

# Use of the Survey Technique to Achieve a Highly Immunized Preschool Population

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**M**ETROPOLITAN Nashville and Davidson County form a community of about 480,000 people including approximately 44,000 preschool children. The area is served by the Metropolitan Health Department which is headed by a director and a five-member board of health.

The department maintains an immunization division to evaluate and respond to the immunization needs of the community. The head of the division, who is responsible to the director of health, has a staff of two clerk-secretaries and four public health field representatives. Professional personnel from the nursing division administer the immunizations.

A goal of the health department is to see that all infants and children in the metropolitan area are immunized against poliomyelitis, diphtheria, pertussis, tetanus, smallpox, and rubeola at the earliest recommended age or as soon after as possible. A health-index survey was conducted in January 1964 to determine the immunization status of preschool children in the community.

## Methods

The 1964 survey was directed by Dr. Robert E. Serfling and Mrs. Ida L. Sherman of the National Communicable Disease Center, Public Health Service. The fieldwork was done by 22 teams, each consisting of a nurse or sanitarian from the Metropolitan Health Department and a volunteer.

The purpose of the survey was to determine the percentage of preschool children immunized against poliomyelitis, smallpox, diphtheria, pertussis, and tetanus. Although the measles vaccine was licensed in 1963, it was not added to the Public Health Service's immunization program until 1965.

A sample of 1,760 dwelling units was chosen. The sample was stratified according to three broad socioeconomic levels (upper, middle, and lower) on the basis of three indices (education of the father, crowding, and conditions of housing) as reported by census tract in the 1960 census. Also included were two groups of census tracts in which 90 percent of the population was reported to be nonwhite.

An interview team visited each dwelling unit and obtained information about the immunization status of preschool children in 1,730, or 98 percent, of the 1,760 households. This survey revealed the following immunization levels for

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the 1- through 4-year age group: 60 percent had completed a basic series of immunizations against poliomyelitis; 72 percent had completed a basic series against diphtheria, pertussis, and tetanus; and 47 percent had been vaccinated against smallpox.

On June 1, 1965, the Public Health Service awarded the health department an immunization project grant to provide all preschool children with a complete basic series of immunizations, including measles. Two programs were established to accomplish the purpose of the grant.

1. A followup of all infants born after April 1, 1965, using birth certificates as a basis.

2. A separate followup to reduce the backlog of unimmunized preschool children not included in the first program because they were born elsewhere or before April 1, 1965, or for other reasons. This report deals with the second program. The Public Health Service, as part of the project grant award, assigned E. Thomas Gray to the Metropolitan Health Department, and he participated in the design of the program described in this paper.

A door-to-door survey, beginning in February 1966 and ending in June 1968, was conducted in one census tract at a time until 79 of the 89 tracts in Metropolitan Nashville and Davidson County were covered. The other 10 tracts were in a high-income area with few preschool children.

To complete the survey as quickly as possible, an additional clerk and 12 part-time field representatives were added to the existing staff of the immunization division. Training for the new personnel incorporated basic information and definitions about immunity, specific information about the diseases covered, familiarization with the forms and codes associated with the survey, and sample presentations to parents contacted in the field or by telephone. All of this training enabled the personnel to motivate parents by the use of persuasion and definition, which were the only means available.

*Responsibilities of the full-time clerk.* The clerk assigned the work to be done each day by the field personnel, checked the worksheets covering the visits made on the preceding workday to make sure that all the necessary information was recorded for each preschool age child, re-

corded the previous day's work on the closeout sheets, made telephone calls to the parents of preschool children regarding appointments for immunizations, and forwarded all statistical information to the data processing division for tabulation.

In order to carry out the purpose of the visits and followup logically and efficiently, one census tract was worked at a time. Using a book published by the city planning commission, the clerk listed every street in each census tract, and using the city directory, she determined at which houses the surveyors would start and stop on each street. To the left of each street name she jotted down and circled the total number of housing units, and to the right she noted whether both sides or only one side of the street were in the particular census tract.

After the clerk checked the worksheets for the previous day, she listed all families the field representatives had noted as not at home. She then compiled a list for each street by house address to facilitate visiting the families on it at a later time. When the worksheets were completed, the clerk forwarded them to the data processing division.

The clerk kept track of all of the appointments made by the field representatives and checked the health department's records weekly to determine the status of appointments. She telephoned parents of preschool children who had an incomplete basic series of immunizations and who had not kept the immunization appointments made for them by the field representative. If the clerk failed to motivate parents to keep an appointment after two calls, she re-assigned them for field followup.

*Responsibilities of field representatives.* The field representatives' primary responsibilities were to visit designated houses in Nashville and Davidson County and to record the immunization status of all preschool age children in the 79 census tracts. The representatives were to motivate the parents of children whose immunizations were incomplete to have their children given the required immunizations. The field representatives filled out status cards on all children whose immunizations were not complete so that accurate records could be maintained and the followup continued as long as necessary.

To make sure residents of every home were

contacted and that all children who needed immunizations received them, field representatives were divided into three groups to do different kinds of jobs. The first group made the first weekday visits consecutively according to the census tract lists, the second group made initial visits evenings and Saturdays to people who were not at home when first visited, and the third group revisited the parents who were delinquent in keeping appointments for their children's immunizations.

To field representatives assigned to make initial weekday visits, the clerk gave certain streets to be worked that day. The visits of each representative were recorded on a daily worksheet which included columns for the addresses of the houses visited, comments of the worker, and the immunization status of each child.

Each representative recorded on the worksheet the address of every house visited. If no one was at home or there were no preschool age children in the household, this was recorded under "comments." Complete information was recorded on each preschool age child in the households visited. When a child had completed a basic series of immunizations, the worker wrote "completed" in the comments column and designated who had administered the shots in the "given by" column. If a child's immunizations had not been completed, the worker noted this in the "immunization status" column and motivated the parents to have the child immunized.

When the representative made an appointment for the parents to take the child to their private physician or to the health department clinic for shots, the worker entered this information on an appointment card with the child's name and address on it and gave the card to the parents. The worker also initialed this card and recorded the date and place of appointment in the "comments" column of the worksheet. The appointment card was taken by the parent to a physician or health department clinic where it was signed by the person administering the shots and then returned to the immunization division.

After the worker had completed all of his visits for the day, he filled out a status card for each preschool age child who needed immunizations. This card contained all the information

found on the worksheet, including the date and place of appointment, and served as a working form until the child's immunizations were completed. If the appointment card was returned, the new immunization status was entered on the status card and then included in the records so that the form on the child could be completed. If, however, the appointment was not kept, the status card was assigned to a worker who resumed followup.

The second group of field representatives followed the same procedure for recording data and keeping records as the first group. However, they visited people who were not at home when the daytime visits were made. These visits usually occurred in the evening or on Saturdays.

The third group of representatives received the status cards for further followup if the initial appointment was not kept. They visited the parents again to determine why the appointment was not kept, to help the parent overcome the difficulty, and to set up another appointment.

All information obtained on each child was forwarded to the data processing division, where his immunization status was recorded in regard to poliomyelitis, diphtheria-pertussis-tetanus (DPT), smallpox, and measles vaccine, whether he had had measles, and the source of his immunizations. When immunizations were completed or there was a change in the immunization status as a result of the followup activities, status cards were sent for data processing and the changes in immunization status recorded. The sum of completed immunizations enumerated in the original survey and the changes in status resulting from the followup campaign was the total number of immune preschool age children. The information was printed for each census tract surveyed and for all of the surveyed census tracts combined.

## Results

During the original visits the parents of 26,824 preschool age children were contacted. Of the children whose parents were contacted, 1,200, or 4.6 percent, moved; 570, or 2.1 percent, were refused shots; and the parents of 720, or 3 percent, were not contacted again. Of the children immunized, 22,322, or 83.2 percent, had been immunized against poliomyelitis; 22,318,

**Results of followup campaign to immunize preschool children, Nashville and Davidson County, Tenn., February 1966-June 1968**

Kind of immunisation and when enumerated	Where given				Children immunized <sup>1</sup>	
	Physician's office	Health department	Hospital	Other facility	Number	Percent
Poliomyelitis—1968 level.....	10, 404	14, 098	541	495	25, 538	95. 2
First survey.....	10, 198	11, 122	517	485	22, 322	83. 2
Followup.....	206	2, 976	24	10	3, 216	12. 0
Diphtheria-pertussis-tetanus—1968 level.....	10, 448	14, 049	550	434	25, 531	95. 2
First survey.....	10, 273	11, 047	525	473	22, 318	83. 2
Followup.....	175	3, 002	25	11	3, 213	12. 0
Smallpox—1968 level.....	7, 799	7, 506	362	345	16, 012	59. 7
First survey.....	7, 697	6, 711	356	340	15, 104	56. 3
Followup.....	102	795	6	5	908	3. 4
Measles—1968 level.....					24, 692	92. 1
Vaccine before 1968.....	10, 157	8, 359	201	241	18, 958	70. 7
Disease before 1968.....					5, 734	21. 4
First survey.....					16, 332	60. 8
Vaccine.....	9, 152	3, 117	164	214	12, 647	47. 1
Disease.....					3, 685	13. 7
Followup.....					8, 360	31. 3
Vaccine.....	1, 005	5, 242	37	27	6, 311	23. 6
Disease.....					2, 049	7. 7

<sup>1</sup> Of the 26,824 children whose parents were contacted, 1,200, or 4.6 percent, moved; 570, or 2.1 percent, refused shots; and 720, or 3 percent, were not recontacted.

or 83.2 percent, had received DPT vaccine; 15,104, or 56.3 percent, had been vaccinated against smallpox; and 12,647, or 47.2 percent, had received measles vaccine (see table).

In 1968, at the completion of the program, 25,538, or 95.2 percent of the children, had poliomyelitis vaccine; 25,531, or 95.2 percent, had DPT vaccine; 16,012, or 59.7 percent, had smallpox vaccinations; and 18,958, or 70.7 percent, had measles vaccine. Followup activity had increased by 3,216, or 12 percent, the number of children immunized against poliomyelitis; by 3,213, or 12 percent, those protected by DPT vaccine; by 908, or 3.4 percent, those vaccinated against smallpox; and by 6,311, or 23.6 percent, those who had received measles vaccine.

At the time of original contact, 3,685, or 13.7 percent of the children, had already had the measles, and an additional 2,049, or 7.7 percent, contracted the disease during the followup period, so that of the total 26,824 children contacted, 5,734, or 21.4 percent, had experienced the disease. Therefore, 92.1 percent of all the children had become immune to measles.

**Comments**

Several benefits were derived from this intensive survey. The two benefits of greatest importance, however, affect the routine immuniza-

tion responsibilities of the Metropolitan Health Department.

Because of this survey and the associated followup activities, a group of children at the primary school level are substantially immune and less likely to bring home a disease, such as rubeola, and give it to an unimmunized infant.

The other major benefit came from the health education and public relations value. Door-to-door visits made nearly all mothers in Nashville aware of the health department's facilities for giving immunizations and the department's interest in seeing that immunizations are given. Therefore, parental cooperation was easier to obtain in carrying out our routine infant birth certificate followup program.

**Summary**

In April 1965, an estimated 44,000 preschool age children lived in Metropolitan Nashville and Davidson County. The parents of 26,824 children were contacted during an immunization program based on the survey technique with intensive followup. Of the approximately 17,000 children not included, some became of school age between April 1, 1965, and the beginning of the followup in February 1966, others lived in 10 upper income census tracts that were not part of the survey, and a number became of school

age during the nearly 2 years it took to complete the followup program.

Of the children whose parents were contacted, 1,200, or 4.6 percent, moved; 570, or 2.1 percent, were refused shots; and the parents of 720, or 3 percent, were not contacted again. In 1968, at the completion of the program, 25,538, or 95.2 percent of the children, had had poliomyelitis vaccine; 25,531, or 95.2 percent, had DPT vaccine; 16,012, or 59.7 percent, had smallpox vaccination; and 18,958, or 70.7 percent, had measles vaccine. Followup activity had increased by 3,216, or 12 percent, the number of children immunized against poliomyelitis; by 3,213, or 12 percent, those protected by DPT vaccine; by 908, or 3.4 percent, those vaccinated against smallpox; and by 6,311, or 23.6 percent, those who had received measles vaccine.

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Overall, the program achieved high levels of immunity and accomplished the goal of protecting preschool children who were not part of a birth certificate followup program. The coverage provided under the two programs insures Metropolitan Nashville and Davidson County of a highly immunized population for the present.

#### **Tearsheet Requests**

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## **New Indian Health Centers**

The recently constructed Duchesne County Hospital and Public Health Service Indian Health Center in Roosevelt, Utah, mark a new pattern of Indian Health Service assistance to communities in the construction of community hospitals.

The Indian Health Service is authorized by Congress under PL 85-151 to assist construction of community hospitals which will serve Indians and non-Indians. In Roosevelt, the Indian Health Service funds were used for the first time to build an Indian health center attached to the hospital, as well as for hospital beds for Indian patients. Joining the two facilities instead of constructing a separate center provides better services for Indian patients, especially in emergencies, and at less cost. The health center will provide services for about 1,100 members of the Ute Tribe living on the Uintah and Ouray Reservation, including dental care, public health nursing, and environmental health. The center will use

the hospital laboratory and X-ray facilities, and Public Health Service physicians will work with local physicians in the case of hospitalized Indian patients.

In addition to two examining rooms, a reception room, a dental office, and offices for auxiliary personnel, the new Indian clinic contains a complete drug room and a small room for collecting sputum for tuberculosis studies.

In Juneau, Alaska, a 68-bed community hospital is being constructed. Eight of these beds are being funded by the Indian Health Service and in addition, an outpatient clinic attached to the hospital is being built.

Indian Health Service staff at Juneau provide outpatient services for Coast Guard personnel and merchant seamen as well as for Alaska Natives—Indians, Eskimos, and Aleuts.

As at Fort Duchesne Health Center, the Indian Health Service will share laboratory and X-ray facilities with the hospital.