Attitudes of Health Department Clients Toward an Error in Immunization

B. A. KOGAN, M.D., Dr.P.H., H. NAKAGAWA, Ph.D.,
B. HANES, Ph.D., and G. A. HEIDBREDER, M.D., M.P.H.

DURING the first of two scheduled Sunday immunization clinics held in 1966 in Los Angeles County, 467 children of 209 families were inadvertently given sterile water diluent rather than reconstituted measles (rubeola) vaccine. In addition to correcting this error, the staff of the county health department investigated the effect of the error upon the families involved. Furthermore, they used the opportunity for examining some characteristics of the families who accepted this nonroutine health department service afforded by these Sunday clinics.

The clinics were part of several sessions in disadvantaged Los Angeles County communities at which measles vaccine was offered free of charge to susceptible children 1 through 10 years of age. The communities ranked high in prevalence of measles and low in levels of immunization for preventable childhood communicable diseases. The clinics were sponsored and conducted by volunteer physicians; community nurses and lay volunteers assisted. The Los Angeles County Health Department provided vaccine and advisory support.

Compton-Willowbrook, the community in which the error occurred, compared unfavorably with other Los Angeles communities in certain environmental, social, and economic aspects. Like the adjacent community, Watts, the inhabitants are predominantly Negro. In recent years, the population of the Compton-Willowbrook community has increased at a rate 15 times that of the surrounding area and twice that of the county. In the ratio of dependents to adults of productive capacity, Compton-Willowbrook ranks among the higher Los Angeles County communities—115.1 dependents per 100 adults of productive capacity as compared with a range for the county of between 60 and 122 per 100 (*1*).

Dr. Kogan is director of the bureau of medical services of the County of Los Angeles Health Department, Los Angeles, Calif. Dr. Nakagawa, now assistant professor, University of Washington School of Nursing, Seattle, at the time of the study was a behavioral science consultant for the immunization project of the health department, as was Dr. Hanes, who is now professor, department of health science, San Fernando Valley State College, Northridge, Calif. Dr. Heidbreder is health officer for the County of Los Angeles Health Department. *The project described was supported by grant No. V-65-5-63B from the Bureau of State Services, Public Health Service.*

Correction of the Error

To correct the immunization error, district public health nurses visited every home of the families affected. After frankly stating the details of the error to parents, the nurses immunized all eligible children who were present in the home. Those children not immunized at home were referred by letter to an immunization clinic on the following Sunday or to the

local district health office. Families not reached by the nurse were contacted in the evening by a special health officer, who referred the children to the same two places for the measles vaccine. Within the first 2 weeks after the error, all but three families had been personally contacted. The remaining three were reached within the next 4 weeks.

Within 2½ days of the error, public health nurses had immunized 205 children in their homes (43.9 percent of the children who had been given only the diluent). Within 1 month, 80.3 percent of the children given the diluent were accounted for. Within 2 months, all 467 children had been reached; 267 children had been vaccinated in their homes, 109 at the second Sunday measles clinic, and 47 at the health center. Twenty-four children were vaccinated by private physicians. Twenty children were not vaccinated; further information about the 20 children from the nurses' interviews revealed contraindications, such as rubeola.

Interviews of Families

Two samples of families were interviewed. One sample consisted of those whose children had received only diluent; the other, of randomly drawn families whose children had attended the second measles clinic.

The 467 children who had received only diluent were from 209 families living in one district of Los Angeles County. The interviewed sample (A) consisted of 181 families (86.6 percent of the total 209). The remaining 28 families were never found at home after repeated visits, or they had moved in the 6-week interim in which the interviews were conducted.

A second sample (B), comprised of 125 families, was randomly drawn from 143 families who had brought their children to the second measles clinic. This clinic had been held on the Sunday after the first one and at the same location. The children in these families had received the vaccine properly. This control group was used to appraise attitudes not only toward previously obtained county medical services but also toward other public services. Within 2 months of the error, 112 interviews had been completed; 11 families had moved or were not at home; two refused to be interviewed.

All interviews were conducted in the families' homes. The four interviewers were male Negro college students. Introducing themselves as Los Angeles County Health Department representatives, they stated that information was being sought which could be used to better the department's services. A structured questionnaire was used. It was designed to elicit demographic data, a history of past health practices, whether the person was satisfied with health agencies and other public agencies, and his reactions to the error. The vaccination error was promptly acknowledged to persons in sample A but not mentioned to those in the control sample B.

Questions About Error and Replies

The questions in this section related to the immunization error and were therefore asked only of sample A. Verbalization of the mothers' reactions to the error were obtained by stating: "Some parents were upset about the clinic making the error of giving water instead of measles vaccine, and to some people it didn't make any difference. How do you feel about it?" The answers were categorized as follows:

Indifference (9.0 percent). *Respondents'* reactions were considered to reflect "indifference" if they reported no emotional response or expressed such thoughts as "It didn't make any difference."

Negative (62.4 percent). If fright, indignation, anger, or disgust were elicited, as in the following responses, the reactions were classified as negative: "That's how much they really care!" "Someone should have seen to it that the error couldn't have been made." "I wouldn't let the nurse give the shot because I didn't know what she would give."

Reassured (10.5 percent). Respondents were considered "reassured" if, though obviously distressed, a statement of reassurance was expressed, such as: "When I found out that it was harmless I was quite relieved, but I called my doctor to make sure."

Accepting (17.7 percent). When a statement showing rationalization was elicited, the respondent's response was classified as "accepting," as in the following example: "I asked the doctor about various types of measles shots. He explained the mixing process. People are only human."

A question posed to find out if the parent blamed the health department or if the blame had no focus was: "What opinions do you have about why the error appeared?" (Opinions as to who was to blame were not sought by direct questioning. The questioners recorded spontaneous responses. These were later coded into mutually exclusive categories.)

The categories at which blame was directed included the health department (27.4 percent of the respondents blamed it), individual volunteers (23.4 percent), or no focus (49.2 percent).

It was believed that the error might precipitate much discussion in the neighborhood. To appraise this belief, the respondents were queried as follows: "Maybe you've talked to other people who went to that same Sunday clinic. What opinions do they have about how the error could have happened?" Answers were merely categorized as "yes" or "no." On this point, 65.9 percent responded that they had not discussed the error.

Questions About Other Health Matters

Some questions not specifically related to the error were asked of both samples A and B. To determine the kind of medical care used, the mothers in both groups were asked: "Where did you go to the doctor (when children were ill)—to the county hospital, a private doctor, or somewhere else?

Information on immunization behavior was elicited with the following question: "Tell me how many shots your children have had for the following diseases (each child and each disease)." The category "completely immunized" was applied to a family only if every child had received all the available immunizations (diphtheria, tetanus, pertussis, smallpox, and poliomyelitis) with the exception of measles. The adequacy of boosters was disregarded. Ineligible underage children were omitted. All families failing to meet these criteria were noted as incomplete. Immunization records were accessible from most families.

Attitudes toward services were obtained by means of the following two questions, the answers to which were categorized as "satisfied," "dissatisfied," or "never used:" "Maybe you've been to the public health department clinics or county hospital—if so, do you wish they could help you in a better way, or have you gotten what you want from going to them?"

"Some people want better services from the people who are supposed to be serving them, like the firemen, the police, and the parks and recreation department. Have you gotten what you want from them, or do you wish they could help you in better ways?"

Coding of Responses

The interviewers recorded the responses of the families verbatim during the interviews and precoded most of the responses. To verify the interviewers' coding, official coders subsequently coded, checking against verbatim responses. Thereafter, every 10th interview was independently recorded to check for coding errors. A 4 percent error was discovered, which was largely assignable to random error. A 16 percent error, however, was observed in the coding of one major variable—the family's reaction to the vaccination mistake. This variable, therefore, received a 100 percent independent recoding.

Table 1. Relationship of verbal reactions of families to the error and their responses to referrals for measles vaccine

Response to referral	Indifference (9.3 percent)		Negative (62.4 percent)		Reassured (10.5 percent)		Accepting (17.7 percent)		Total (98.9 percent[1])	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No referral needed	8	47.0	57	50.4	11	57.8	16	50.0	92	50.8
Completed by 1 month	6	35.4	36	32.0	2	10.7	10	31.3	54	29.8
Not completed by 1 month	3	17.6	20	17.6	6	31.5	6	18.7	35	19.4
Total	17	100.0	113	100.0	19	100.0	32	100.0	181	100.0

[1] Component percentages do not add to 100.0 because of rounding.

The verbatim responses to the vaccination error were used to check interviewer bias. These differences were not significant by the chi-square test of association.

Results

Comparisons of samples A and B on numerous demographic characteristics showed independence of one another. The mistake in vaccination did not affect the kind of families drawn into the second clinic. Moreover, the error triggered little discussion. Only one-third of the families talked about the error, and then usually only with relatives.

Table 1 illustrates the verbal reactions of sample A families (the error sample) in relation to their responses to referral. When we examined the percentage of the families in each reaction type completing referrals to a second vaccination clinic, it was evident that negative reactions were unrelated to fulfilling the referrals. The group of parents who stated that they had been reassured were the ones who resisted referral in the greatest percentage (31.5 percent compared with 17.6 percent of the indifferent group, 17.6 percent of the negative, and 18.7 percent of the accepting).

Table 2 illustrates the percentage differences in various characteristics of the families as categorized by kinds of reaction to the error. These characteristics by no means clearly determined the kind of reaction. Other observations based on table 2 are as follows:

Indifference. The families with indifferent verbal reactions had the highest percentage of families with annual incomes below $3,100 (29.4 percent). Yet this group was high in educational achievement (33.3 percent of the fathers had had some college education).

Negative. The group with negative responses had the highest percentage of families with negative attitudes toward past medical attention. This group had only a small percentage with incomes below $3,100 (5.6 percent)

Table 2. Percent with various characteristics among the families with indifferent, negative, reassured, and accepting kinds of reactions to the error

Characteristic	Indifference (N=17)	Negative (N=113)	Reassured (N=19)	Accepting (N=32)
Using public medical care	25.0	20.7	22.2	16.0
Low knowledge of immunizable diseases (score 0–4)	35.2	39.8	26.3	32.2
Incomplete in past immunizations	16.6	18.8	31.5	26.6
Negative or mixed negative attitudes toward medical attention received	6.2	25.8	0.0	6.4
Dissatisfied with other public services	25.0	25.0	10.5	28.1
Those with referred children incomplete by 1 month	33.3	35.7	75.0	37.5
Annual income below $3,100	29.4	5.6	5.5	9.3
Annual income above $7,200	23.5	35.8	16.6	34.3
Mothers with less than 8 years of school	9.8	5.2	9.3	9.4
Fathers with less than 8 years of school	6.6	16.6	10.5	11.5
Mothers with some college education	35.2	22.2	26.2	34.3
Fathers with some college education	33.3	17.6	31.5	38.3

Table 3. Relationship of reactions to the error and the focus of blame for the error

Focus of blame for error	Indifference		Negative		Reassured		Accepting		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No focus	14	82.4	36	33.0	14	82.3	22	68.8	86	49.2
Persons at clinic site	3	17.6	29	26.6	2	11.8	7	21.9	41	23.4
Health department	0	0.0	44	40.4	1	5.9	3	9.3	48	27.4
Total	17	100.0	109	100.0	17	100.0	32	100.0	[1] 175	100.0

[1] Responses of 6 of the 181 families were not codable under the categories used for focus of blame.

Table 4. Comparison of the demographic characteristics of families who attended measles immunization clinics with the characteristics of community population

Characteristic	Percent among clinic families (samples A and B)	Percent in Willowbrook community
Less than 8 years of school:		
Mothers	7.2	----------
Fathers	12.7	----------
Average	9.9	35.2
1 year or more of college:		
Mothers	21.1	----------
Fathers	20.3	----------
Average	20.7	15.1
Annual family income less than $3,100	7.5	18.5
Unemployed males	6.3	10.0
Racial-ethnic groups:		
Negroes	91.6	84.2
With Spanish surnames	5.2	11.7

SOURCE: reference 2.

and a high percentage with incomes above $7,200 (35.8 percent). Yet educational achievement, especially of the fathers, was comparatively low—only 17.6 percent of the fathers had had some college education and 16.6 percent had had less than 8 years of school. Other writers (*2–4*) have pointed out possible conflicts in persons with high income and low education or with low income and high education. Such circumstances may have some bearing on the responses shown in both tables 1 and 2.

Reassured. Dissatisfaction with medical attention and other public services was not expressed by families in the "reassured" group, but in the past this group had had the highest percentage of incomplete immunizations (31.5 percent) and in the 1966 measles immunization effort had the highest percentage of referred children who did not obtain their second injections within a month (75 percent). Thus, expressions of reassurance appeared to be associated with not seeking a vaccination. These families talked better than they performed.

Accepting. Not unexpectedly, the group with the "accepting" type of reaction was in the high education and income group. Also, the group had the lowest percentage of families using public medical care.

Focus of blame. The vaccination error was not blamed upon the health department except by the negative reactors (table 3). Slightly more than one-third of the parents with negative reactions blamed the health department; about one-third blamed the persons at the clinic site. Of the total sample, almost one-half blamed no one. The adverse effect of the vaccination error on the health department was surprisingly slight. Moreover, comparison of samples A and B revealed little difference in the percentage showing dissatisfaction with past medical attention or other public services.

Demographic characteristics. An opportunity was provided in connection with the vaccination error for examination of some characteristics of the families making use of a special clinic for preventive care. Table 4 combines samples A and B for this purpose. The demographic characteristics of the combined samples were then compared with those revealed by the 1965 special census of the community (*5*). The families in our samples had considerably higher socioeconomic status than that of the community as a whole. Among the sample families, 7.5 percent had annual incomes of less than $3,100 compared with 18.5 percent in the community; 6.3 percent of the sample fathers were unemployed and 10.0 percent in the community. Far fewer mothers and fathers in the sample had less than 8 years of schooling (9.9 percent compared with 35.2 percent for the total community). A somewhat larger percentage of parents had completed 1 year or more of college (20.7 percent compared with 15.1 percent). A slightly higher percentage of Negro families came to obtain measles vaccine at our clinic than was characteristic of the Willowbrook-Compton community (91.6 percent compared with 84.2 percent in the community). A lower percentage of families with Spanish surnames were in our sample (5.2 compared with 11.7 in the community).

An unexpected result of the comparison of demographic data was the discovery that the people who came to the special clinics were not, on the average, the most disadvantaged of the community. These data showed that the measles vaccination clinics had failed to reach many of the children for whom they were primarily intended.

Summary and Conclusions

Desiccated measles virus had inadvertently not been mixed with sterile water diluent at a Sunday mass immunization clinic held in one community of Los Angeles County in 1966. Thus, 467 children from 209 families received sterile water injections. In promptly correcting the error, all known susceptible children of the 209 families were immunized.

The Los Angeles County Health Department also arranged for followup interviews with 181 mothers of the 209 families involved to determine their attitudes about the error and to learn what kind of families attended the clinic. A second group of families, sample B, was drawn from among those attending a measles immunization clinic on a following Sunday. A comparison of the demographic characteristics of the families in these two samples indicated that they were similar, and therefore sample B was used as a control.

Reactions to the mistake were predominantly negative, but the blame that was expressed was not primarily directed toward the health department. Moreover, those parents who responded negatively readily completed the vaccination of their children. In contrast, many of the parents who said that they were reassured by the explanation of the vaccination error failed to follow up on referrals to a second vaccination clinic until they had been visited a considerable number of times by health department personnel.

Demographic comparisons revealed that the families in both samples who attended the measles clinics were a select group, not characteristic of the total community. They were better educated and had higher incomes and lower unemployment rates. The special measles clinics failed to reach the neediest children.

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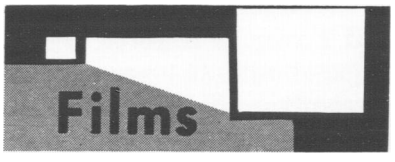

Getting Through. ***Motion picture, 16 mm., black and white, sound, 20½ minutes, 1967. Not cleared for television. Order No. M–1520–X. Produced by Spectrum Associates for the National Clearinghouse for Smoking and Health, Health Services and Mental Health Administration, Public Health Service.***

AUDIENCE: High school students.

SUMMARY: Shows the paradox of the smoking habit—society's acceptance and promotion of it, and medical sciences' rejection of it as being a health hazard. Actor Burt Lancaster presents some of the troublesome questions about cigarette smoking. Why do young people smoke knowing that it may cause physical disability or early death? And, who is responsible for seeing that young people do not pick up the habit? The film dramatizes the "smoky" world in which teenagers live. It explores cigarette smoking as a complex paradox in our society and concludes that the final decision about teenage smoking is not up to parents, teachers, the Government, medical science, or the advertising business. It is a personal decision which each teenager must make after carefully weighing the facts.

AVAILABILITY: For free short term loans, high schools should write to National Medical Audiovisual Center (Annex), Chamblee, Ga. 30005. Attention: Film Distribution. Others write to National Clearinghouse on Smoking and Health, 4040 North Fairfax Drive, Arlington, Va. 22203. Purchase from DuArt Film Laboratories, Inc., 245 West 55th Street, New York, N.Y. 10019.