

Practical Uses of Diphtheria Immunization Records*

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RECORD keeping is probably the pet aversion of the physician. Some at least, carry it with them to the health department when they become health officers. Other so-called "practical" people object to making, collecting, and tabulating records on the theory that it wastes their resources.

Referring to records of immunization one finds these "practical" people saying that "records do not get children immunized"; that "I can use the people needed to keep records to get more children immunized." Both are mistaken. Records do help to get children immunized and they can do more effective work than could be purchased for the same cost in direct action.

In the first place it is needful to know who among a group of children have been immunized in order to save the efforts of canvassers. Canvassing has proved the most effective method in securing immunizations, but it is expensive. The possession and *use* of properly kept records will save their cost of this item alone. Even if unpaid volunteers are used, as sometimes in a "drive," the cost may be saved. Neither volunteer nor professional relishes visiting households that have already been immunized and

serious damage to morale may result from failure to sort out the immunes.

The record of the individual is also useful in determining whether a reported case of diphtheria received his full course of injections at the time and place stated. In a number of instances when this claim has been made it has been possible to show that the time was much less remote than stated; that they had less than the full course of injections; or that they were not there at all. The record is also of use as proof of the individual's having received the required series of injections. These are demanded by not a few summer camps and playgrounds.

Records help to get children immunized in another way. The tabulation of the records tells the health officer, and enables him to tell the community authoritatively, where it stands—how much has been accomplished and how much remains to be done. It substitutes a definite figure for a wishful guess.

Some years ago, following an "intensive drive" along the lines then necessary, the leader of this drive announced that 90 per cent of the children of the city had been immunized. Although there had been enough noise and confusion seemingly to immunize the entire county, a skeptical state health department questioned the figures and asked for the records. After eliminating duplicates and correcting

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errors it was found they had achieved the very creditable figures of 35 per cent of the under-5 age group, 65 per cent of those 5-9 years, and a little over 30 per cent of the 10-14 group. It was a very successful "campaign" and seemingly it stopped diphtheria, but a hard boiled tabulation of their records showed there was still work to be done.

The officials of another city making large claims for immunization work were becoming skeptical of its value. According to them they had immunized some 30 to 40 per cent of the younger children and nearly 100 per cent of the older ones. Had they kept up their pace and their method of calculation it would have been a matter of only a few years until they could have shown over 100 per cent in the first group and 200-300 per cent in the second. They overlooked the fact that children *do* get older.

I am aware of the claim made by some that they can "make a pretty close estimate" from the amount of T-A they give out. Toxin-antitoxin and toxoid are furnished to physicians free of charge in New York State, the result being that unquestionably some of it is wasted. While there are probably few who inject the entire contents of a 5 c.c. bottle for each shot as one elderly gentleman was found to be doing, yet there are not a few who use but 1 dose out of a bottle in their private practice. Not having many to inject at the same time they prefer to get a new bottle for each injection rather than risk contamination. At clinics nobody ever keeps count of the bottles that are tipped over, those that break, the needles that clog and suddenly let go with an attendant shower under the ministrations of an enthusiastic nurse or physician. Furthermore this method fails to tell us how many individuals got the injections or how many got a complete series of injections. I have no idea what the actual ratio is of c.c.'s

of T-A or toxoid per person receiving a complete series.

Under the stimulus of actual figures health officers with a sense of responsibility strive to better a poor showing; those with a good one try to maintain it, if they cannot improve it. Records get children immunized in that way. Immunization figures enable us also to determine the effectiveness of the various methods employed in getting children immunized. By cutting out useless procedures we have that much more time for useful ones.

The drive I have previously mentioned as having been led by an optimistic estimator, reached its climax after 3 months of publicity. Talks to organizations and new articles were spread over this period with a not very well organized canvass near its close. The result was good. A month later the health officer of another city organized a campaign with 100 volunteer canvassers 16 days before the first clinic was to be held. His newspaper publicity started at the same time. The first clinic was held in the worst blizzard of the winter but despite this handicap the attendance strained the capacity of the arrangements. The results as shown by the records were somewhat better than the longer, more elaborate and more expensive campaign in the first city.

By tabulating and studying the results with varying educational methods, in varying quantities we were soon able to determine that the canvass and a public clinic were *the essential* elements in a drive; that elaborate newspaper propaganda got very little return without them; that school drives got school children but very few younger children; that dog teams, posters, lectures, letters, postcards, merely served as a background; that it took a face-to-face talk and the existence of a free clinic to get children to a clinic or the family doctor in appreciable numbers. The records

also showed that doctors immunized more children during an active drive with a public clinic being operated than they did in all the rest of the year; that the mass movement of children to clinics gave the impetus needed to overcome the inertia of procrastinating parents.

Records will also show which canvassers are successful and which unsuccessful in securing immunizations. Sometimes poor ones can be taught, sometimes they can be enthused into becoming good ones. If they cannot be, they may be good at something else.

The foregoing comments refer to the immediate uses of records. But there is a more remote and I believe a more important use. A year ago I read a paper before the Health Officers Section wherein I advanced the following hypothesis:

1. The attainment of a high degree of herd immunity among children 5-9 and 10-14, as evidenced by the injection of 3 doses of toxin-antitoxin in 50 per cent or more of the members of these groups, produces no definite effect on the diphtheria incidence in that community. Diphtheria if prevalent continues prevalent for a considerable period and declines gradually as it does when active immunization is not used. If not prevalent an outbreak of considerable proportions may arise.

2. However, when the immunization of approximately 30 per cent or more of the children under 5 years is superimposed, there is an immediate definite decline in the current prevalence, and if the community be free from the disease or if its prevalence be low, an outbreak is very unlikely to occur. In other words, there is a critical point in the under-5 age group which must be attained and sustained in order to affect the diphtheria rate favorably.

It should be clearly understood that the foregoing is a mere hypothesis—important if true. It is based on a limited number of observations within a restricted area. It requires further observations of a similar nature from a wider area. Such observations, to be of value, must be based on knowledge of

where the community started from as well as where it ended.

To determine the starting point means that records of immunization must be kept by the health department as a routine. Their everyday uses justify this. They should be classified by age, perhaps by certain areas, at regular intervals, and when unusual circumstances arise. Starting to collect immunization records after an epidemic has commenced is futile unless it is known that there were none to collect.

At least once each year the immunes must be re-classified by age. As previously remarked, children do get older. A record that stood at 100 per cent of the under-5 age group January 1, 1927, would have been exactly zero per cent January 1, 1932, if no immunizations had been done in the meantime. The important thing to the health officer is not where he stood a few years ago, but where he stands now. Reclassifying the ages is not difficult if a system be followed. That used by the New York State Health Department is described in the article previously referred to and in the *Rural Appraisal Form* for 1932. I know of none that is simpler.

While it is purposed to continue observations in New York State as opportunity arises, yet diphtheria outbreaks have become so infrequent that unless decided change occurs it will be many years before sufficient evidence accumulates to provide an ample test. There has not been what might be termed a "satisfactory" outbreak in the state since a year ago last winter and no area of high endemic prevalence for over 2 years. Of necessity, therefore, if this hypothesis is to be further tested in the near future, it seems it will have to be done elsewhere than in New York.

The Committee on Administrative Practice of this Association is interested in obtaining further data that will tend

either to support or refute this hypothesis. It is hoped that every county and city health department in the country will secure and maintain such records as will enable it to determine where it stands relative to diphtheria immunizations now and at any time in the future. If diphtheria becomes prevalent there should be available not only a record of the cases, but a record by age of the children who have had a full series of toxoid or toxin-antitoxin.

A health officer's duty is first of all to his community—as a community. He must consider his people and their diseases in the mass and be concerned with the individual primarily as he affects the mass.

If the injection of 80 per cent or even 100 per cent of the older children fails to stop diphtheria in the community,

the project has failed. It is not important that he has stopped the disease among school children; it is not important that every one of those injected has been Schick-tested and found negative. But it is important whether or not diphtheria continues to take its toll among the unprotected.

If injecting 30 per cent or more of the under-5 age group will stop diphtheria among all groups, that is the essential thing to do. If it is not true, we should find it out without delay. If it is only partly true we should find out what the modifying factors are. If it is true we should know it with certainty.

We will not be able to determine the point until we have available for study reasonably complete and reasonably accurate records of immunization.

