

New Jersey's Action Program to Prevent Poliomyelitis

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NEW JERSEY experienced a relatively high incidence of paralytic poliomyelitis during 1958. There were 266 cases of illness and 10 deaths due to the infection reported to the State department of health (1). The number of paralytic cases increased more than six-fold, from 29 in 1957 to 186 in 1958. One hundred and nineteen of the paralytic cases were confirmed by laboratory isolation of poliomyelitis virus. Among those affected by paralytic poliomyelitis, 35 percent were under 5 years of age. Another 21 percent were 5 through 9 years of age. Less than 10 percent of all persons with paralytic disease had received three inoculations of Salk vaccine.

Planning

In January 1959 representatives of state-wide medical, health, nursing, educational, and parent-teacher organizations met to consider means of achieving widespread poliomyelitis immunization among those groups who lacked the protection provided by poliomyelitis vaccine.

At the meeting it was reported that the Medical Society of New Jersey was considering a resolution urging all of its component county medical societies to encourage local boards of

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education and other educational systems to require poliomyelitis immunization as a prerequisite for admission to school.

A number of representatives stated that there would be little purpose in stimulating demand for immunization unless facilities and vaccine were available to provide the immunizations.

Representatives of the National Foundation reported that when a public clinic is conducted, the general demand for immunization rises. The fact that children are being vaccinated in one situation influences many parents to seek poliomyelitis immunization for their children from family physicians.

Representatives at the meeting endorsed four proposals:

1. The Medical Society of New Jersey resolution encouraging poliomyelitis immunization as a prerequisite for admission to school.

2. Cooperative surveys to determine the status of poliomyelitis immunization, particularly in low socioeconomic groups.

3. Aggressive poliomyelitis immunization programs planned cooperatively by health departments, medical societies, and community agencies.

4. Expansion of existing local health department immunization programs in areas of medical indigency.

A second meeting was held in February 1959 to consider a plan to survey the poliomyelitis immunization status of persons in selected New Jersey communities. The proposed plan was designed to define local problems clearly so that positive action would be taken to immunize as many members of susceptible groups as possible

prior to the 1959 poliomyelitis season. It stated that local health departments would be responsible for immunization programs in areas where studies revealed incomplete immunization associated with medical indigency, and that the State department of health would provide vaccine for the medically indigent within the limitations imposed on the department by law.

Surveys were suggested for Newark, Jersey City, Paterson, Elizabeth, Bayonne, Hoboken, Trenton, Camden, and Atlantic City because in these cities a significant proportion of the population fell in the low socioeconomic group. Several of the cities had a high incidence of paralytic poliomyelitis during 1958.

It was recommended that the need for and methods of survey be discussed with the representatives of the local medical societies and with the local health officials of the cities under consideration.

Completed Plan

In a subsequent meeting representatives of the State department of health and the Medical Society of New Jersey considered the survey procedures and agreed on the following actions:

- Local health departments in cooperation with appropriate county medical societies determine areas of incomplete immunization associated with low socioeconomic status and medical indigency.
- Local health departments establish and medical societies assist in staffing facilities for administering poliomyelitis immunization to nonimmunized persons up to 20 years of age.
- The services of the immunization facilities be limited solely to residents of those areas defined as medically indigent by the health department and the medical society.
- Persons living in the defined areas be persuaded to utilize immunization services through organized community effort.

Local Action

District State health officers met with local medical societies to discuss the background, planning, and technique of the poliomyelitis immunization survey. Immediate cooperation was assured by the county medical societies.

The surveys were then discussed with the

local health officers. Planning meetings were held in each community to determine a course of action. The methods and results which follow reflect the ingenuity, initiative, and ability of the health professions in New Jersey to tailor action to meet specific needs.

Newark

During the 1958 New Jersey epidemic Newark experienced an unusual incidence of 43 paralytic cases. The Newark Division of Health in cooperation with the State department of health and the Communicable Disease Center of the Public Health Service undertook to determine the extent to which selected persons living in Newark had been immunized against poliomyelitis. In a most unusual response during the outbreak in mid-August the nurses of the bureau of child health and the Visiting Nurse Association conducted in 1 week a survey covering more than 8,000 persons. At that time, approximately 30 percent of children between 5 and 14 years and 50 percent of children under 5 years of age had not received Salk vaccine.

An intensive campaign was initiated, reaching every area of the community, so that by the end of 1958 more than 50,000 inoculations had been given in public and parochial schools, at city "baby keep well stations," in the division of health clinics, and in adult clinics throughout the city.

Inspectors of the Newark Division of Health visited approximately 3,500 families in the latter part of 1958. They surveyed all persons under 19 years to determine how many had been inoculated and the number of injections they had received. Those with no protection or with an incomplete series of inoculations were urged to obtain immunization. They were referred to private physicians, clinics, or the city's division of health.

Early in January 1959 the Newark Board of Education adopted a resolution that every pupil newly enrolled after January 31 of that year be required to have received at least one inoculation against poliomyelitis as a prerequisite of attendance at school.

When the plan for survey was presented to the Newark Division of Health in the spring of 1959, Newark elected to use the method of the

preceding summer and fall. A door-to-door survey to reach more than 7,000 families totaling approximately 28,000 persons in 12 housing projects was proposed. Techniques were planned to record all persons who were still in need of immunization and to persuade them to attend scheduled immunization clinics.

Starting in April, personnel of the city's bureau of communicable disease control visited 4,815 families, 2,520 distributed among all socioeconomic levels of the city and 2,295 in low-income housing projects. As a result, a total of 7,692 persons through 18 years of age either had or obtained a complete series of Salk vaccine injections. In midsummer more than 2,000 persons in these families still had received no Salk vaccine.

From April, when the survey started, through December, 83,818 cc. of vaccine were administered in the concurrent immunization program of the Newark Division of Health.

Jersey City

An immunization survey, undertaken in Jersey City in 1958, revealed that approximately 50 percent of children in the age group 5 through 14 years had not received Salk vaccine. It further revealed a remarkably low level of poliomyelitis immunization in adults. During and following the 1958 epidemic, demand for poliomyelitis immunization increased so that by the end of 1958 more than 12,000 inoculations had been given in city child health conferences.

When city health officials were approached in 1959 concerning a new study of immunization in Jersey City, there was an immediate affirmative response. The health department decided to survey seven low-income and one middle-income housing projects.

In a survey of 2,860 persons, principally in low socioeconomic areas, it was found that only 32 percent had completed a series of Salk inoculations. Increased immunization activity resulted, and more than 11,000 inoculations were given through the middle of July 1959.

Elizabeth

In April 1959 the Elizabeth Health Department initiated action to determine the protection level against poliomyelitis and to pinpoint

those groups in the population which had not been reached. Representatives of the Union County Medical Society, Tuberculosis and Health League, National Foundation chapter, council of parents and teachers, and representatives of the public schools were concerned that surveys in other parts of the country had demonstrated there were many unvaccinated persons in lower socioeconomic groups. The survey committee selected for intensive study a definite geographic area containing approximately 45 percent of the city's population, including the low socioeconomic groups and the medically indigent. Selection was based on 1950 census tract information, a planning board report, and a communicable disease control spot map. It was decided the survey would be limited to a study of the poliomyelitis immunization records of the 12 public elementary and junior high schools, 10 parochial schools, and 6 "baby keep well stations" located in the selected area.

Study of school immunization records showed a direct correlation between the percentages of students with less than three injections and low-income areas. In high-income sections, with a total school enrollment of more than 4,300 students, 76 percent had received at least one injection. In the low-income sections, with enrollment of about 6,000 students, only 59 percent had received at least one inoculation. In view of these findings, it was readily agreed that an intensified vaccination program be established.

A group of approximately 100 volunteers contacted approximately 1,500 families whose members included approximately 2,200 children under the age of 5 years. The immunization campaign reached 1,681 children who received a series of two injections and 220 children who were given their third injection.

A total of 3,012 inoculations were given in the public schools and 1,096 inoculations in the parochial schools. Immunization records indicate that 83 percent of students in the parochial schools are now triply vaccinated (2).

Paterson

When a poliomyelitis immunization survey was proposed in Paterson, it was learned that

the Passaic County Medical Society, together with the Passaic County Chapter of the National Foundation, had initiated a county poliomyelitis vaccine committee in 1957. The committee comprised representatives of labor, industry, health, pharmacy, education, and the main religious groups. In the spring of 1959, recommendations of the Public Health Service that immunization programs throughout the United States be stepped up stimulated the committee to action.

When the State department of health suggested a census of the children who had not been immunized, the local director of the civil defense organization offered the services of his group to canvass the county. The canvass gathered information concerning poliomyelitis immunization and data for civil defense and disaster control. This technique provided a great stimulus stirring thousands of persons to action.

More than 20,000 poliomyelitis vaccine inoculations were given. Eighty percent were first or second doses because beginning inoculations were emphasized.

Cooperating in the campaign were more than 130 doctors who volunteered their services, the boards of health in 16 municipalities who assisted, and the county's hospitals where ap-

proximately one-fifth of the inoculations were given. The local civil defense organization, in assuming a new function, set a precedent in community preventive action.

Northern State Health District

The Northern State Health District, consisting of Hunterdon, Morris, Somerset, Sussex, and Warren Counties, undertook a survey of general immunization requirements in the school districts of the five counties and the poliomyelitis immunization status of children enrolling for school in September 1959.

This survey included 119 municipalities in an area that is predominantly rural but is spotted with growing urban and suburban areas. Although 115 municipalities required smallpox vaccination for admission, only 31 required one or more inoculations of poliomyelitis vaccine.

Ninety-seven percent of the 11,168 students scheduled to enter school in September had complied with the smallpox requirement in July. School records on poliomyelitis immunization were incomplete because it was not a prerequisite for admission to school. However, 5,142 children were recorded as meeting poliomyelitis immunization requirements. This accounts for 54 percent of the entering

Table 1. Percent of persons through 39 years of age, uninoculated or triply inoculated, by socioeconomic group, poliomyelitis immunization surveys of selected New Jersey cities, 1959

City	Socioeconomic groups ¹											
	Total			Upper			Middle			Lower		
	Total number	Uninoculated	Three inoculations	Total number	Uninoculated	Three inoculations	Total number	Uninoculated	Three inoculations	Total number	Uninoculated	Three inoculations
Total	7, 279	45. 0	36. 3	524	20. 0	67. 0	3, 976	43. 4	37. 5	2, 779	52. 5	26. 0
Atlantic City	451	28. 3	62. 7	67	12. 0	77. 6	295	28. 1	62. 0	89	43. 8	53. 9
Bayonne	684	48. 4	30. 2	13	54. 0	23. 1	358	47. 2	34. 2	313	49. 6	25. 9
Camden	3, 804	49. 5	28. 6	77	37. 7	53. 4	2, 228	47. 2	31. 2	1, 499	53. 5	23. 4
Hoboken	589	35. 0	37. 0	63	28. 6	55. 5	222	25. 1	51. 7	304	55. 0	22. 4
Trenton	1, 751	40. 2	43. 0	304	13. 8	72. 0	873	42. 0	43. 0	574	52. 0	29. 7

¹ Households were assigned to a socioeconomic group on the basis of number of persons per room and the educational level of the head of the household. Households were scored as follows: 2 points for 0.74 persons per room, 1 for 0.75-1.24, and 0 for 1.25 or more; 2 points for 1 year of college or more or other formal training after high school, 1 for 7-12 grades, and 0 for 6 grades or less. A combined score of 4 points equaled the upper group, 3 or 2 points, middle group, and 1 or 0, the lower group.

first grade students, and is probably lower than the actual number.

Other Cities

Sampling surveys were undertaken in Hoboken, Bayonne, Trenton, Camden, and Atlantic City. While the organizations conducting the surveys varied, nevertheless there was a relative uniformity in technique. In each area, persons familiar with the local characteristics assisted in the definition of areas of high, middle, and low socioeconomic status.

The Hoboken Health Department nursing staff planned and conducted the survey under the guidance of the health officer and personnel of the State department of health.

In Camden, city health department nurses and other personnel of the department carried out the survey.

In Bayonne, the Visiting Nurse Association, under the guidance of its nursing director, sampled the community's immunization status.

In Trenton, a citizens' health committee fostered the survey and subsequent immunization campaign.

Finally, in Atlantic City volunteers of the National Foundation made the survey possible.

The results of sampling surveys in selected cities are presented in table 1. Information was obtained on a total of 7,279 persons. The sample is heavily weighted by persons in the middle and lower socioeconomic groups. Only 524 persons were sampled in the upper socioeconomic group. In the entire sample, approximately 43 percent of persons in the middle

socioeconomic group and 53 percent of persons in the lower socioeconomic group have had no Salk vaccine. Approximately 37 percent of the middle group and 26 percent of the lower socioeconomic group had completed the basic series of three inoculations.

Table 2 indicates the percentage of persons in the samples having three inoculations by age group, in the selected cities and Jersey City. This table is biased in the direction of the middle and low socioeconomic groups.

Generally, approximately 50 percent of the population sampled in the 5-14 age group has been completely protected. Only 28 percent of children under 5 years and 20 percent of persons between the ages of 15 and 39 have been completely protected. The highest levels of complete protection were found in Atlantic City and Trenton in the 5 to 14 age group.

While these figures are selective and contain bias, nevertheless, they serve to reveal quite dramatically conditions existing in the spring of 1959 in New Jersey. They highlight the continuing need for complete protection in the 5 to 14 age group and emphasize the need for starting and completing the series of inoculations for children under 5 years.

Effects of Surveys

Conducting the surveys, the survey findings, newspaper publicity, the activity of professional organizations, visiting of homes, and the neighborhood impact served to stimulate widespread immunization. Cities surrounding major sampling areas undertook surveys of their own (3,4). This multiplying effect was antici-

Table 2. Percent of persons triply inoculated, poliomyelitis immunization surveys of selected New Jersey cities, 1959

Age group (years)	All cities			Atlantic City	Bayonne	Camden	Hoboken	Jersey City	Trenton
	Number surveyed	Number with three inoculations	Percent with three inoculations						
Total.....	10, 139	3, 464	34. 2	62. 7	30. 2	28. 6	37. 0	32. 0	43. 0
Under 5.....	2, 809	799	28. 4	48. 1	31. 0	28. 3	20. 6	21. 4	39. 6
5-14.....	3, 862	1, 975	51. 1	85. 7	60. 0	49. 0	66. 5	40. 0	71. 7
15-39.....	3, 468	690	19. 9	49. 0	16. 7	13. 9	27. 0	18. 9	25. 7

pated and contributed to wider immunization than could be expected from the individual surveys.

Use of Salk Vaccine

Two gauges may be used to measure the use of Salk vaccine within the State, the records of shipments from manufacturers to commercial and public agencies and the records of the State department of health biological distributing stations.

Between January 1 and December 25, 1959, a total of 1,785,000 cc. were shipped to the State, 1,113,000 cc. to commercial outlets and 672,000 cc. to public agencies. Vaccine was in short supply during July and August.

Records of the biological distributing stations indicate that the total of 555,760 cc. issued in 1959 exceeds by 180,000 cc. issues made in 1958. At the height of survey activity in May and June 1959 nearly 200,000 cc. were issued.

Future Activity

The results of the surveys conducted in the spring of 1959 indicate need for continuing programs to improve the poliomyelitis immunization status of the population.

Two types of activity are planned: a broad survey of immunization status of pupils to be carried out by boards of education, and surveys by boards of health of the immunization status of children through 2 years of age.

The school survey is designed to determine if school districts and parochial schools require poliomyelitis immunization. Selected schools will then be sampled to determine the completeness of the students' poliomyelitis immunization. These studies are to be followed by activities designed to stimulate immunization of all students who are incompletely protected.

The studies by boards of health are proposed to determine the immunization status of the younger children. This will provide an opportunity to explain the need for complete immunization to parents.

Summary

In 1958 New Jersey experienced an outbreak of poliomyelitis in which 90 percent of persons with paralytic disease had not received Salk vaccine. Preliminary surveys in 1958 indicated that a substantial portion of the population of several cities had not received three inoculations of Salk vaccine.

A survey and immunization plan was developed for cooperative action by the health departments, medical societies, and voluntary agencies. Surveys were carried out in one State health district, one county, and nine large cities of the State. Several methodologies were used with equally good effects.

A direct relationship was found between the degree of immunization and socioeconomic status. The higher the socioeconomic status, the more nearly complete the immunization. A need for starting and completing immunization of large numbers of persons through 18 years of age was revealed.

Surveys were followed by increased numbers of immunization programs and broader coverage of persons, and more vaccine was used throughout the State.

Future action includes immunization surveys by boards of education and boards of health and increased immunization activity.

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