

THE NEW U.S. INITIATIVE IN CHILDHOOD IMMUNIZATION¹

Alan R. Hinman²

In 1977 the United States launched a major domestic campaign to promote childhood immunization. This presentation describes the nature of that campaign, current U.S. childhood immunization levels, and future plans.

On 6 April 1977 the United States Secretary of Health, Education, and Welfare announced a national childhood immunization initiative. This undertaking had two goals: (1) attainment of immunization levels of 90 per cent in our nation's children by October 1979; and (2) establishment of a permanent system to provide comprehensive immunization services to the 3 million U.S. children born each year.

In making his announcement, the Secretary cited figures from the 1976 U.S. Immigration Survey showing that in order for children 1-4 years of age to be adequately protected:

- more than one-fourth needed at least one DTP shot
- more than one-third needed at least one dose of oral polio vaccine
- more than one-third needed their measles shot
- more than one-third needed their rubella shot
- more than one-third needed their mumps shot.

According to the survey, nearly 20 million U.S. children needed at least one dose of one vaccine in order to be fully protected. The poor and the nonwhite

were disproportionately represented among those in need.

Stating that "our national failure to protect our young from preventable diseases is shocking" and a "national disgrace," the Secretary outlined a broad-based program including increased federal support for immunizations, increased involvement of volunteers in all aspects of immunization activities, increased public awareness and public education activities, and increased cooperation between government agencies.

Since the Secretary's announcement, a lot of work has been devoted to the initiative. Most efforts to date have related to the first of the two goals: that of reducing the backlog of incompletely immunized children. I should therefore like to summarize here the progress made in 1977. This presentation will deal first with the general program components outlined by the Secretary and then with the subjects of disease incidence, program activities, and evaluation.

Elements Contributing to the Initiative

Increased Federal Support

Federal support for immunization activities has increased substantially, with US\$23 million being appropriated for grant support in fiscal year (FY) 1978, as compared to \$17 million in FY 1977 and only \$4.9 million in FY 1976. For the next fiscal year, \$35 million in project grant support has been requested. In addition to this categorical support, other federal agencies have been increasing the level of their support

¹Based on a paper presented on 17 April 1978 at the XXXVI Annual Meeting of the U.S.-Mexico Border Health Association held at Reynosa, Tamaulipas, Mexico.

²Director, Immunization Division, Bureau of State Services, United States Center for Disease Control, Atlanta, Georgia, U.S.A.

for immunization activities, although precise dollar figures are not currently available.

Increased Use of Volunteers

Nearly all the states have identified lead volunteer agencies and have begun developing specific plans for the use of volunteers. Some have progressed even further. Arkansas continues in the forefront in this regard with a unique mixture of paid employees, employees placed on a "free time" status by their employers, and volunteers involved in all aspects of program work.

Increased Public Information and Public Education Activities

A pamphlet entitled *Parent's Guide to Childhood Immunizations* has been prepared and distributed nationally. A series of mass media materials, including TV and radio spot announcements, and press releases, have been developed and are now

being distributed. A coloring book has been composed and is available for distribution. Romper Room has completed taping a series of puppet skits about immunizations that was played to its audience of 1.5 million preschool children.

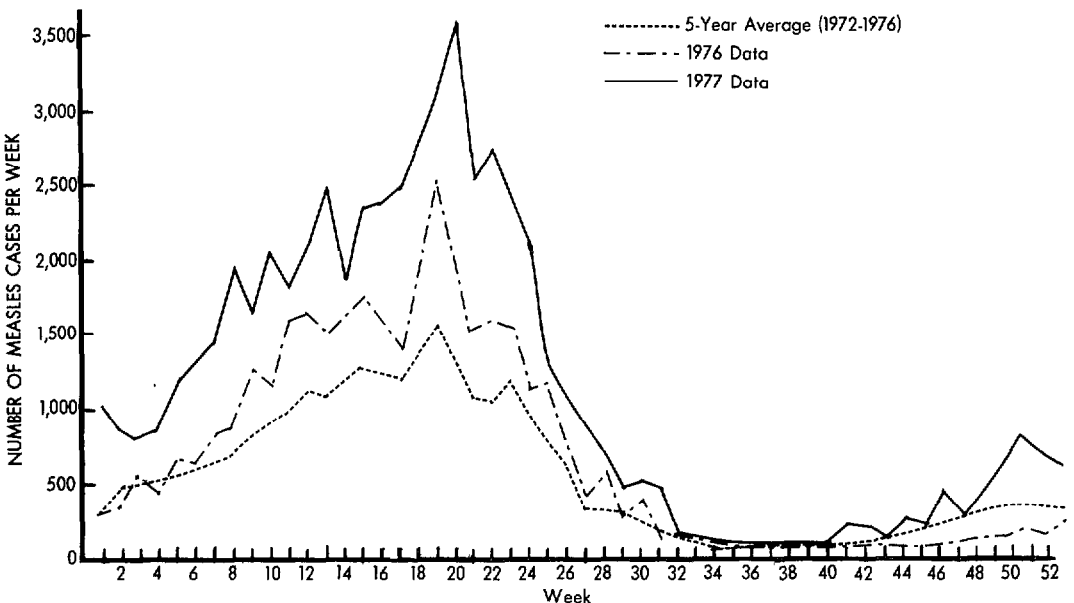
Increased Interagency Cooperation

An Immunization Initiative Project Office has been established in the Office of the Assistant Secretary for Health in Washington. This office is charged with overall management of the initiative; it is particularly concerned with cooperation between agencies within the Department of Health, Education, and Welfare and between other cabinet-level departments.

Disease Incidence

Reduced occurrence of vaccine-preventable diseases is the single most important indicator of success. Hence I should like to

Figure 1. Reported measles cases in the United States, 1976-1977.



make a few comments about the incidence of the seven diseases preventable by routine childhood vaccination.

Measles

A provisional total of 55,974 measles cases was reported for 1977, representing an increase of 37.8 per cent over 1976. Nevertheless, this increase was only apparent during the early part of the year; on entering a new season in October, a substantial reduction in weekly incidence was observed—as compared with both the preceding year and the 5-year average (Figure 1). This trend continued into 1978.

Many factors are doubtless involved in this recent, encouraging decline. These include the natural periodicity of measles, a reduction in the pool of susceptibles through natural infection, and a striking increase in the administration of measles vaccine within the United States. At this point it is impossible to say which of these factors is most important.

Rubella

Rubella incidence was also up in 1977, with a provisional total of 20,135 cases reported—a 64.5 per cent increase over 1976. To a lesser extent than measles, the weekly incidence of rubella—relative to previous years—declined as we entered the “low” season (Figure 2).

Mumps

The incidence of this disease has continued its downward trend (Figure 3). The provisional total of reported cases was only 21,337 for 1977, a decrease of 45.3 per cent over 1976.

Poliomyelitis

Continuing at a very low level (Figure 4), the incidence of poliomyelitis showed an increase in 1977 over 1976, there being 17 cases provisionally reported for 1977, as compared to 12 cases for 1976.

Figure 2. Reported rubella cases in the United States, 1976-1977.

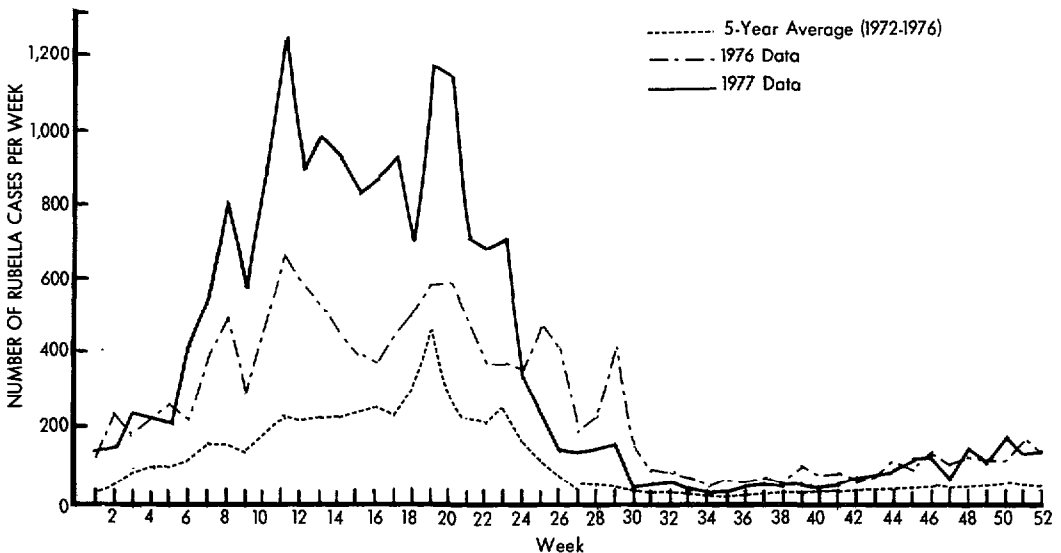


Figure 3. Reported mumps cases in the United States, 1922-1977.

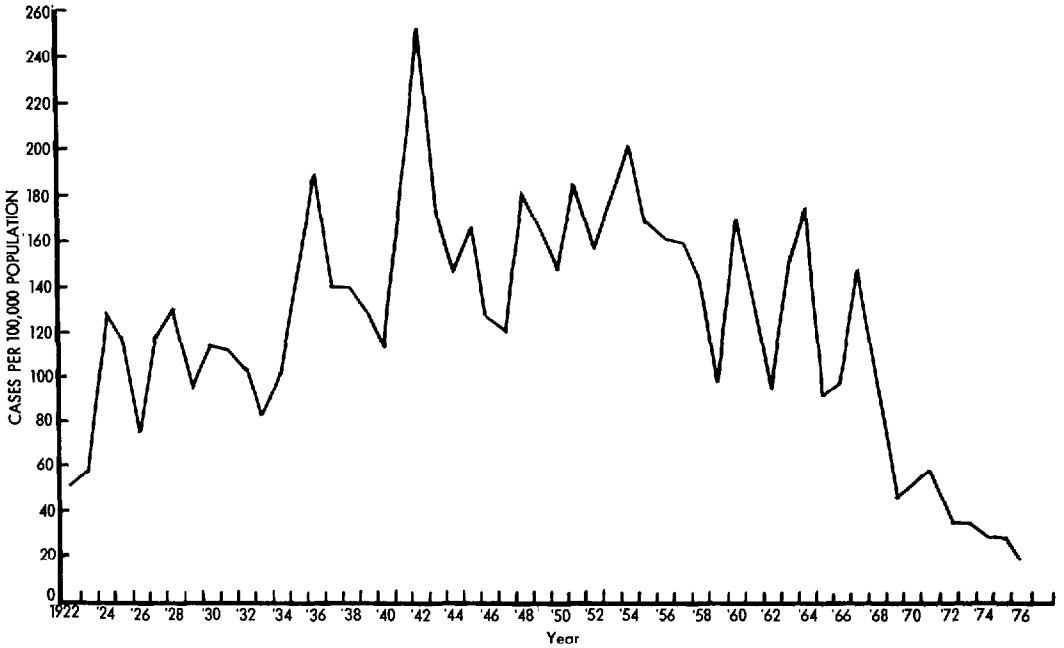


Figure 4. Paralytic and overall poliomyelitis cases estimated and reported in the United States, 1941-1977.*

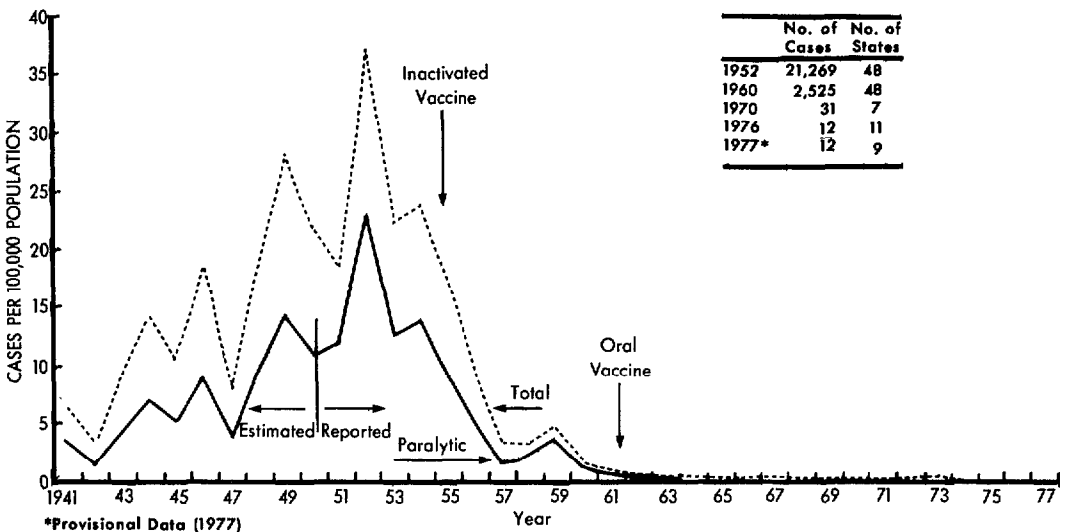
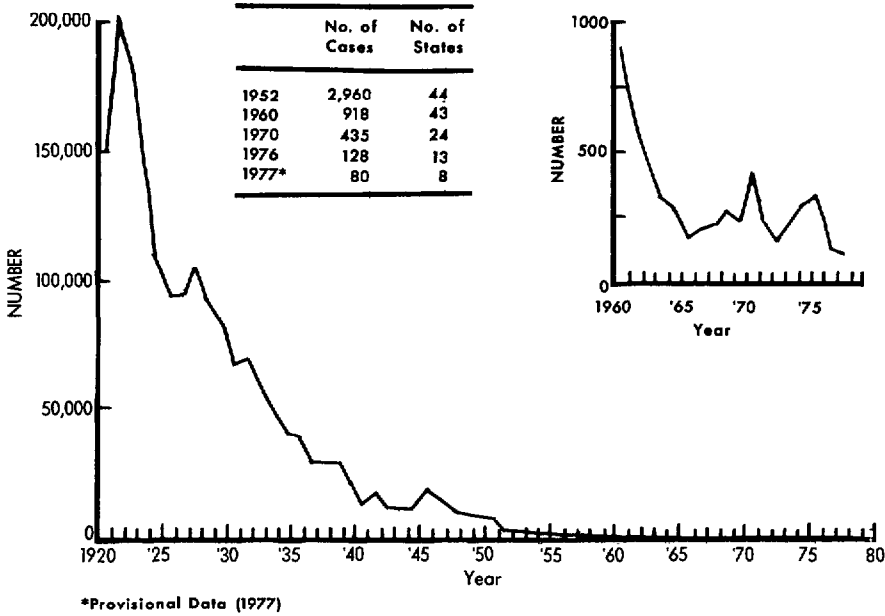


Figure 5. Reported diphtheria cases in the United States, 1920-1977.



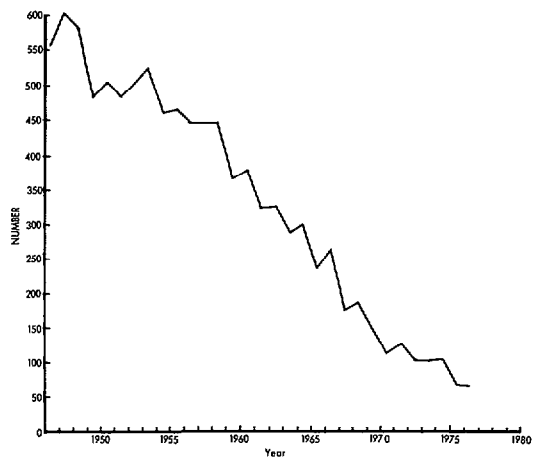
Diphtheria and Tetanus

The occurrence of diphtheria (Figure 5) was at an all-time low in 1977, with a provisional total of only 84 cases reported from eight states. A similarly gratifying decline was seen in the number of tetanus cases (Figure 6), which reached an all-time low of 70 cases reported from 26 states.

Pertussis

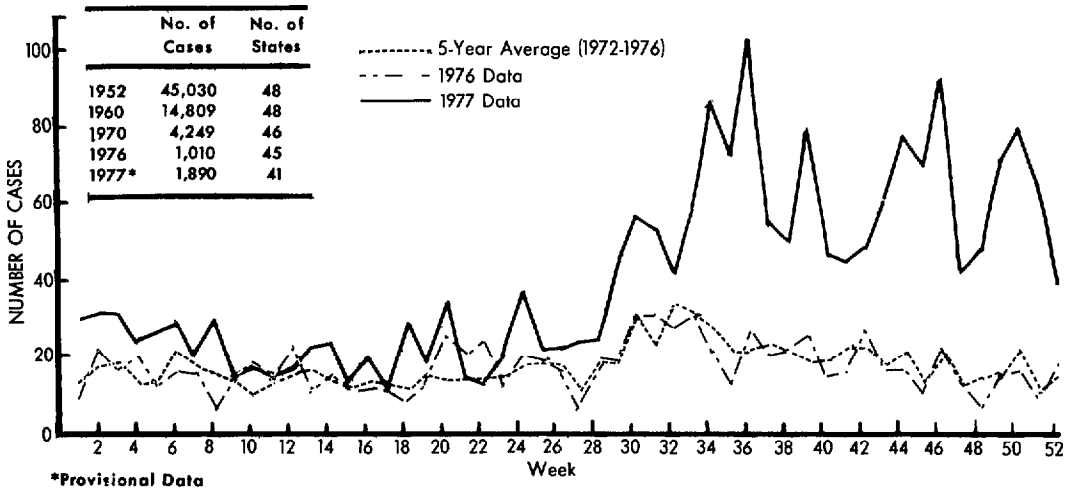
Pertussis incidence, on the other hand, proved mystifying. Although the level of pertussis reported in 1977 was considerably below that reported as recently as 1970, there was a substantial increase in 1977 as compared to 1976 (Figure 7); nor did the incidence curve follow its usual pattern by remaining fairly flat throughout the year. Instead there was a substantial and sustained increase in reported cases during the second half of the year. The reasons for this increase are not clear but could relate to

Figure 6. Reported tetanus cases in the United States, 1947-1977.



any or all of several factors: a truly increased rate of pertussis; wider availability of pertussis fluorescent-antibody diagnostic testing; and heightened awareness of the continued existence of pertussis in the United States. Articles on pertussis out-

Figure 7. Reported pertussis cases in the United States, 1976-1977.



breaks appeared in the Center for Disease Control's *Morbidity and Mortality Weekly Report* in weeks 31 and 37. The increase seen in the latter part of 1977 has continued into 1978.

Program Activities

One result of the increased financial support mentioned earlier has been a substantial upswing in vaccine administration in the public sector. Immunizations are being given at a wider variety of times and places than in the past, and the number of vaccine doses administered has increased substantially (Table 1). The magnitude of

these observed increases partly reflects diminished activity at the end of 1976, but it is clear that there has also been a significant rise in activity compared to previous levels. The relatively small increase in polio vaccine administration was probably due to a change in the number of recommended doses and the (temporary) shortages of polio vaccine suffered during the winter of 1976-1977.

One major change in the procedure for delivering immunizations in the public sector has resulted from the development of a series of forms explaining vaccination risks and benefits and from the requirements that these forms be used with all

Table 1. Number of vaccine doses administered under the auspices of public programs in the United States, 1976 and 1977.

	1976	1977	% Change
DTP	8,059,697	9,189,654	+ 14.0
Polio	7,785,551	8,342,342	+ 7.2
Measles	2,976,483	4,625,285	+ 55.4
Rubella	2,517,470	3,038,595	+ 20.7
Mumps	1,180,317	1,625,677	+ 37.7
Total	22,519,518	26,821,553	+ 19.1

federally supplied vaccines administered in settings other than a private physician's office. It is also required that the forms be signed, to show that efforts have been made to inform the participants. This new approach stems from two related factors: (1) a Departmental commitment to ensure that participants understand the benefits and risks of health procedures, and (2) a contractual assumption by the Department of the manufacturer's "duty to warn" the prospective vaccine recipient about the benefits and risks of vaccination. Although there has been concern that the presentation of risk information might scare people away, or that use of the forms might cause major administrative problems and thus impede service delivery, these have not been major problems to date.

A second substantial change—development of a nationwide vaccine reaction surveillance system—has not yet been fully implemented. This system is designed to detect serious medical events that might be related to vaccination. The trigger for reporting such events is the statement on each vaccine information form that "If the person who received the vaccine gets sick and visits a doctor, hospital, or clinic in the four weeks after vaccination, please report it to:_____." The local health department is responsible for identifying the person or place to which such events are to be reported. Information will then be forwarded to the national level using a standard format. A somewhat similar system was used during the swine influenza immunization program and was partly responsible for identifying the association between influenza vaccine and Guillain-Barré syndrome.

During the next two years, all states will review the immunization status of children in all grades of all schools. Some states have already completed this review. (In Missouri, for example, this assessment has already entailed review of the immunization status of more than 1 million children.)

Evaluation

One of the most challenging and frustrating parts of the whole program is evaluation. While the occurrence of disease is clearly an important evaluative tool, so many variables are involved that one must be careful in inferring cause and effect relationships between morbidity levels and program operations.

Surveys are an important means of evaluating immunization status. Each state has had experience with immunization status surveys of students at the time of school entry, and most have had experience with surveys of two-year-olds. Two-year-old surveys are typically carried out using birth certificates to construct the sample, and have customarily included questions relating to the number and type of immunizations received.

In addition, one of the most important tools available for evaluation work has traditionally been the U.S. Immunization Survey carried out by the Bureau of the Census each September. Summary results of the 1977 survey are presented in Table 2. Immunization levels (all antigens) in the 1 to 4 year age group declined slightly between September 1976 and September 1977. For the 5 to 9 year age group there was a slight decline in polio and DTP immunization levels, a slight increase in measles and rubella levels, and a substantial increase (4.7 per cent) in mumps levels.

Reflecting the major emphasis in the past year on outbreak control and immunization of those already in school, measles, rubella, and mumps immunization levels all increased in the 10 to 14 year age group. Although it would have been nice to see increases in all antigen levels among all age groups, we should not be discouraged by these results, which should be viewed as baseline data. In particular, it should be noted that the 1976 survey was carried out just before the swine flu program, during which there was some decline in childhood

Table 2. Reported childhood immunization levels, U.S. Immunization Survey, 1977.

	% with specified vaccine, by age group		
	1-4 years	5-9 years	10-14 years*
DTP (3 + doses)	69.5	76.0	74.0
DTP (0 doses)	3.3	1.6	2.0
Polio (3 + doses)	60.1	69.9	62.8
Polio (0 doses)	8.7	4.7	7.0
Measles	63.1	75.5	70.2
Rubella	59.4	70.5	63.5
Mumps	48.1	55.4	40.8

*Polio: 10-14 years; DTP, measles, mumps: 10-13; rubella: 10-12.

immunizations, and it took a while to catch up again.

As mentioned at the beginning of this presentation, most efforts of the first year of the initiative have been directed at reducing the backlog of unimmunized children. Now that we are well on our way toward that objective, we are turning our attention to the specific requirements of the initiative's second goal—to ensure that appropriate immunization levels will be maintained.

Clearly, immunizations are only one part

of the preventive health services needed by all our citizens. They are, however, among the easiest services to deliver and to measure. Consequently, the current unsatisfactory levels of immunization are a clear indication of how much needs to be done in this country to improve overall health status. Improvement of immunization levels is thus only a start toward ensuring that everyone receives the kind of preventive services that he or she needs, wants, and deserves, and that we, as a nation, can afford.

SUMMARY

In April 1977 the United States Government launched a major campaign to promote childhood immunization. Directed at seven diseases (diphtheria, tetanus, pertussis, measles, rubella, mumps, and poliomyelitis), the program has two goals: to immunize 90 per cent of all U.S. children against these diseases by October 1979; and to establish a permanent system providing comprehensive immunization services to the 3 million children born in the U.S. each year.

Disease incidence figures for 1977 have not shown any clear downward trend. Overall, the numbers of measles, rubella, pertussis, and poliomyelitis cases reported for 1977 exceeded the numbers reported for 1976, while declines were observed in the incidences of diphtheria,

mumps, and tetanus. However, there has been a significant rise in the number of vaccine doses administered through public programs, as well as a slight rise in the immunization levels of some age groups. There is no reason to expect that 1977 data would reflect major improvements, partly because the swine flu program caused some decline in childhood immunizations and it has taken a while to regain lost ground. Despite this, however, good progress is being made in reducing the backlog of unimmunized children, and the immunization program is now turning attention to its second goal—that of ensuring that appropriate immunization levels will be maintained.