CHAPTER 27
HEALTH STATISTICS

BOARD OF HEALTH ROLE AT A GLANCE

Statistics are basic information tools. Well-organized meaningful statistics can help the local board of health (BOH) identify health needs and problem areas, monitor and evaluate existing health education, screening and health promotion programs, determine the amount of services necessary, and justify changes in existing public health programs or initiate new ones.

OVERVIEW

"Data, in the form of vital statistics, health status indicators, and activities of the Health Department staff, are the first indispensable component in the operation functions of a health department. Without a solid data collection and reporting system, needs cannot be identified, priorities and goals and objectives cannot be set, and no evaluation or monitoring is possible." (Springfield Blue Ribbon Commission Report, 1979).

Program planning should be based, in part, on data analysis. Care should be used in data collection and analysis to choose useful information which will answer specific questions. Examples are: well-baby clinics located in areas where babies live and public transportation is available; a growing percentage of elderly people in the community often indicates an increased need for home health services and clinical services; an outbreak of food poisoning may signal the need for more intensive surveillance of restaurants or better education of food handlers; special immunization clinics should be offered if an outbreak of communicable disease occurs, or if school records indicate incomplete immunizations of children; and an increased venereal disease rate should lead to more educational prevention programs.

Responsive and effective public health programs cannot be planned, implemented, monitored, or evaluated without a solid and appropriate data base. To rationalize expenditures, it is essential to know how many persons need a particular program or how much benefit is being derived from that program. Also, availability of well-organized data is necessary to apply for federal funding of special programs.

BOARD OF HEALTH RESPONSIBILITIES

BOH responsibilities for the collection, analysis, and dissemination of health statistics vary enormously depending upon the resources available to perform these functions.

Data Collection, Management, Compilation, Analysis, and Dissemination
Data collection, management, compilation, analysis, and dissemination could cover many topics important to the community. Various kinds of information include:
vital statistics - records of births, marriages, and deaths;

- **health status indicators** - measures that assess the relative health of a population. Measures of morbidity (episodes of illness or disability) and prenatal indicators such as low birth weight are commonly used to assess health status;
- **health service and program statistics** - records of program utilization and availability: amount of services available, number of medical procedures performed, number of clinic visits, number of people served, number of inspections, etc.;
- **demographic data** - population and economic status data provide important background information on health resource needs. An expanding population base usually means demands for health services and enforcement will grow accordingly. With a denser population, such environmental concerns as sewage and refuse disposal become critical. Economic status indicators (e.g. per capita income, percent of population below poverty level) are another demographic gauge for service demand. A low-income population has particular need for screening and nursing services. Likewise, dilapidated housing creates a demand for frequent housing inspections. Together with health-related statistics, demographic data give the planner a more comprehensive picture of the community's health needs.
- MDPH Environmental Public Health Tracking Portal – a resource to Local Health for accessing health data

Information and Use

TYPE OF INFORMATION SELECTED USE

Mortality statistics - Assess leading causes of death in the community and develop programs to (from death certificates)prevent disease and alleviate suffering.

Age-specific death rate - Indicates age group that a particular program should address.

Infant mortality rate - Traditionally considered to be an accurate indicator of unmet health needs and adverse environmental/social conditions: nutrition, medical care, sanitation, health education. Assesses quality of infant and maternal health services.

Morbidity statistics - Assess adequacy of environmental control programs (food and water quality); evaluate adequacy of immunization efforts; indicate areas of concern regarding occupational and domestic health hazards, etc.

Crude birth rate - Indicates need for maternal and child health services.

Age-specific birth rate - Indicates need for family planning services (e.g. large percentage of teenage mothers).

Rates of drug & alcohol use - Assess need for expanded education or prevention programs, rationale for expenditures. Need for better health education in schools.

Measures of disability - Assess need for home health services, supportive services, and occupational (restricted activity days, health programs, work loss, bed-disability)

The Bureau of Health Statistics, Research and Evaluation (BHSRE) at the Department of Public Health (DPH), strongly encourages a BOH to obtain vital records information (births, deaths, marriages, and divorces) directly from DPH, BHSRE or Registry of Vital Records staff (see Table 1 for telephone numbers). Information maintained by the city or town clerks may not be complete due to births and deaths that occur in other communities or outside the State. By not including these events, any analyses performed and/or recommendations made could be biased.

Possible Levels of Analysis of Statistical Information

Level 1: Records of birth and deaths are kept in the city or town clerk's office, but may not be readily accessible for analysis. DPH encourages a BOH to obtain complete statistical information on births, deaths, diseases, hospital utilization, and demographic factors in other parts of Massachusetts and is available from a variety of data sources (See Section III. State Data Resources for more information. Useful town-to-town or town-to-state comparisons can be made).

Level 2: Each BOH should keep minimum program statistics on its own services: inspections, nursing services, clinics, hearings, notices of violations, etc. These records serve as a monitoring device, keeping track of the quantity of service output. Such statistics should always be related to the number of units involved (e.g. number of inspections should be related to the number of restaurants, houses, etc. and related to the total number of units that are eligible for inspection. Clinic visits and home visits should always be related to the number of patients served.).

Level 3: Sophisticated program development involves assessing service needs

as well as comparing service delivery and utilization by other communities. Health service and program statistics can be obtained from DPH, regional Prevention Centers, other state agencies, the State Data Center (for population and socioeconomic data), the regional office of the Federal Census Bureau, local and regional planning agencies, local hospital, clinic and voluntary agencies' statistics, local studies (universities, private foundations, consultants), and school health records.

Information from other health providers, based on their program statistics or assessment of community needs, can help the planner/evaluator to assess the community's most important health problems, ascertain how well other local agencies are meeting the community's health needs, and provide a reference point for evaluating the community's own services. Before seeking data from outside or other community sources, the administrator or BOH should decide exactly what information it wishes to obtain and what use the information will be to its planning efforts. Collection of irrelevant data wastes time and resources.

Issues in the Use and Presentation of Data

The following is a series of question and answers that provide useful information for a BOH concerning use of health statistic information:

Are the data from a reliable source? The method of collecting data may have been so haphazard as to render the information useless. This is particularly true if categories are not well defined or mutually exclusive.

Do the data represent a significant trend or could the results be due to random variation? For example, a 50 percent drop in measles cases in one year does not necessarily indicate a successful vaccination effort. A steady decline in measles cases over a five-year period would be more significant.

Are the comparisons meaningful? Most health-related statistics vary greatly by age and sex. Thus, comparing a community with a very young population to one with an older population is very misleading, unless the data are broken down by age category. Epidemiologists often use directly age-adjusted rates or standardized rates rather than actual counts of deaths to measure whether an area has an unusually high rate of death or disease. However, both rates and raw numbers should be examined. Rates allow the analyst to compare the relative seriousness of health problems in communities of different size populations. Raw numbers indicate the seriousness of the matter (e.g. A report could announce that town Y has three times as many cases of food poisoning as town X. However, if town Y had three cases and town X had one, the finding would not be very significant.).

Are the results due to biases in the data? Data may be accurately recorded, but still be misleading (e.g. using hospital data to assess health needs may cause a planner to miss less serious diseases that are being treated in clinics

and/or private offices). Moreover, a health survey should include data from all segments of the population.

Are important population characteristics taken into account? The breakdown of data by age, race, sex, geographic location, and economic status often yields important information on effective service delivery. The planner must know who should be receiving services and where services are to be delivered. Of course there are limits to the interpretation of statistical data, because of its quantitative nature. Quantitative information should be used in conjunction with knowledge based on experience. For example, statistics can indicate the level of success of a particular screening program. The reasons for this patter of utilization, however, may require more intensive knowledge about the target population.

Has the health impact of a particular service been taken into account? A high incidence of a certain disease does not automatically mean screening programs should be initiated. Some diseases lend themselves to screening better than others. Hypertension is a very screenable condition; it is widely prevalent in the general population, easy to detect, and once discovered, responds well to treatment. Lung cancer, on the other hand, is not very screenable; it is much less prevalent, detection procedures are expensive, and treatment efforts are usually unsuccessful. Thus, even if intensive screening is initiated, it is of little use. Educational efforts may be more appropriate.

Are the data presented in a clear and meaningful fashion? Some important keys to data presentation are:

- label all graphs and tables clearly (what, where, when?);
- standardize categories (well-defined) and make them mutually exclusive so that everyone interprets the data in the same fashion;
- accompany charts, tables, and graphs with a brief written analysis;
- use rates (e.g. cases per 1,000 population) so comparisons can be made; and
- compare figures to those for previous years to indicate trends.

In general, data should be presented in a manner that will let the planner know how well departmental activities relate to the health service needs of the community. For example, it is not sufficient to indicate the number of referrals made at a well-baby clinic; thorough follow-up data are needed. It also helps to know the number of people who would benefit from a well-baby clinic to get an idea of what percentage of the target population is being served.

The end result of successful data management should be well-planned programs and services that address the health needs of the community. Another second important outcome is the ability to justify public expenditures for local programs.

STATE RESPONSIBILITIES

There are numerous resources available for health data and technical assistance from DPH and other state agencies as well as, local and federal information providers. DPH has a wealth of data, much of it available at the local or regional level. The following discussion provides brief examples of some of these resources. Table 1 below summarizes some of the major resources at DPH. Table 2 provides information for health and demographic resources outside of DPH.

The most readily available DPH data can be obtained through the user friendly menu driven on-line information service that is accessible through the INTERNET. The system is known as MassCHIP (the Massachusetts Community Health Information Profile). It contains community level data from 18 different health status, health outcome, program utilization, and demographic data sets. MassCHIP users have the ability to create reports at numerous geographic levels with multiple search criteria or to produce standard reports. The output comes in the form of tables, charts, graphs, and maps of the data. To find out more general information about the system, please call 1-888-MASCHIP. To obtain authorization necessary to download the system, please call Anne Beinecke at 617-624-5662.

DPH has also compiled a set of 55 health status indicators for the 27 Community Health Network Areas (CHNAs). These indicators include sociodemographic, mortality, morbidity, hospitalization use, and substance abuse treatment. In addition, the data are available for each community in Massachusetts (see Table 1). To obtain these reports, please call Jean LoRusso at 617-624-5699.

DPH also funds ten regional prevention centers throughout Massachusetts. These centers provide technical support and information for primary prevention activities such as training, education, and performing community needs assessment. Information and technical assistance is available for public health issues such as substance abuse prevention, AIDS/HIV education, tobacco control, and violence prevention.

TABLE 1
MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH DATA RESOURCES

Topic	Bureau/ Division
Vital statistics	Health Statistics, Research & Evaluation (617)624-5600
birth, death, marriage, divorce	Registry of Vital Records and Statistics (617)753-8600
Community Health Networks	CHNA Program

	(617) 624-5254
Cancer incidence data	Massachusetts Cancer Registry (617) 624-5645
Health resource data	Health Care Quality (617) 727-5860
Occupational health	Health Statistics, Research & Evaluation (617) 624-5632
Weapons-related injury surveillance	Health Statistics, Research & Evaluation (617) 624-5663
Behavioral Risk Factor Surveillance Survey	Health Statistics, Research & Evaluation (617) 624-5636
AIDS/HIV surveillance	AIDS (617) 983-6560
Communicable diseases	Communicable Disease (617) 983-6816
Immunization	Immunization (617) 983-6800
Sexually transmitted diseases	Division of STD Prevention (617) 983-6940
Tuberculosis	Communicable Disease/ TB Control (617) 983-6990
Childhood lead exposure	Childhood Lead Poisoning Prevention Program (617) 753-8400
Substance abuse services	Substance Abuse (617) 624-5111
Refugee, immigrant health	Refugee and Immigrant Health (617) 983-6590
Women, infants and children Program	Family & Community Health, WIC (617) 624-6100

Perinatal and child health Health	Family & Community Health/ Perinatal/Child (617) 624-6060
School, women's, elder health Division	Family & Community Health/Prevention (617) 624-5070
Environmental health	Environmental Health Assessment (617) 624-5757
Domestic violence Division	Family & Community Health/Prevention (617) 624-5461
Diabetes control Program	Family & Community Health//Diabetes (617) 624-5070
Nutrition surveillance Health/Prevention/Nutrition	Family & Community (617) 624-5437

TABLE 2
DATA RESOURCES OUTSIDE THE DEPARTMENT OF PUBLIC HEALTH

Topic	Agency/ Department
Sociodemographic & population data	State Data Center (413) 545-3460 Massachusetts Institute Social & Economic Research; U.S. Census Bureau; Regional planning agencies (617) 424-0510
Hospital discharge data	Division of Health Care Finance and Policy (617) 451-5310
Prevention support services	regional Prevention Centers (or call individual center) (617) 624-5070
Air quality	Environmental Protection (617) 292-5630
Hazardous waste	Environmental Protection (617) 292-5853
National health data	National Center for Health Statistics (301) 436-8500
Labor statistics	Labor Statistics (617) 565-2327
Number of physicians	Board of Medicine (617) 727-3086
Burns, fireworks	Burn Registry Fire Marshal's Office (508) 567-3100
Insurance coverage and issues	Division of Health Care Finance and Policy (617) 890-5330

Hospital statistics	Mass.Health Data Consortium (617) 890-6040