 240 nonserious events, 43 serious events, and 2 deaths. The most common symptoms reported to VAERS were local hypersensitivity reactions, injection site edema, and vasodilatation. These correspond to adverse reactions reported in the medical literature; pneumococcal vaccine is known to cause fever, myalgias, and—in 50% of recipients—minor local reactions such as erythema and pain at the injection site.[12,13] More severe local or systemic reactions occur in fewer than 1% of recipients.[12,13] Anaphylaxis is estimated to occur at a rate of five per one million doses administered.[12,13]

Although the vast majority of reports for these vaccines fall in the nonserious category, we were unable to determine whether a perception that adverse reactions are common keeps vaccination rates low. Studies by Fiebach and Viscoli,[14] Ganguly et al.,[15] and Nichol et al.[16] have shown that fear of a reaction is often cited as a reason for patients' refusing influenza vaccinations. Whether coverage under VICP would decrease the perception of risk, thereby improving vaccination rates, has not been shown. Further research should be conducted to examine this possibility and related issues such as whether an increase in vaccine price (due to an excise tax on adult vaccines to fund VICP coverage) would contribute to a reduction in vaccination rates.

INPUT FROM CONSUMERS, HEALTH PROFESSIONALS, AND INDUSTRY

As a final step in our investigation, we sought out the opinions of the groups that had helped Congress design and pass the VICP law. These included Dissatisfied Parents Together—a group founded by parents who believed their children had been injured by the DTP vaccine—and the vaccine manufacturers. We also sought the opinions of those concerned with adult vaccination, including the National Coalition for Adult Immunization (NCAI), a broad coalition of more than 80 organizations and individuals concerned with adult immunization, including state health departments, home health agencies, senior citizen organizations, organizations of medical professionals, social service agencies, private businesses, and community leaders; medical professionals; and the manufacturers of influenza and pneumococcal vaccines.

Table 2. Reported adverse events following influenza and pneumococcal vaccination in people 18 years of age and older, VAERS, 1990–1995

Vaccine	Adverse events per 10 million doses		
	Nonserious	Serious	Deaths
Influenza	135	30	5
Pneumococcal	240	43	2

NOTE: As defined by VAERS, *serious* events include those in which the person has a life-threatening illness, the person requires an emergency room or doctor's visit, the person is hospitalized, or the person suffers a permanent disability; *nonserious* events are defined as nonfatal events not falling into these categories.
VAERS=Vaccine Adverse Event Reporting System

Representatives of Dissatisfied Parents Together opposed including adult pneumococcal and influenza vaccines in VICP. They explained that the addition of new vaccines or the inclusion of adults in VICP "would further shield drug companies from being held accountable for the safety of their products," eliminating one of the economic incentives for companies to improve the safety of the vaccines they produce.

NCAI queried its member organizations for their views on inclusion of adult vaccines in VICP. Based on NCAI's input, the Steering Committee supported inclusion of pneumococcal and influenza vaccines under VICP. NCAI believed that coverage of these vaccines in VICP would reassure manufacturers and provide a major economic stimulus for them to develop and place new vaccines into the marketplace. NCAI also concluded that inclusion of pneumococcal and influenza vaccines in VICP could positively influence consumers' and providers' attitudes and thereby increase coverage.

We queried each of the manufacturers of pneumococcal and influenza vaccines (Merck and Company, Medeva Americas, Wyeth-Ayerst Laboratories, Connaught Laboratories, and Parke-Davis). Each manufacturer replied to our query; however, no consensus was reached. Parke-Davis declined to comment, three manufacturers supported inclusion of both vaccines under VICP, and one manufacturer (Connaught Laboratories) opposed inclusion of adults within VICP.

Based on these queries, we concluded that there was no consensus among stakeholders with regard to inclusion of influenza and pneumococcal vaccines under VICP.

NVAC'S CONCLUSION

If liability concerns were limiting the willingness of manufacturers to supply adult influenza and pneumococcal vaccines or if the public were unwilling to accept these vaccines because of a fear of adverse reactions, these would be arguments for the inclusion of adult vaccines under VICP. Similar conditions surrounding DTP argued for the creation of the program in the first place. However, influenza and pneumococcal vaccine prices are stable,

there is no shortage of these vaccines, and there was proportionately less litigation against manufacturers for influenza and pneumococcal vaccines in the early 1990s than for DTP vaccine during the crisis in the early 1980s.

The litigation rate that we calculated for the adult vaccines for 1990–1995 was much lower than the rate for DTP vaccine at the time of the DTP liability crisis, supporting the conclusion of a low liability burden at this time. However, some manufacturers caution that using the number of lawsuits for the 1990–1995 period may not reflect the true existing—and possibly increasing—litigation burden. In addition, the litigation index does not reflect the actual costs of litigation to the manufacturer, which involve payments to plaintiffs (when a plaintiff wins or a case is settled), attorneys' time, trial expenses, and staff time.

Whether coverage under VICP would decrease the perception of risk, thereby improving vaccination rates, has not been shown.

VICP exists, in part, to provide fair and just compensation for those thought to be injured by vaccines recommended for routine administration to children. Some provider organizations, such as NCAI, argue that the Federal government has an ethical responsibility to cover injuries from vaccines once they are recommended for routine administration for any age group. They see such a policy as fair and equal treatment for all citizens under taxpayer-supported Federal programs.

In September 1996, NVAC voted to table a decision on recommending inclusion of adult vaccines in VICP, concluding that available data provided no compelling reason to expand the program. NVAC reasoned (*a*) that no data exist to suggest that expansion of VICP would improve vaccination levels in adults, (*b*) that the data examined do not indicate a liability crisis, either for those who give vaccines or vaccine manufacturers, (*c*) that the few serious injuries that are reported could not be conclusively attributed to the vaccines, and (d) that there was no strong support for expansion of VICP among interested groups. Should new developments occur or should some of the lacking data be developed, it is likely that NVAC would revisit this issue.

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At the time of the events described, Dr. Lloyd-Puryear was with the Division of Vaccine Injury Compensation, Bureau of Health Professions, U.S. Health Resources and Services Administration (HRSA); she is currently the Chief of the Genetic Services Branch, Maternal and Child Health Bureau, HRSA, Rockville, MD. Dr. Ball was Chief of the Policy and Commission Branch, Division of Vaccine Injury Compensation; she is currently a Medical Officer in the Division of Vaccines and Related Food Product Applications, Center for Biologics Evaluation and Research, U.S. Food and Drug Administration, Rockville, MD. Mr. Benor is a Senior Attorney in the Public Health Division, Office of General Counsel, U.S. Department of Health and Human Services, Rockville, MD.

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