

# Oral Poliovirus Vaccination Program in Central New York State, 1961

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A SEVERE EPIDEMIC of poliomyelitis occurred in upstate New York (New York State, exclusive of New York City) in 1916, when 4,215 cases were reported (19.2 per 100,000 population). Since then, poliomyelitis has been endemic, irregular, and rather unpredictable in incidence. In the period 1917–50, the annual incidence of all forms (paralytic, nonparalytic, and not stated) ranged from 1 to 68 cases per 100,000 population. In the early part of the period, most cases were probably paralytic. Later, the nonparalytic variety was better recognized. On the average, probably 55 percent of the cases reported in the 1940's and early 1950's were paralytic. During the past few years, again most of the cases reported have been paralytic because many cases previously called nonparalytic are now labeled aseptic meningitis. Paralytic cases are the best index of the disease. Reporting of paralytic cases is perhaps more complete, however, after 1954 than before.

In the 1940's and early 1950's, both the average age of the patients and the incidence in-

creased. Since 1955, with the widespread use of the inactivated poliovirus (Salk) vaccine, the annual incidence has fallen about 85–90 percent, using the 1951–53 average as a base. However, the fall has not been smooth but has shown the annual variability characteristic of the disease.

The experience of Syracuse and central New York with poliomyelitis goes back at least to 1916, when poliomyelitis struck Syracuse as it did all of the eastern United States. With a population of 160,000 in that year, Syracuse recorded 229 cases and 64 deaths. Evidence is available that many cases were missed and that only definitely paralyzed cases were recognized. Since then only 1918, 1919, and 1934 failed to show recorded cases of poliomyelitis. Sizable outbreaks with at least 100 cases occurred in 1924, 1930, 1944, and 1950.

## The 1961 Outbreak

The incidence of poliomyelitis declined greatly in Madison, Oneida, and Onondaga Counties after 1955 (table 1). Few cases were reported in these counties or in the upstate area through the first 7 months of 1961 (figure 1). The first intimation of an outbreak in 1961 was the report of three paralytic cases in Madison County on August 15. Two sporadic paralytic cases had been reported in Madison County earlier, but this was not considered unusual. On August 16, two more paralytic cases were reported. All were from four northern townships.

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To estimate the vaccination status of residents of the affected area of Madison County, a telephone survey of families selected at random from telephone books was conducted by an epidemic intelligence surveillance officer. The survey, completed August 23, provided information on 2,754 persons of an estimated population of 31,100. Eighty percent of children 0-4 years of age and 86 percent of those 0-19 years had had three or more doses of Salk vaccine.

It seemed unlikely that the percentage vaccinated could be increased appreciably. Use of the Federal stockpile of oral type 1 vaccine was therefore considered. Among the Federal requirements for use of the vaccine was identification of at least two cases as type 1 infection. One case had already been so identified. Pending identification of a second case, plans for administering type 1 oral vaccine were laid. State health officials held conferences with local health officers, practicing pediatricians, and county medical society officers. By August 24, a few paralytic cases had been reported from Syracuse City and two adjoining townships in Onondaga County, and Onondaga County was included in the plans.

At a meeting on August 25, the State Poliomyelitis Advisory Committee recommended use of the live oral poliovirus (Sabin) vaccine in three counties in central New York: Madison,

Oneida, and Onondaga, including Syracuse City. The epidemic area was delineated to include 1 township of 7,100 people in Oneida County, 4 townships with 31,100 people in Madison County, and 10 townships and the city of Syracuse in Onondaga County with a population of 434,400. The population in the outbreak area totaled 472,600. The outbreak area included less than 5 percent of the people and area of Oneida County, about half the population and one-third the area of Madison County, and about 93 percent of the population and a little over half the area of Onondaga County. The areas were contiguous and formed a band in central New York, with the Oneida County township at the eastern end and Onondaga County at the western end. Application was made immediately for 500,000 doses of type 1 live poliovirus vaccine. The application was approved forthwith and the vaccine was shipped promptly.

The description of the outbreak is limited to the paralytic cases; first, because paralysis is the only serious manifestation of poliomyelitis and, second, because reporting and laboratory study of the nonparalytic variety were incomplete.

Sixty-four cases of paralytic poliomyelitis, with three deaths, occurred in 1961 in those parts of the three-county area eligible for oral vaccine (table 2). The age distribution is not

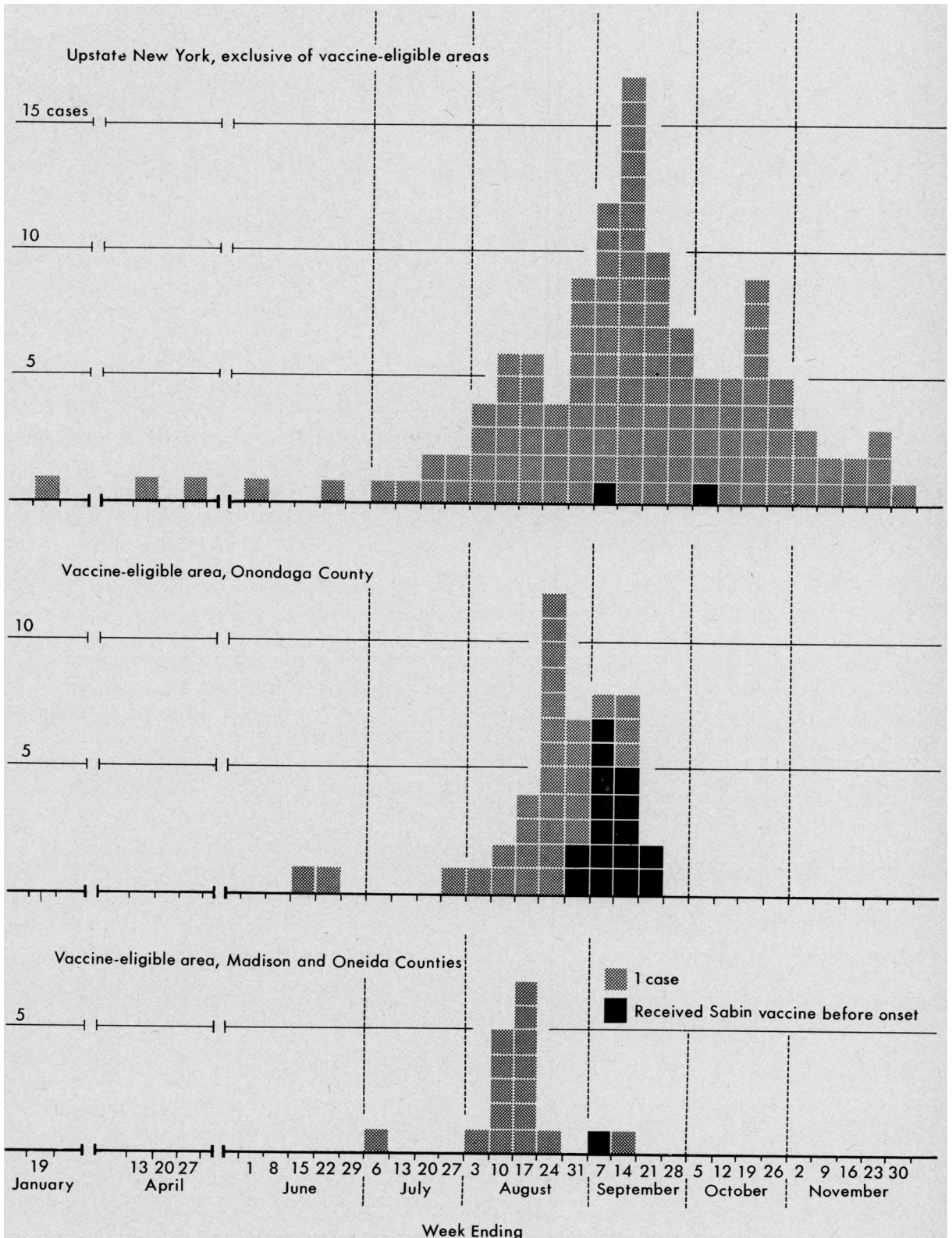
**Table 1. Reported cases of poliomyelitis, Madison, Oneida, and Onondaga Counties, and upstate New York, 1950-60**

Year	Madison County		Oneida County		Onondaga County				New York State, exclusive of New York City	
	All forms	Paralytic	All forms	Paralytic	Syracuse City		Remainder		All forms	Paralytic
					All forms	Paralytic	All forms	Paralytic		
1950	38	<sup>1</sup> 21	173	<sup>1</sup> 119	152	<sup>1</sup> 102	80	<sup>1</sup> 63	2,979	( <sup>2</sup> )
1951	7	<sup>1</sup> 2	18	6	23	10	25	<sup>1</sup> 15	1,038	564
1952	6	1	17	<sup>1</sup> 5	66	<sup>1</sup> 42	49	31	1,688	929
1953	17	16	49	36	40	23	42	33	2,304	1,353
1954	18	7	42	22	100	25	52	19	1,419	864
1955	16	8	39	18	32	22	46	28	1,808	868
1956	1	1	15	8	4	4	10	5	606	311
1957	3	3	3	3	3	0	5	2	139	69
1958	1	1	6	3	6	4	3	3	181	125
1959	1	1	12	8	4	3	5	4	339	276
1960	1	1	4	2	3	2	3	3	179	135

<sup>1</sup> Estimate.

<sup>2</sup> Not available.

**Number of paralytic poliomyelitis cases, by week of onset, upstate New York, 1961**



unusual. Only 9 (14 percent) of the 64 cases had had four or more doses of inactivated vaccine. Virus isolation was attempted for 38 of 70 patients with paralytic illnesses. Poliovirus type 1 was recovered from 26, 6 were negative, and other enteric viruses were found in 6 more. These last six cases are not included in the detailed analysis because of the likelihood that the disease was not due to poliovirus. However, since virus isolation from the feces is not definitive, details on these cases are given in table 3 for the reader who wishes to include them with the poliomyelitis cases. All but one of these patients had had four or more doses of inactivated vaccine.

The concentration of poliomyelitis cases geographically and the incidence rates were as follows:

Area	Number of cases	Rate per 100,000 population
Madison County (eligible area)---	15	48
Oneida County (eligible area)-----	2	28
Syracuse City-----	34	16
Rest of eligible area of Onondaga County -----	13	16

**Table 2. Paralytic poliomyelitis cases and deaths,<sup>1</sup> vaccine-eligible areas of Madison, Oneida, and Onondaga Counties, N.Y., 1961**

Age (years)	Total	Doses of inactivated vaccine					
		5	4	3	2	1	0
All ages-----	64(3)	1	8	12	11(1)	6	26(2)
0-5-----	25	1	1	6	4	3	10
5-14-----	17(1)	0	5	4	3(1)	1	4
15-39-----	17(1)	0	1	2	4	2	8(1)
40 and over-----	5(1)	0	1	0	0	0	4(1)

<sup>1</sup> Figures in parentheses show the number of deaths.

**Table 3. Cases of paralytic disease considered not due to poliovirus, vaccine-eligible areas of Madison, Oneida, and Onondaga Counties, N.Y., 1961**

Address	Age	Sex	Doses of inactivated vaccine	Date of onset	Paralysis 60 days after onset	Virus in stool
Madison County-----	2 yr-----	F	4	Aug. 16	Minor-----	Coxsackie A23
Oneida County-----	4 yr-----	M	4	Aug. 21	Minor-----	Coxsackie A
Oneida County-----	8 yr-----	M	5	Aug. 23	None-----	Coxsackie A
Oneida County-----	8 yr-----	F	5	Aug. 22	None-----	Coxsackie B5
Syracuse City-----	19 mo-----	F	1	Aug. 24	None-----	ECHO 10
Onondaga County-----	28 yr-----	F	4	Aug. 19	None-----	Coxsackie B5

Analysis of the protection afforded by inactivated vaccine in Syracuse was made possible by a survey in November 1961 of the vaccination status of the population as of August 1961. The attack rates of paralytic poliomyelitis in that city before oral vaccine was used are shown in table 4. The rates are not stable because of the small numbers, but they indicate vaccine effectiveness comparable to that reported nationally year after year.

#### Administration of the Program

The oral vaccination program was directed by the local full-time health officers in the area: Dr. David E. Bigwood, Jr., Syracuse City commissioner of health; Dr. Evelyn F. H. Rogers, Utica District health officer; and Dr. William G. Hafner, Syracuse District health officer. Dr. Eldon R. Westman, Watertown District health officer, was regional coordinator. Consultants from the State department of health were designated for technical advice, public education and publicity, and administrative management.

A precampaign planning meeting was held in Syracuse on Saturday, August 26. It was

attended by the staffs of the three health jurisdictions, representatives from the State health department's offices of epidemiology, public health education, and planning and procedures, the associate commissioner, and representatives from the Upstate Medical Center at Syracuse. Decisions were made on (a) time and dates of the vaccination program; (b) population groups eligible for vaccination; (c) preparation and distribution of the vaccine; (d) procurement and distribution of equipment and supplies; (e) establishment of communications and preparation and distribution of public information and publicity; and (f) recruitment of staff, including volunteers.

Public poliovirus vaccination clinics were conducted August 29 through August 31 in each of the three health districts. Live vaccine was also distributed for special clinics in industries, large commercial establishments, hospitals, and other institutions. In addition, physicians agreed to vaccinate 100 or more persons without charge in their private offices. More than 34,000 doses of oral poliovirus vaccine were used at these special clinics and in physicians' offices. In all these, assurance of registration of persons vaccinated and submission of reports was required.

For operation of the program in Madison and Oneida Counties (Utica District), a central area office was set up in the city of Oneida. Seven clinic locations were used to administer the vaccine, one in each of the villages and one in Oneida. Six of the clinics were in schools, and one was in an armory.

In Syracuse and Onondaga County, the program was decentralized, with clinics set up in

district schools selected with accessibility in mind and so distributed to permit broad geographic coverage. The principal factor limiting the number of schools was the availability of staff.

Plans for the vaccination program designated persons under age 50 as eligible for the vaccine, but it was acknowledged that it would not be wise to exclude anyone because of age. Consent cards and registration were required for everyone.

The vaccine was received by Dr. Harry A. Feldman, professor of preventive medicine, Upstate Medical Center. It was stored at the center and prepared by dilution for distribution to the clinics. For the Utica District a local hospital provided both freezer and cooler space for storage of the vaccine used in that area.

Orders for materials and supplies were sent to the Syracuse regional office, placed with local suppliers, and distributed from the regional office to the clinic locations.

The Syracuse regional office was the general communications center for the vaccination campaign. Reports from clinics were telephoned in at least daily. The press and other news media were informed on the progress of the campaign. Public information, publicity material, news releases and special campaign promotional materials prepared by the State health department's office of public health education were distributed from the regional office.

The staffs of each of the local health jurisdictions were used in the clinics by assignment for out-of-duty hours. The function of physicians was limited to direction and supervision of the program. Public health nurses were

**Table 4. Incidence of paralytic poliomyelitis in Syracuse City, by age and by doses of inactivated vaccine, January–August, 1961<sup>1</sup>**

Age (years)	No doses		3 doses only		3 or more doses		Percent effectiveness	
	Number of cases	Rate per 100,000	Number of cases	Rate per 100,000	Number of cases	Rate per 100,000	3 doses only	3 or more doses
0-4	4	171	3	50	3	22	71	87
5-14	2	84	1	10	2	7	88	92
15-39	2	9	0	-----	1	2	100	74

<sup>1</sup> Excludes 6 persons with Coxsackie or ECHO virus isolations.

available in sufficient numbers to permit one to be in charge of each of the public vaccination centers at all times. Sanitarians and inspectors provided the supply services. Health educators worked in cooperation with colleagues from the State health department on public educational activities and general publicity. The office staffs took care of procurement of supplies (exclusive of the vaccine), processed messages from the field, accumulated reports, and prepared summaries of work accomplished.

Professional volunteers were recruited from among the medical and nursing professions. The physicians were available to take care of medical emergencies and to assume professional responsibility for operation of the vaccination centers. The nurses reinforced the staff of the official agencies.

The Syracuse City Department of Health recruited volunteers through the local Volunteer Center and the Red Cross chapter for Syracuse and Onondaga County. The county nursing services in Madison and Oneida Counties recruited volunteers in these areas, many of the volunteers coming from outside the epidemic area.

### **Public Education Activities**

Newspaper, radio, and television publicity was given to new cases of poliomyelitis as they occurred, with accounts of severely paralyzed patients and the three deaths. This publicity resulted in considerable public concern about the outbreak.

"Get Protected Fast" was adopted as the slogan of the publicity campaign.

Since publicity alone may not motivate people to be vaccinated, efforts were made to involve as many community groups as possible in the program. Volunteers were recruited to assist at the clinics, transport the vaccine to the clinics, put up posters, distribute literature, and perform office and clerical duties. In addition, many community agencies endorsed the campaign and encouraged their member families to take the vaccine.

Business concerns tied in the campaign information messages with their advertisements or distributed campaign literature to their customers. Milk dealers put special campaign

collars on the milk bottles urging their customers to take the Sabin vaccine. The power and light company enclosed leaflets in their mailings. In Madison and Oneida Counties, throw-away flyers were distributed by Boy Scouts and through the rural post office delivery.

Another important contribution to the success of the campaign was the cooperation from leaders of all religious faiths. Announcements were made on the Sunday preceding the campaign in almost all churches in the area.

Letters were sent jointly by the health departments and county medical societies to all physicians in the area outlining the campaign, giving details about the Sabin vaccine and the vaccination program in advance of any newspaper publicity so that physicians would be prepared to answer the questions raised by their patients.

A press conference was held to inform the newspaper correspondents about the program and to answer their questions. A press statement was sent to all newspapers and radio and television stations in the area to advise those not present at the press conference.

News reporters were helped to develop their stories factually and completely. Interviews, conferences, pictures, films, and tape recordings were arranged. Headlines and front page coverage were generously given to reporting the large numbers receiving the vaccine.

Daily press statements were prepared and telephoned to the papers and the radio and television stations. These statements gave the number of new cases reported, the number of vaccinations performed, and other matters of interest. Two additional telephones were provided in the regional office for prompt handling of press inquiries. Special feature stories and special campaign events such as the vaccination of Miss New York State Fair were encouraged and publicized. Registration forms were published in the newspapers and large numbers of these were used by persons requesting the vaccine.

The single source of information to the press and to the public was of the utmost importance in this campaign in which many people had important functions to perform. The single source sped the story to the press and coordinated information from all those carrying on the vaccination campaign.

Informational materials included a list of the locations of vaccination centers. A factsheet which answered most of the questions thought likely to be asked about the vaccination program was prepared in large numbers and distributed widely to those responsible for promoting and conducting the vaccination program. Its purpose was primarily to assure that everyone would be communicating the same facts and messages about the campaign.

The pressroom was located next to the regional coordinator's office to provide ready access to the administrative data coming to the coordinator and easy transmission of reports from the pressroom to him. This proximity helped to avoid communication difficulties and helped considerably in the conduct of the information and education phases of the campaign.

#### Technical Aspects of Vaccination

The vaccine dose was three drops per person except for infants under 6 months who were given five drops. Any method of oral administration was acceptable: directly into the mouth, on loaf sugar, or in water.

The brochure enclosed in the package of vaccine was used as the authoritative source of technical information about the vaccine in order to avoid conflicting statements. This brochure was supplemented with facts concerning penicillin sensitivity, so that physicians could give the best possible advice if patients requested such information.

Other technical questions concerned the incidence of reactions to vaccination and the efficacy of the vaccine. The vaccine was considered safe and was accepted as such. It is impossible to evaluate reactions except in a controlled trial. Since this was not a controlled trial but an attempt to control poliomyelitis, it was not feasible to determine the incidence and kinds of illness due to vaccine.

However, in order to learn whether or not serious immediate reactions were occurring, clinics were asked to report reactions to the regional coordinator. No reports of serious immediate reactions were received. Since patients outside Syracuse City were not screened for penicillin sensitivity, many persons sensitive to

penicillin must have taken oral vaccine without such reactions. The lot of vaccine used was said to contain up to 4 units of penicillin in each three-drop dose.

In Syracuse, persons sensitive to penicillin were referred to a special clinic held September 1. About 2,000 people came to this clinic, of whom 200 or so gave a history of reaction to parenteral penicillin. All were vaccinated without immediate incident. About six persons with a history of reaction to oral penicillin were turned away.

**Table 5. Number of persons receiving oral vaccine, by clinic site, Madison, Oneida, and Onondaga Counties, N.Y., 1961**

Clinic site	1961 population <sup>1</sup>		Number recorded as vaccinated <sup>2</sup>
	All ages	Under 50 years	
Madison County	31, 100	23, 800	34, 300
Oneida County	7, 100	5, 300	17, 600
Onondaga County (including Syracuse City)	434, 400	333, 000	304, 100
Total	472, 600	361, 100	356, 000

<sup>1</sup> In vaccine-eligible areas. Estimated and rounded to nearest 100.

<sup>2</sup> Based on written request forms ("consent slips"). Includes nonresidents. Rounded to nearest 100.

**Table 6. Acceptance of oral vaccine by residents of vaccine-eligible area of Onondaga County, N.Y., by age, 1961**

Age (years)	1961 population <sup>1</sup>	Receiving oral vaccine <sup>2</sup>	
		Number	Percent
All ages	434, 430	275, 100	63. 3
Under 50	333, 041	253, 700	76. 2
Under 4	51, 685	40, 700	78. 3
5-9	44, 884	41, 600	92. 7
10-14	37, 710	35, 800	94. 8
15-19	29, 490	22, 800	77. 5
20-29	53, 606	36, 100	67. 3
30-39	62, 161	41, 500	66. 8
40-49	53, 505	35, 200	65. 9
50 and over	101, 389	14, 000	13. 8
Unknown		7, 400	

<sup>1</sup> Estimated.

<sup>2</sup> Based on 2 percent sample of consent cards.

## Results of the Campaign

In terms of the proportion of the population receiving the vaccine, the vaccination program was highly successful. According to a count of the individual consent cards, 356,000 persons, including persons over age 50 and nonresidents, were given the vaccine (table 5). A 2 percent sample of the records from the clinics in Onondaga County (including Syracuse City) was studied to determine acceptance of the vaccine by residents by age group. This study (table 6) and a survey of a sample of 1,734 persons in different social strata in Syracuse City conducted November 7-9, 1961, by the Syracuse City Health Department with the technical assistance of the Communicable Disease Center (table 7), showed that the great majority of the population under 40 years of age took the oral vaccine.

The effects of the campaign on the course of the outbreak are more difficult to assess. The distribution of cases by week of onset (see charts) suggests that the vaccine was given in Onondaga County at or slightly after the peak, and the outbreak was over in a few weeks. In contrast, the incidence in upstate New York continued, although at a decreasing pace. In Madison and Oneida it would seem that the outbreak was well on the wane when the oral vaccine was given.

**Table 7. Acceptance of type 1 oral vaccine in Syracuse City, N.Y., by age and socioeconomic classification, as determined by survey, Nov. 7-9, 1961**

Age and socioeconomic classification	Percent vaccinated
3 months-4 years:	
Upper.....	100
Middle.....	91
Lower.....	88
5-14 years:	
Upper.....	94
Middle.....	93
Lower.....	97
10-39 years:	
Upper.....	85
Middle.....	84
Lower.....	82

SOURCE: Reference 2, table 6.

Poliomyelitis cases occurred in 17 residents of the epidemic area and in 2 other persons who had taken oral vaccine. The intervals between vaccination and date of onset of those in the epidemic area were as follows:

Days	Number of cases
1.....	3
2.....	1
3.....	3
5.....	3
9.....	1
10.....	1
14.....	2
15.....	1
18.....	1
19.....	1

The two persons from outside the epidemic area received the oral vaccine 1 day before onset. Also, two cases of poliomyelitis occurred in families of persons vaccinated although the patients themselves had not received vaccine. The vaccine was taken 9 days and 13 days before onset of illness.

It is impossible to assert the reason for the association between oral vaccine and development of poliomyelitis in any single case. Considering the cases as a whole, the intervals suggest that the vaccine failed to prevent poliomyelitis rather than that the vaccine caused poliomyelitis. The interval was so short in some patients that they must have been incubating infection with a wild strain. Even in those cases with longer intervals, one could postulate either that they too might have been incubating a wild infection or that for some reason the vaccine did not prevent infection by a wild strain. No one expects 100 percent effectiveness from any vaccine, including the oral poliovirus vaccine. Stool specimens were taken on many of these patients, but the laboratory studies have not yet been completed.

As the outbreak progressed in Syracuse City and those parts of Onondaga County in which oral vaccine was used, it tended to affect older persons. Of 24 patients with onset before August 29, only 7 were adults (20 years of age or older). Of 18 patients with onset September 1 or later, 10 were adults. To complete the story, two of five patients with onset August 29-31 were adults. (Patients with Coxsackie or ECHO virus isolation are not included here.)



The relative increase in adults is not surprising because the proportion of the adult population vaccinated, with either inactivated vaccine or live vaccine, was smaller than the proportion of children. Such a trend has been observed in other outbreaks. Moreover, there is some reason to believe that both vaccines may be less effective in adults.

The public response to the vaccination program is one measure of the effectiveness of the publicity efforts, although of course the response cannot be credited entirely to these efforts. Additional clues to the success or failure of this phase of the campaign were obtained from a survey in Syracuse by a social scientist of the Public Health Service and from informal sampling of public opinion by program participants. These sources indicated that:

1. The public was well informed about the epidemic, the need for protection, and how and where to obtain the vaccine. There did exist some confusion, however, about allergy to penicillin, the relation between Salk and Sabin vaccines, the first signs of poliomyelitis, and what parents should do.

2. Newspapers and radio were the principal sources of information. There were indications that the effect of the mass media was less pronounced among certain population groups.

3. The desire to protect oneself and one's children against the disease and the wish not to be a possible source of infection to others were the most effective motivating forces.

4. Factors mitigating against taking the vaccine included (a) disbelief that there was a real epidemic, (b) irritation at having to wait in line for the vaccine, and (c) belief that three or four doses of Salk vaccine were sufficient for protection against poliomyelitis.

## Discussion

The incidence of paralytic poliomyelitis in the United States and in New York State has fallen to a record low. In spite of the general decline, local outbreaks can occur. The vaccination rate with inactivated vaccine in Syracuse was similar to that of the United States (1,2).

What does oral vaccine have to offer in control of outbreaks? In the outbreak described here, the oral vaccine seems to have had more

striking effect than the inactivated vaccine in that no paralytic cases occurred after 3 weeks after the vaccination program. The oral vaccine was well accepted by children and by young adults in all socioeconomic classes (table 7). It was easily administered from the point of view of mechanics of feeding an individual, although because of the numbers involved, the program was no small task for the health departments.

If oral vaccine is used only to halt an outbreak, a number of cases may occur before the outbreak is recognized and before the vaccine is used. The oral type 1 vaccine either did not cause neuromyolytic reactions or any such behavior was overshadowed by its protectiveness. However, it is difficult to distinguish between vaccine failures and vaccine-induced disease. The optimum time for routine use of oral vaccine is the winter, when natural poliomyelitis is rare.

This vaccination campaign proved the ability of State and local public health workers to mobilize quickly and carry out harmoniously an effective public health program. With 2 days for planning and procuring necessary facilities, personnel, and supplies and 3 days for conducting the vaccination program, it was possible to vaccinate more than 350,000 people at 36 public vaccination centers and other locations in three counties.

The intensive publicity resulted in getting people "talking." Out of this talking about the outbreak and from observations made while helping with the promotion and conduct of the vaccination campaign came the understanding and motivation which led so many of the people to take the vaccine. The "talking" engendered by the publicity even reached and motivated many who had not read the papers or listened to the radio. Newspapers and radio seemed to have a greater impact than did television.

The concern fostered by the intensive publicity campaign was met by making free Sabin vaccine quickly and conveniently available to everyone in the outbreak area.

## Summary

An outbreak of type 1 poliomyelitis occurred in Madison, Oneida, and Onondaga Counties in central New York State in August and September 1961. Parts of these three counties were

designated to receive type 1 oral poliovirus vaccine. The population of the vaccine-eligible area was 472,600, of whom 361,100 were under 50 years of age.

Seventy cases of paralytic disease occurred in the epidemic area. Poliovirus type 1 was isolated from 26, a Coxsackie or ECHO virus from 6, and from 6 no virus was recovered. Virus isolation was not attempted in the remainder.

Inactivated poliovirus (Salk) vaccine did not prevent the outbreak although incidence was appreciably lower in those who had had at least three doses. Only 9 of the 64 patients (excluding those with Coxsackie or ECHO virus) had as many as four doses of inactivated vaccine.

Type 1 oral poliovirus vaccine, meant for residents of the epidemic area under 50 years of age, was administered to 356,000 people. Practically all of the vaccine was given August 29-31. Some of the recipients were nonresidents, and some were over age 50. At least 76 percent of the resident population under 50 years of age took oral vaccine.

No serious illnesses unquestionably due to oral vaccine were reported. Seventeen cases of paralytic poliomyelitis in the epidemic area had

onset 1-19 days after the patients had received oral vaccine. The intervals suggest that these cases were not due to the vaccine. The patients were primarily adults.

The oral vaccine was given when the outbreak was on the decline in Madison and Oneida Counties. In Onondaga County (including Syracuse City), it was given at or immediately after the peak. No cases of paralytic poliomyelitis in the oral-vaccinated occurred more than 3 weeks after vaccination. While experience with the course of outbreaks in the post-Salk era is limited, it is likely that the rather abrupt decline in paralytic poliomyelitis in Onondaga County was due to oral vaccine.

The episode proved the ability of State and local public health workers to mobilize and carry out an effective poliomyelitis vaccination scheme with the assistance of volunteers.

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## Commissioner of Welfare

Dr. Ellen Winston assumed her duties as Commissioner of the newly established Welfare Administration in the Department of Health, Education, and Welfare on January 28, 1963. She was State commissioner of public welfare in North Carolina for 18 years and has been president of the American Public Welfare Association. She has written several books and many articles on aspects of public welfare.

A native of Bryson City, N.C., she graduated from Converse College in South Carolina and received a Ph.D. in sociology from the University of Chicago in 1930.

As Commissioner of Welfare, Dr. Winston directs the Bureau of Family Services, the Children's Bureau, the Office of Aging, the Cuban Refugee Program, and the Office of Juvenile Delinquency and Youth Development.