

Sewerage

The solution to be used for providing sewage and excreta disposal services must take into account the nature of the population group in question (dispersed or living in villages, towns/cities, slums, major cities), the particular human problems involved (gastrointestinal diseases, lack of generally acceptable sanitary conditions, etc.), and the constraints that must be dealt with (financial, human, institutional). In view of these widely varying inputs, the Organization worked to develop a range of solutions and examined a variety of "new" technologies for reducing costs and/or

improving service.

The problem of safe human and industrial waste disposal grew in complexity and volume. While at the end of 1975 only 41 per cent of the urban dwellers and 2.5 per cent of the village population had adequate sewerage systems, past efforts began to show results as PAHO/WHO continued its assistance in Brazil, Ecuador, Mexico, and countries of Central America.

Working with the Canadian International Development Agency and the UNDP, the Organization also developed and/or carried out technical engineering projects in Barbados, Belize, Brazil, Grenada, Guyana, and Mexico.

EPIDEMIOLOGY AND NURSING

The importance of epidemiologic methods and concepts for the practice of community nursing was emphasized in 1975 by the PAHO Advisory Committee on the Teaching of Community Nursing, which recommended that this subject be incorporated into the training programs. As a first step in carrying forward this emphasis, a work group was convened by the Pan American Health Organization in cooperation with the U.S. Center for Disease Control (Atlanta, 3-7 May 1976) to discuss specific aspects of epidemiology in nursing and its application to the delivery of health care. The participants included both epidemiologists with either medical or nursing background and nurses representing services and education areas. Their final report is presented below.

Introduction

The extension of health service coverage to all the people in the Americas living in accessible communities was one of the principal goals set by the Ministers of Health at their III Special Meeting (Santiago, October 1972). Recognizing that large segments of the population are not reached by even minimum health services, they gave

this objective the highest priority in the Ten-Year Health Plan for the Americas, 1971-1980.

The task of providing basic health services for the geographically accessible but underserved population is complicated by a series of interacting factors in rural areas—poor communications, distances to overcome between widely scattered towns and villages, inadequate educational facilities, unem-

ployment—and at the same time by the overburdening of services in periurban settlements to which people are steadily flocking from the countryside. And adding constantly to the entire situation is the growth itself of the population at an annual rate of 2.9 per cent. In 1970 Latin America and the Caribbean area had a total of 273 million; by 1980, the target date of the Plan, this number will have increased by nearly 40 per cent—to approximately 379 million.

It the coverage goal is to be met, maximum effectiveness must be derived from the human resources available. The health team will have to be restructured and its personnel prepared to assume new roles. According to the strategies that have been adopted, utilization of the nurse is to be improved in the delivery and supervision of all health services. For this purpose, consideration is being given to application of the concepts and methods of epidemiology—that is to say, those used in the study of rates and patterns of events in relation to health in populations.¹ Epidemiology, which in primary health care aims to prevent and control disease,¹ has been successfully applied over the years to the solution of communicable disease problems; more recently it has also been used in assessing community problems in general, monitoring health service delivery, and evaluating program results. In the past, if the nurse² were involved at all in epidemio-

logic activities, her participation was limited to specific program areas such as communicable disease control. Today, however, with the need for her to assume a far more active role in the planning, management, and evaluation of health care delivery, the contributions of epidemiology to this enlarged task must be carefully studied.

Use of Epidemiologic Concepts in the Provision of Health Care

Epidemiology has unique contributions to make to the planning, delivery, and evaluation of health services, whether they are provided in the community (extramurally) or in hospitals (intramurally).³ An epidemiologic orientation permits the application of public health concepts to the practice setting. It facilitates the documentation and prediction of health problems on a community-wide basis. Applied to the delivery of services, its methods allow for continuing surveillance in regard to the types of services given, the persons being reached, and what point in its history the problem is being dealt with. It also helps to assess the impact of these services.

In developing countries, with their need to maximize the effectiveness of available nursing resources, epidemiologic concepts and methods have great value in all phases of the provision of nursing services. They can be used in assessing and quantifying the needs for extra- and intramural services, in identifying those groups of individuals that share the same requirements for care, and in setting priorities for the efficient deployment of scarce resources. In the hospital the application of epidemiology has special importance in ensuring a safe environment for patients.

¹This concept of *epidemiology* is the one that has been adopted by the Work Group for purposes of the present report.

²For purposes of the present report, the term *nurse* refers to the health professional, although she may delegate certain activities to other health workers or nursing auxiliary personnel. Her role is defined in terms of general functions in epidemiology. It is important to note the difference between the nurse who applies epidemiology and its methods to her work in nursing services and the *nurse-epidemiologist*, who is an epidemiologist with a background in nursing but who works full time in epidemiology. While reference is made throughout in the feminine gender, the term refers to both sexes.

³The term *hospital* in this document refers to in-patient institutional care facilities; outpatient services are excluded.

The degree to which epidemiologic concepts and methods are applied by a nurse will vary depending on the administrative level at which she works, the type of program to which she is assigned, and the services that are being provided. At any level, however, it is essential that she know how to collect and interpret base-line data and quantify health needs so as to be able to define the existing situation in both the extra- and the intramural populations.

Contingency plans based on identified needs should be prepared, and they should allow for continuing provision of the data necessary in order to program, monitor, and evaluate the delivery of nursing services. Evaluation of the applied plan in terms of its impact on the original needs results, in turn, in a new cycle of planning, delivery, and evaluation.

Epidemiologic Surveillance

Information necessary for the prevention and control of disease in the community or hospital is provided through *epidemiologic surveillance*. The main steps involved are: collection of the data; analysis and interpretation; and dissemination and utilization of the results for decisions and actions leading to the prevention and control of disease.⁴

In the *community* epidemiologic surveillance operates at three major levels: the central, the intermediate, and the local. All components of the surveillance system are found at each level, although they differ in degree of complexity. For the most part, the major responsibility at the local level is information collection, while the central level is involved in the more complex analysis and interpretation of data, but in reality the different components all blend into a single continuum, and the mixture at each level will depend on the administrative structure of the health service system.

While epidemiologic surveillance provides data that can be translated into action, responsibility for this action may not necessarily be within the province of the epidemiologist; frequently it rests with the health services themselves. For example, the need for immunization programs can be determined by epidemiologic methods, but the achievement of adequate immunization levels is ultimately the job of preventive or maternal and child health service workers—with the participation of epidemiologists.

The nurse, as a member of the epidemiologic team, participates in surveillance at all levels, although the form this takes will vary according to the overall situation, the level at which she works, and the extent of her preparation in epidemiology. For example, she may be the only health professional available at the local level and find herself responsible for all surveillance activities.

A nurse with basic training in epidemiology is a logical person to teach and supervise others in the collection of surveillance data. At the local level she can make simple interpretations and take decisions in regard to actions for prevention and control. Her continuous contact with and knowledge of the community places her in an excellent position to evaluate the health situation. Her decisions are based on her training and experience, a policy procedure manual, and consultation with other members of the epidemiologic team at the intermediate and/or central levels. Thus, her role may include:

- Collection of the information needed for surveillance;
- Interpretation of the data available;
- Initiation of action, including further investigation based on the interpretation of the data;
- Evaluation of the action taken in terms of its effect on the health situation in the community;
- Supervision and teaching of other health personnel in epidemiologic activities;

⁴This is the framework that has been agreed upon for purposes of the present report.

- Evaluation of the quality of information collected and forwarded to the intermediate level.

In the *hospital* the nurse likewise has an important role in surveillance. Especially, there is need for control of nosocomial infections, whose occurrence often goes unquantified. These infections place an added burden on hospital resources in terms of such factors as increased lengths of stay, costs of care, use of antibiotics, etc. *Infection control committees* and trained *infection control nurses*—both still relatively rare in Latin America and the Caribbean area—can help define and deal with this problem. The hospital infection control committee should include at least the following individuals: a representative of the hospital director; a staff physician, preferably the one who has responsibility for infection control in the hospital; and a nurse representing the nursing services and administration, again preferably the one responsible for infection control. An infection control nurse is a graduate professional with clinical experience who has had

additional training in epidemiology, infectious diseases, and microbiology. She is responsible for all components of the hospital surveillance system. From the information she collects, analyzes, and interprets, she may take immediate action based on policy set by the committee, or she may present information to the committee in order to obtain a decision for action.

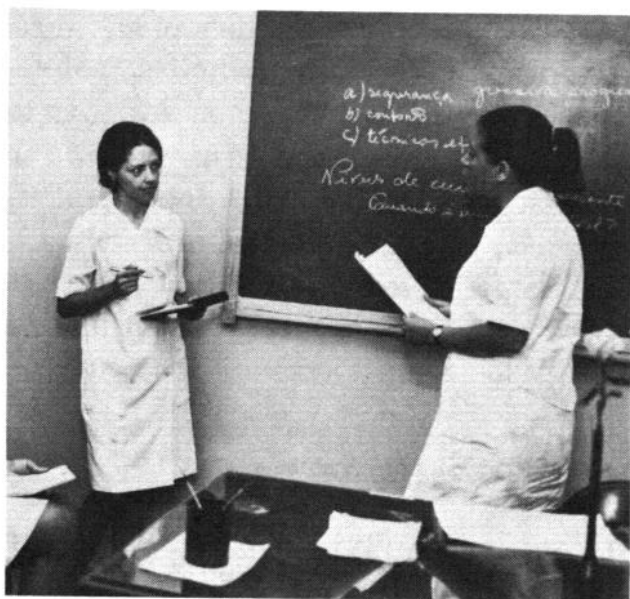
Preparation of the Nurse

If the nurse is to possess the skills necessary to perform the role that has been defined, epidemiologic concepts and methods must be included as an integral part of both the theoretical and practical nursing curricula.

To date the focus in educational programs has been on care of either the individual or the family, rather than on a community approach within which health care needs may be met on an individual basis. To bring about the curriculum changes mentioned, it will be necessary to have role models in the clinical practice



Nurses must be constantly on guard against the occurrence of hospital-induced infections in vulnerable patients.



In-service epidemiologic training of hospital nurses provides the necessary "role model" for the patterning of curricula.

areas. Thus, changes in the services should precede, or at least be concomitant with, the changes in curriculum.

The subjects of epidemiology and epidemiologic surveillance must be presented throughout the basic programs. Students must be given the opportunity to apply epidemiologic concepts during their clinical practice or else to participate in applied epidemiology as a member of the nursing team. Students, teachers, and nurses should all have the same approach to epidemiology, its application to the delivery of services, and the nurse's role in this area. Hence, a close relationship must be established between nursing education and the services.

Nurses working in service areas should be updated on the epidemiologic approach to disease control and to the planning, delivery, and evaluation of care. This applies to nurses providing direct care; those supervising auxiliaries in the community, or extramural, services; and those in hospitals who are responsible for infection control. The training of existing staff should be a progressive process, carried out in alternating stages of theory and practice so that the concepts are well implanted and the methods correctly applied. The value of multidisciplinary group training, rather

than separate courses for nurses, should be stressed.

In order to facilitate incorporation of the epidemiologic approach into health service delivery, it is preferable to train a large number of nurses in short courses, rather than a few in depth. It is also most important that not only supervisors but other members of the health team as well be oriented in this approach to the delivery of nursing services.

The preparation of nurses for the application of epidemiology in the extra- or intramural services should not be initiated unless there is a commitment on the part of the competent health authorities to establish programs in which the concepts and methods will be utilized.

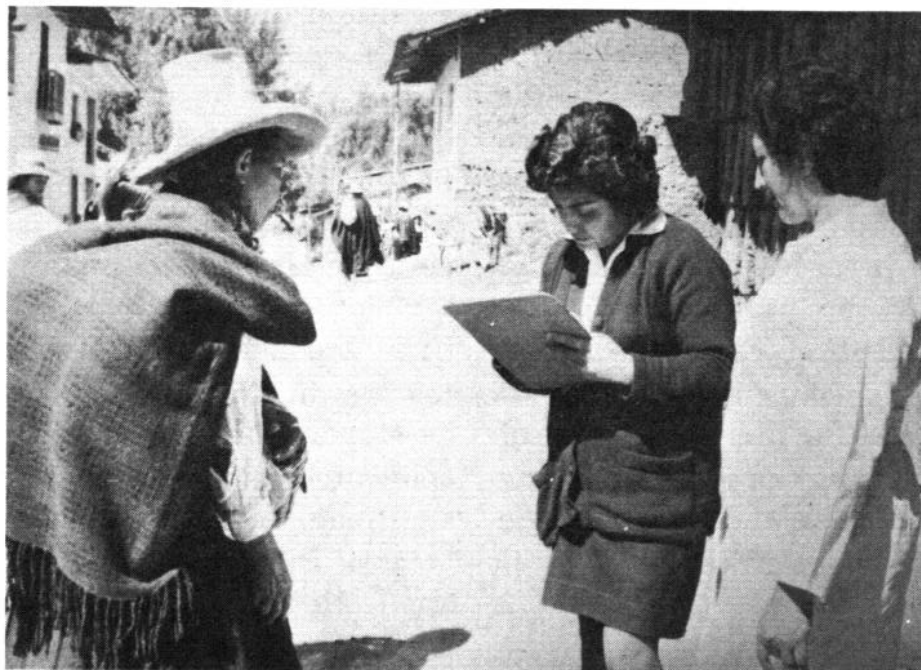
Recommendations

The Work Group adopted the following recommendations:

- *Considering that epidemiologic surveillance is a fundamental component of all programs for the control and prevention of disease; that activities of epidemiologic*



The epidemiologic focus is especially important for the nurse working in the community.



Nurses in rural areas contribute to epidemiologic surveillance through house-to-house collection of data.

surveillance are carried out at all levels of operation, with varying degrees of responsibility, by all members of the health team; and that in many countries the nurse has major responsibilities for supervision and/or delivery of community health services, especially at peripheral levels, *it is recommended* that in the Latin American and the Caribbean countries the role and responsibilities of the nurse in programs for the control and prevention of disease be defined with special reference to the epidemiologic surveillance component and in conjunction with those of the other members of the health team.

- *Considering* that the nurse working in community health programs must have the group rather than the individual focus, inasmuch as such programs deal with the aggregate; that there is need to maximize the effectiveness of resources in the extension of health service coverage; and that the epidemiologic methods are good instruments for the identification of problems common to groups of individuals, *it is recommended* that the nurse use epidemiologic methods in her work with the community to assist in the diagnosis of existing and anticipated needs in the

planning of services and in the evaluation of their effectiveness.

- *Considering* that nosocomial infections are major causes of preventable morbidity and mortality in hospitals, impeding effective utilization of financial and human resources, and that hospital infection control programs utilizing nurses trained in epidemiology contribute significantly to the prevention and control of "acquired infections" in the institutional setting, *it is recommended* that the Governments review the nosocomial infection situation in their hospitals and take the measures required for effective prevention and control of hospital-acquired infections.

- *Considering* that experience in Canada, the United Kingdom, and the United States of America has shown that the nurse is uniquely qualified to function as the central figure in infection control programs, *it is recommended* that nurses currently working in supervisory positions in hospitals be utilized in the development of hospital infection control programs and that provision be made for their orientation and training in epidemiology and infection control.

• *Considering* that epidemiologic concepts and methods are basic to programs of disease prevention and control; that the majority of nurses, who are basic members of the health team, need additional preparation in this area; and that short courses have proven effective in providing training in epidemiology for the health team, *it is recommended* that short courses in epidemiology, including epidemiologic surveillance, be developed for the preparation of nurses, such courses preferably being multidisciplinary so that they may apply to other health professions as well

• *Considering* that nursing practice and nursing education have focused on the individual rather than using group approaches; that it is necessary to emphasize the nurse's role in relation to the community as a whole and/or to population groups; and that changes in nursing education do not necessarily produce the desired changes in practice, *it is recommended* that: (1) priority be given to preparing nurses in service through short courses on the application of epidemiologic concepts and methods to her work and that help be provided in implementing this approach in the delivery of nursing services; and (2) epidemiology, including surveillance, be taught in the basic nursing curriculum and applied throughout the nurse's practical experience.

• *Considering* that the Ministers of

Health of the Americas and the Governing Bodies of the Pan American Health Organization have given high priority to the extension of health service coverage in the prevention and control of communicable diseases; that there is need for an effective surveillance program as a basis for the planning, operation, and evaluation of basic and peripheral health services; that the present Work Group has recommended development of the role of the nurse in epidemiology; and that special and/or additional assistance may be needed in the areas of infection control in hospitals and application of epidemiologic methods in diagnosis by nurses situated in rural and periurban communities, *it is recommended* that the Pan American Health Organization: (1) give the widest possible circulation to the present report, including publication in the Organization's journals; (2) consider presentation of the report to the Governing Bodies for their consideration and recommendations; (3) explore the possibility of funding by international and bilateral agencies to assist countries in the development of pilot infection control projects in hospitals and the application of epidemiologic methods by nurses in the planning, operation, and evaluation of community health programs, particularly in rural areas; and (4) furnish assistance to the Governments, as requested, to implement the foregoing recommendations of the Work Group.

ANNEX I

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