BALTIMORE HEALTH SURVEY

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Administration of public health programs requires a background of information today quite different from that considered necessary three decades ago. At a time when the dominant problems were communicable diseases for which no effective preventive agents were known, the medical intelligence needs were appropriately met by a vital events registration system and a reportable disease notification system.

The successful development of vaccines and inoculants against diphtheria, pertussis, tetanus, poliomyelitis and measles, and the reduction of the importance of such diseases as pneumonia, streptococcal infection, and tuberculosis have changed considerably the direction of public health interest and effort. This change, towards a concern for eradication of diseases for which a specific preventive agent exists, towards an improvement in general medical care, and towards a heavy involvement with chronic and degenerative diseases, has set forth new requirements for data necessary to guide rational decision making.

By and large the new data requirements have centered about the need for (1) estimate of inoculation levels among children, (2) the need for information on the current practices of the population in respect to use of medical care facilities and (3) a requirement for information on the prevalence of acute respiratory disease. By and large the requirement for a high level of precision in such data has not been urgent, for the number of alternative decisions to be considered are limited.

Soon after the Public Health Service launched its National Health Survey the Research and Planning Section of the Baltimore City Health Department felt that a continuous survey of the population could provide the Health Department with a new intelligence system for certain types of information. It also felt that for such a survey to be a feasible and practical undertaking for a local Health Department it must be designed to operate within the existing framework of the Health Department staff.

Aware that accuracy of response depends upon the respondent's knowledge of and willingness to impart the desired information, it was decided to limit the objectives of the survey to (1) obtaining an estimate of the inoculation levels against diphtheria, tetanus, pertussis, and poliomyelitis among the child population, (2) studying the epidemiology of acute respiratory disease, (3) obtaining basic demographic information including data on the mobility of the population, and (4) obtaining information regarding such questions of timely importance as (1) the day care provided for children of working mothers, (2) safety practices in the home and (3) sources of medical care for low income children.

Originally consideration was given to the use of either the public health nurses or the sanitarians as interviewers. The public health nurses were selected on the basis that their common educational background and familiarity with taking personal histories argued for accuracy of response. The Nursing Department agreed to assume the interviewing task for a continuous survey provided that the load was one which could be absorbed into their ongoing routine.

It was decided that 100 families could be reached each month. A sample of 100 households was expected to yield information on approximately 300 persons a month. This amount of information was considered sufficient to meet the requirements for precision for the types of data sought.

Since the population under study was to be the non-institutionalized population residing within the Baltimore City limits, the city directory (Polk) was available to serve as a sample frame. The sampling procedure developed calls for the systematic selection of 1200 dwelling units per year from this directory. These 1200 households are then systematically sub-sampled to obtain the 100 interviews to be conducted during each month. Other sampling schemes were considered, namely that described by Serfling and a similar modified cluster sampling plan, but it was found that the anticipated savings in travel time did not materialize. The public health nurses had time limitations and could not interview all units in a cluster at one time.

The survey, inaugurated in January, 1960, has now been in operation for five full years. Each year during this period approximately 83 per cent of the selected households have been successfully interviewed. The refusal rate among households eligible for interview has been between 4 and 5 per cent, which is very close to the rate experienced by the National Health Survey. Approximately 57 per cent of the successful interviews have been obtained at the time of the first visit to the household, but up to three call-backs have been required in order to maintain the

83 per cent completion rate. On the average, approximately 147 visits are made to obtain 83 completed interviews during a one month period. Each month between 15 and 25 interviews must be performed in the evening by a part-time professional interviewer hired for the purpose of contacting those households which could not be reached during the nurse's usual working day.

A check on the validity of the sampling scheme is provided by a comparison of the age and racial distribution of the population in the sample with that derived from the annual estimate of the city's population based on natural increase and migration. For example, during 1964, 39.5 per cent of the persons in the sample were under 20 years of age compared to 38.4 per cent in the annual population estimate for 1964. The proportion of non-white persons has been slightly higher in the sample--42.3 per cent compared to 39.3 per cent in the annual population estimate.

There has been some concern regarding the problem of updating the city directory. From 1960 to 1964 building permits were issued for approximately 16,000 new dwelling units which were not in the directory used for the sample. Arrangements have been made with the Department of Building Inspection to obtain listings of new housing and demolitions so that these changes may be incorporated into the sampling frame.

The sample size of 100 households per month is sufficient to produce estimates of the prevalence of acute respiratory illness with a standard error of estimate of less than 5 per cent for any month. However, it is necessary to collect information over a one year period in order to obtain estimates of inoculation levels among pre-school age children with this degree of accuracy. More important is the fact that, for meaningful program planning, reliable estimates of these inoculation levels are required for subdivisions within the city. Unfortunately, the present sample size does not allow for this.

Although the sample size is sufficient for the determination of the prevalence of acute respiratory illness during a one month period, the accuracy of the prevalence figure presupposes an even sampling over the month. This we have not been able to obtain since the interviewing must be performed as it can be fitted into the nurses working schedules. This lack of scheduling prevents early identification of changes in the prevalence trend.

The use of public health nurses as interviewers has not produced any significant other problems. Initially each nurse is carefully briefed on the purpose of the survey, the procedures to be followed, and the need to avoid interviewer bias. We feel that there are some distinct advantages to having the nurses as interviewers as well as some disadvantages. Among the advantages are (1) the expense of employing professional interviewers is eliminated and (2) their knowledge of vaccines and how they are administered results in more accurate information on inoculation status. Among the disadvantages are (1) the nurses are responsible to a department other than that responsible for the function of the survey and consequently close control of the fieldwork is not possible other than through immediate checks of the completed questionnaires, (2) the assignment of the nurses to definite geographical areas prevents call-backs for repeatability checks, and (3) each nurse receives only 1-3 interviews to complete each month which prevents the development of close familiarity with the survey.

In spite of some of its shortcomings, the survey has produced some distinct advantages. For example, the survey sample developed over the five year period has been used several times for special ad hoc surveys--one carried out in the lower socio-economic areas of the city in an attempt to identify pockets of young children with inadequate protection levels against poliomyelitis and one carried out on a city-wide basis to evaluate the adequacy of existing child day care centers to provide care for the children of working mothers. Recently, the sample was used in a city-wide survey to determine the proportion of young children who are still at risk to measles.