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METHODS OF IMPROVING VITAL AND HEALTH STATISTICS

First Working Paper

## I N D E X

	<u>Páge</u>
Recommendations for statistical systems	1
New approaches and methods	2
Role of statistician in health team	4
Hospital statistics	4
Reports and statistical activities of health centers	5
Resources and health manpower	6
Birth and death statistics	6
Summary	8
References	10

## METHODS OF IMPROVING VITAL AND HEALTH STATISTIC

Fulfillment of the goals of the Charter of Punta del Este (1) and measuring progress toward the goals require statistical data in several fields. Deficiencies in the availability, timeliness and quality of data for use in analyzing health conditions and resources are clearly evident. Statistical data are essential for health programs and at the present time the needs for planning indicate the advisability of emergency measures to solve these problems. In the malaria eradication programs, steps were taken for the rapid training of all types of workers in order to carry out the wide scale program on a defined schedule. Similarly the demands for vital and health statistics at the present time for planning are sufficient to support the adoption of satisfactory systems of providing the data to serve as a basis for health programs and of rapid training of all types of workers for such programs.

Expenditures made now for establishing a satisfactory system of collection and analysis will have long term benefits in the health program. It is probably cheaper to develop a satisfactory system now than to continue to operate inefficient systems which do not provide adequate data on health. Thus the task ahead is to modernize and improve the vital and health statistics systems as rapidly as possible as part of the operations for planning called for by the Charter of Punta del Este.

## RECOMMENDATIONS FOR STATISTICAL SYSTEMS

The Governing Bodies of the Pan American Health Organization have shown considerable vision in establishing requirements in the fields of morbidity and mortality statistics. The Pan American Sanitary Code (2) signed in 1924 contained a section on morbidity and mortality statistics and the XIV Pan American Sanitary Conference (3) in 1954 approved ten resolutions which delineated the statistics required in health programs and methods of improving vital and health statistics. The broad scope of these resolutions is seen in the first one which recommends:

"that the Member States, to the extent that their economic, social and cultural development permits, extend and improve the collection, processing, analysis and timely publication of statistics on population, vital statistics, morbidity statistics, statistics on health resources and services, and socio-economic statistics related to health."

Others refer to the bases for improvement of vital statistics, morbidity statistics, statistics on resources and services related to health, and socio-economic statistics related to health. Resolution XXII recommends:

1. "That the Member States create, or stimulate and strengthen, the statistical services in health administrations, providing them with material facilities and adequately trained statistical personnel.

2. "That, in order to coordinate the various administrations producing statistics of health interest, the Member States promote the establishment and development of National Committees on Vital and Health Statistics, in accordance with the Report of the First International Conference on National Committees on Vital and Health Statistics.
3. That, in order to produce reliable basic data essential for vital statistics, local coordination be established between health services, civil registration, and statistical services."

These Resolutions continue to be applicable and are reproduced from the Final Acts of that Conference (Official Document No. 61, to be distributed separately).

The Regional Advisory Committee on Health Statistics (4) in 1962 and 1964 have made recommendations for statistical programs in accordance with the Charter of Punta del Este. The Committee in 1962 considered the role of statisticians in planning for the ten years and the expansion of the education and training program and prepared recommendations for a program to improve basic statistical data and to extend research activities. Goals in health statistics for the ten-year period were prepared in accordance with the recommendations of the Committee (Ten-Year Goals in Health Statistics, to be distributed separately). These goals are specific in terms of the actions needed in fields of vital statistics, notifiable diseases, hospital statistics, and education and training programs. Also one of the goals is for the establishment of a statistical service at a proper level in the Ministry of Health to make services accessible and responsive to all needs of the Ministry.

The Committee (5) in 1964 gave its attention to Hospital Statistics and Indices of Evaluation. These reports of Advisory Committees serve as basic references for the programs in the fields of vital and health statistics. (These reports will be distributed separately.) The purpose of these Technical Discussions is to establish methods of improving statistics through implementing existing recommendations and through the introduction of new methods for more rapid accomplishments.

#### NEW APPROACHES AND METHODS

At this time, provision of the types of data desired for health planning places an important responsibility on statisticians. Health planning for the next 10 or 20 years requires knowledge of the extent and characteristics of health problems, the resources in facilities and personnel, and how the latter can be effectively utilized to eliminate or reduce specific health problems. Thus the changes needed to obtain specific results are being investigated. For example, what is the distribution of the professional time of a physician and the total medical profession? How many medical hours in the hospital, in clinics, in administration, in preventive services, in teaching and in research are required in a country for the provision of services to the population? As a member of the health team concerned with these problems, the statistician can assist by the development and collection of the data for the country or for specific areas of the country and by the proper analysis and interpretation of data for planning programs and evaluating progress.

Also at this time it is important to consider new approaches in every phase of statistical programs. Methods of processing data are changing due to new developments in mechanical equipment and computers. In almost all capitals and large cities such equipment is already in use by industry and by government agencies. The availability of such equipment indicates the desirability of redesigning programs for current processing of birth and death certificates, abstracts of hospital patients, reports of notifiable diseases, reports of health activities and other reports. Through programming for use of electronic computer, tabulations can be prepared rapidly. The National Center for Health Statistics in the United States is now preparing its annual vital statistics reports utilizing a computer. The Commission of Professional and Hospital Activities (6) processes currently records of nearly four million hospital patients from over 400 hospitals using a Honeywell computer and other agencies are likewise processing data from groups of hospitals. To take full advantage of mechanical equipment, information may be collected whereby the basic record provides the information needed and is accurately completed. Copying and duplication can be eliminated and necessary reports prepared by machine. The task is to develop a relatively simple system which is easily understood by clerical workers and to train them to complete records. This would require training through short courses the many thousand persons who are responsible for completion and transmission of these records.

For many years birth and death certificates for legal purposes have been the source of birth and death statistics. However, additional medical information regarding both births and deaths are needed for health and research programs. Much more adequate information could be obtained regarding births, fetal deaths and early infant deaths, through medical examination and autopsies. The Inter-American Investigation of Mortality indicates that the data from laboratory and autopsy reports, from hospitals and physicians provide complete and accurate data on the cause of death. Hospitals have responsibilities in regard to completion of birth and death certificates. In addition to the legal certificates, confidential medical reports could be provided of births and deaths to improve the knowledge of important health and medical problems.

Experimental or pilot areas are needed in which new methods are tried out. After methods have proved satisfactory they should be extended to the entire country. Also use of such areas to obtain cost benefit data is highly desirable. It is proposed that each school of public health have an experimental area for operational research.

The basic principles and goals for vital and health statistics systems have been established. This document is principally concerned with methods of improving the contributions of statisticians as part of the health team as well as improving data at their source, that is, in hospitals, health centers and in civil registrars' offices. Emphasis is on emergency training of auxiliary workers through short courses.

## ROLE OF STATISTICIAN IN HEALTH TEAM

In order that satisfactory data will become available for health planning and for measuring progress the statistician, working as one of the team of planners and administrators, may have to take immediate steps. Data are needed on services and resources either for a country or from samples or from experimental areas in order to have adequate data for estimating the services needed, the manpower required, the costs, etc., of realistic health programs. Experimental areas and research are needed in order to measure the effect of specific health activities on the improvement of the health level of populations.

The implementation of a recommendation of the Charter of Punta del Este (1) "To improve the collection and study of vital and health statistics as a basis for the formulation and evaluation of national health programs" should have high priority in planning. A statistician in the Ministry in each country should have responsibility for the coordination of these activities in vital and health statistics and for carrying out recommendations made at the Second and Third Meetings of the Regional Advisory Committee in Health Statistics. Activities in five specific fields in which leaderships and programs might be initiated at once follow.

### HOSPITAL STATISTICS

The hospital is a major source of data needed in the field of vital and health statistics. The Third Advisory Committee (5) described the requirements for a hospital statistics system. Each hospital would have individual medical records, a central department for hospital records, a manual of procedures and a medical record committee. A record system is the source of the basic statistical data needed for effective administration and operation of the hospital in order to provide proper care for its patients. Statistics relating to the hospital and also statistics relating to the patient are essential for administration of the hospital and also at community, regional and national levels for (a) organization, coordination and planning of hospital services in an administrative area; (b) economic utilization of hospital facilities within the general health program of the community, region or country; (c) assessment of morbidity in the population including epidemiological aspects of diseases.

In the field of hospital statistics new methods of preparing reports are being developed using mechanical equipment and computers. In the program of the Commission on Professional and Hospital Activities an abstract for each patient including diagnosis and treatment is sent to a central office for processing. The diagnostic index is prepared as well as reports for each hospital on a current basis for use in the administration of the hospital and for hospital statistics for the entire group of hospitals. A relatively short training program of the record clerks responsible for the abstracts is in operation.

Many of the births and deaths in urban areas occur in hospitals and in rural areas the numbers of births and deaths in hospitals are increasing. The diagnoses of cases of notifiable diseases are frequently made in hospitals. Thus the staffs of hospitals have a major role in the provision of basic data for vital and health statistics. Yet little has been done to develop hospital statistics and to train staffs in the completion and transmittal of such reports.

According to recent information (7) there were 9417 hospitals in Latin America in 1962. The person in charge of reports of a hospital should receive instruction in regard to completion of birth and death certificates, reporting of cases of notifiable diseases, maintaining hospital files, preparing reports of the hospital and abstracts of each patient's record. Probably one-half of the hospitals are small having less than 50 beds; however, about one-fourth will be large having 100 or more beds. For the large hospitals at least two persons could be trained in the preparation of reports. In the large university hospitals, the medical record department usually has a large staff of which several would require instruction. Thus the training of record clerks for hospitals is a large task. In the next five years it is estimated that the training needs might be of the order of 14,000. The person in charge of the department of hospital records in large hospitals should have training of several months (at the intermediate level). These departments at university hospitals could serve as the training centers for auxiliary personnel in short courses of two to three weeks.

It is proposed that immediate steps be developed to obtain hospital statistics. Short courses for technical personnel who will be responsible for training others could be developed as part of the program of the Pan American Health Organization. However, training of staff for each hospital is essentially a national responsibility. Also the design of the program, the records and procedures, the selection of persons for training, the continuing supervision would be at the national level. Professional statisticians and statisticians and other technical personnel at the intermediate level who have already received training would be in charge of the program.

#### REPORTS AND STATISTICAL ACTIVITIES OF HEALTH CENTERS

For planning health programs, the distribution, activities, staffing, etc., of health centers in a country is another field needing major attention. Ideally the staff of each large health center includes at least one clerical or statistical person responsible for transmitting reports of notifiable diseases, maintaining records of services and activities, preparing daily, weekly, monthly and annual reports. In small health units one person is assigned responsibility in this field. Analysis of the services of health units centers is important in planning for personnel and resources for the country. The responsibility of the statistician at the national level includes the development of records and procedures for health services, a method of routine transmission so that the data for planning and evaluation are available rapidly and a program of training and supervision of local personnel in these methods.

At the local level in countries where hospitals and health centers are combined one person could serve for recording and transmittal of data in both fields. In countries where health services are entirely separate and the procedures differ, trained staff would be required in health centers as well as in hospitals. Thus a training program for these auxiliary workers is desirable. The number of persons to be trained for current reporting of activities in health centers and units depends on the system in operation in a country and the coverage of the population by the system. Many thousands of local workers will need preparation and supervision in this program. Although this is a national responsibility the Organization can render assistance especially in courses for instructors and in pilot courses.

#### RESOURCES AND HEALTH MANPOWER

Health planners are concerned with the economic resources and resources in personnel and equipment, both public and private, and with the development of sound estimates of the needs in these fields in the next decade. Thus one of the major responsibilities of the statistician at the national level is to develop a systematic method of collecting such data. As pointed out in Resolution XX of the Conference in 1954, an evaluation of the yield and cost of public health programs is of basic importance and for this purpose, statistics on resources and on services provided are indispensable. The major sources of data are from hospitals and health centers and other health units. Data from private as well as the governmental facilities are needed. Thus for this evaluation systematic collection and analysis of basic information is important.

#### BIRTH AND DEATH STATISTICS

An aggressive program is needed to obtain birth and death certificates for use in health programs and also to obtain birth and death statistics as the basis for planning programs and measuring progress. The responsibility for collection of certificates usually belongs to the civil registration offices under the jurisdiction of the Ministry of Justice or Government, and in many countries there is no agency at the national level directly responsible.

The deficiencies in the level of development of civil registration services in Latin America were pointed out recently at the Second Inter-American Seminar on Civil Registration (8) (November 30-December 11, 1964, Lima, Perú). These include out-of-date legislation, lack of requirements and training of civil registration staff, inadequate documents and excessive complexity of procedures, inadequate budgets, etc.



Since these records are essential for operation of health programs, Ministries of Health have an important responsibility to insure the satisfactory operation of the civil registration system. Certification of the fact of death and also the cause is a medical responsibility. Since many births occur in hospitals, hospitals have responsibilities to insure that facts of birth are provided. Thus the health profession is deeply involved in providing the facts regarding these vital events. Also health services need the records and statistics for their programs. It is logical that because health and medical professions are the source and users of the information from birth and death certificates that they should give leadership to insure the proper collection of such valuable records.

In a few countries Ministries of Health are giving major assistance and leadership in the improvement of registration. For example in Venezuela the Ministry of Health and Social Welfare exercises responsibility at the national level for the registration of births and compiles statistics on causes of deaths and stillbirths for the whole country and for births in organized notification areas. In 1953, an experimental area was developed in the State of Lara to improve the quantity and quality of the registration of vital events in Venezuela. Marked improvements were obtained and this experimental area was extended to other states. In the "Gaceta Oficial" of Venezuela on 12 December 1963, a Resolution of the Ministry of Health was published which had two important aspects for the improvement of mortality statistics namely (1) the creation of a representative area of registration of deaths and (2) the requirement that each Federal "Entity" have at least one inspector for the improvement of registration. The Ministry has conducted two-week courses to prepare these inspectors to carry out active programs working with health services, local registrars, and others to improve registration.

In Brazil the Federal Service of Biostatistics of the National Department of Health developed an extensive program of work to establish Registration Areas in Brazil. The field work of checking on registration of births and deaths has been completed in seven states and one territory in the Northeast.

In the United States of America, the State Departments of Health (with one exception) are responsible for registration of live births, deaths and stillbirths and the Public Health Service is responsible for publication of birth and death statistics at the national level. At the local level in several states the local health officer is the registrar and the clerk of the health department serves as his deputy.

In several countries, in addition to those mentioned, Ministries of Health are responsible for the collection and publication of vital statistics. The type of registration organization must be in accordance with the conditions in each country.

The Handbook of Vital Statistics Methods (9) of the United Nations points out the value of placing this responsibility in health services. "The jurisdiction of health authorities over registration has the great advantage of identifying the needs and interests of public health with those of the registration authorities and of exploiting to the full the public-health possibilities of the data. Under progressive leadership, this type of organization tends to produce vital records and statistics of high calibre and of special usefulness to public health workers."

International agencies can coordinate their activities and provide assistance to national agencies so that the importance of civil registration and vital statistics will receive the recognition it deserves. The Pan American Sanitary Bureau has expressed its desire to cooperate in the committee of representatives of international agencies (as recommended by the Second Inter-American Seminar on Civil Registration) to secure immediate actions in this field.

Whatever steps are taken by national and international agencies to assist in the development of civil registration, training programs are needed. Health services could undertake such programs either jointly with a training program of clerks of local health departments or separately as a method of improvement of birth and death registration.

#### SUMMARY

1. The principles and goals in the fields of vital statistics established in the Pan American Sanitary Code, by the Pan American Sanitary Conference and by Advisory Committees serve as a sound basis for programs for the improvement of vital and health statistics.
2. Statisticians have an important role serving as members of the health team for the provision of the data needed from a satisfactory system of collection of information.
3. New approaches for rapid improvements of systems are advisable with methods and tried out in experimental and pilot areas.
4. Modernization of programs is highly desirable with greater utilization of mechanical equipment and redesigned programs to meet specific needs.
5. Since the hospital is a major source of data needed in the field of vital and health statistics, it is important to design carefully the system of recording and transmittal of essential data and to train record clerks in each hospital to maintain files, transmit abstracts, prepare reports, etc.

6. A system of routine collection and transmittal of reports of activities, staffing, etc., of health centers and units is necessary for data on resources and services.

7. Since health planners are concerned with resources in personnel and facilities both public and private and the costs of such resources for estimation of future needs, one of the functions of a statistician is to develop a satisfactory system of collection and analysis of material in this field.

8. Birth and death certificates are essential for operation of health programs and thus Ministries of Health have an important responsibility to insure the satisfactory operation of civil registration systems. They can provide progressive leadership so that vital records and statistics of high calibre and special usefulness to health workers are obtained.

9. The urgency of provision of statistical information for health planning necessitates an emergency program of developing satisfactory systems and a training program of auxiliary health workers.

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PUBLICATIONS TO BE DISTRIBUTED SEPARATELY DURING THE MEETING

- 1) Resolutions XVI-XXV on Health Statistics, Final Act, XIV Pan American Sanitary Conference, Official Documents No. 10 October 1954.
- 2) Ten-Year Goals in Health Statistics.
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