

Class 8. Health Personnel Planning

Objectives

At the end of this class the students will know

- ◆ why health personnel planning is an important issue
- ◆ what are the basic principles and methods used in health personnel planning
- ◆ how the personnel planning is done at national and local levels
- ◆ what are some common problems related to health personnel planning

The provision of human resources in adequate quantity and with appropriate competence to deliver and support the needed services is crucial for any planning. This is especially true for the planning in the health sector. The health care sector is a highly labor-intensive field – health personnel expenditures may account for about 60-75% of total expenditures. That's why health personnel planning is one of the key points in the overall planning process.

Health personnel planning takes place at two levels: *macro and micro*. At a *macrolevel* there is a need to plan for the sufficient number of workers, but not to exceed the need. At the *microlevel* the functions and the assignments of workers needs to be determined. In real life, the two levels are pursued simultaneously: it is difficult to say precisely how many nurses, surgeons, etc should be trained until their functions and work loads have been clarified and quantified.

The health personnel planning has a multifaceted nature. The framework used for analyzing it is complex. The one, which we are going to present to you, has been used in several countries, and proved useful in practice. This *framework* has four parts:

1. **Supply analysis and projection of supply** includes measuring the current supply of all types of health workers and projecting the supply forward to target dates ten to twenty years in the future, including anticipated additions of new graduates; and estimated subtractions for death, migration, retirement, and change of profession.
2. **Demand analysis and projection of demand** includes evaluating the effective economic demand for health services from both the private and public sector and projecting the effective economic demand forward to ten- to twenty-year target dates.
3. **Productivity analysis and projection** is the estimation of the average number of services per health worker per unit of time, and projection of changes.
4. **Matching future supply and demand** includes comparing the projected supply with the projected demand, and recommending necessary adjustments to effect a balance in light of inevitable constraints.

Supply can be brought into balance with demand (and this is the request of market) by either increasing supply or increasing productivity. An increase in productivity is limited by the standards of acceptable quality. On an economic basis, total services may be increased at the same cost by increasing units of service per health worker, or substituting current workers with less expensive health workers. As a concept it sounds quite simple but in real life (and we will see that in further discussion) it is rather complex.

Let's discuss the framework in detail.

1. Supply analysis and projection of supply

1.1 Supply analysis

Current supply should be analyzed in terms of (1) *categories of health workers*, (2) *counts of workers*, and (3) *characteristics of health workers*.

(1) Categories of health workers.

The first step in supply analysis is to decide *whom to count*. The most attention should be given to the *categories* which are costly to society (total numbers x average earnings). Therefore doctors, nurses, dentists, and technicians should be included. Midwives, herbalists, and similar categories should be counted only in countries where they are numerically important. Most drivers, hospital maids, and clerks should not be studied in detail, as they are part of a larger general labor pool. In this step it is highly important to have a clear definition of the categories of health workers (i.e. who should be included under the term "doctor", or "chiropractors", etc). For each class of health worker, three broad groups – professional, assistant, and aid level – should be adequate for general health personnel planning. Usually a definition based on years of training and income level is the most useful in determining these groups (however it is difficult to consider it as useful and adequate in Armenia at this time).

(2) Counts of workers.

Sources of current data on current supply, as well as the accuracy of the data differ in different countries. The sources may include

- a) training institutions (a count of the past graduates, corrected for migration, deaths, and retirement from the profession is used)
- b) licensing institution (gives the maximum numbers of legal practitioners in the country)
- c) professional registries
- d) government payrolls
- e) the registry of private physicians
- f) a special registration for narcotic use (may be useful in some countries lacking general registration)
- g) the list of health workers paying professional taxes
- h) rosters of professional societies
- i) census data (but information can be five years, out-of-date, and not verified)
- j) pharmaceutical companies lists of private practitioners (may be incomplete, companies may refuse to share info)
- k) special survey which is the last and most accurate method of determining the current supply of health workers in the country. In the case of absence of a good source of the information, it could be the starting point for an effective registration system, however it is time-consuming and expensive

(3) Characteristics of health workers.

Several factors (such as age, sex, educational background, income, type of the practice/number of work hours, specialization, productivity – i.e., number of patients seen by the average practitioner per unit of time, and geographic location) should be considered when making predictions for change in supply.

1.2 Projection of supply

A change of supply may be divided into *losses* (primarily by death, retirement, and migration) and *increases*. Accurate information on deaths often is not readily available. There are a few methods of age-specific professional death rate determination varying in their accuracy, however even approximate information can be used since death losses are generally small in comparison to losses from retirement and other voluntary withdrawals from employment. Usually the greatest source of loss to the profession is retirement.

In some countries, for example in most of Latin America, where the medical degree is as much a mark of an educated person as it is the key to a professional career, and where many physicians do not practice medicine, losses by change of occupation are very significant. A determination of these losses may be made by surveys of one or more cohorts of the graduates of professional schools.

The last major source of losses to the profession is migration. It differs widely in importance among countries and is a problem now for Armenia.

New graduates are the primary source for increase in supply. Four basic factors determine a country's potential for increasing the number of trained health professionals: (1) the "raw" material, i.e. qualified applicants; (2) the educational plant capacity, that is, the number of students who can be taught in existing teaching facilities; (3) capital, i.e. the funds available for expanding training facilities and paying for the recurring costs of training and education; (4) availability of teachers.

2. Demand analysis and projection of demand

2.1 Demand analysis

There are several different methods to determine the demand for health workers, unfortunately none of the methods are completely adequate. The approaches to measure demand include:

- ◆ basic biologic need
- ◆ status quo
- ◆ comparative method
- ◆ established standards of practice
- ◆ effective economic demand

The following is a brief description of each of them.

Determination of basic biologic needs

This approach has seductive appeal seeming to be the most scientific appraisal; but at the same time, for many reasons it is not practical. Sufficiently detailed and accurate morbidity and mortality statistics are needed, though not always available. Furthermore the approach requires estimation of the time spent by health professionals to care for each type of patient representing various types of morbidity and mortality, which is difficult to calculate, since health problems often have many alternative solutions that require different types of health personnel. Therefore even if one could calculate the "need", it is not the measure of public demand from services of health professionals.

The status quo

This is the most common approach to health personnel analysis. It is a normative approach whereby existing professional-to-population ratios are encoded as norms. The major flaw in this method is that it

either fails to determine the suitability of present ratios or cannot account for changes in demand due to technological innovations or to a changed demographic character in the population.

Comparative method

This method takes the ratios for other countries, and reasons that the country under study has effective economic demand for at least as many health workers as the reference country. The flaw in this method lies in the fact that very few countries are truly comparable.

Expert opinion

This method is often used to estimate the demand for health workers. In some fields that employ small number of health workers for whom there is no real public demand (for example, health education, sanitary engineering, etc) it is probably the best estimate available.

Established standards of practice

The approach is similar to the basic biologic need approach. It was used in the former USSR, where essentially all medical care was provided by government personnel, and the estimation of demand for physicians, nurses and feldshers was based on observed norms of practice.

Effective economic demand

Used in the countries where the private sector offers an appreciable source of financing of health services.

Since there is no perfect method for measuring demands, one should utilize the elements of all relevant methods and come up with a composite judgment of the current demand for medical services.

2.2 Projection of demands

There are several factors (predictable and unpredictable) affecting change in demand.

Predictable factors. Demand for health services throughout the country (and correspondingly for the personnel providing them) is quantified by the basic demographic and socioeconomic attributes of the population. The primary factor here is the *population size*: the more people, the more services demanded, assuming that economic growth at least keeps pace with population growth.

However, it is important to bear in mind that the increase in demand may be directly proportional not only to the increase in the population; but also to the *age pattern changes*. For example in case of higher proportion of older people and/or young children in a population, the demand for health care increases since these groups require more medical attention. The *geographic redistribution* of the population must also be taken into consideration. Thus, as the country becomes increasingly urbanized, the demand for health services changes in size and character.

Economic development also plays a significant role in increasing demand. Increases in income and educational level lead to rising expectations and greater sophistication in the use of health services. Economic development also increases public sector demand, as more tax revenue is available to fund public health programs. Finally, development can further bring about important shifts in the type, as well as the magnitude of demand.

Alteration of the supply and accessibility of health workers are considered a related source of change in demand. For example, in a village where physicians are unknown or unavailable effective demand for

them doesn't exist. But having a new road that fosters contact of a village with the medical service of a neighboring town is likely to change demand patterns markedly.

Unpredictable factors. Some factors which are virtually unpredictable (such as *changes in disease patterns, technological advances, modifications in the organization of health services*) can significantly impact on demand.

Thus, *new diseases*, such as AIDS, when introduced in places where they didn't exist previously, distort the picture of demand for medical care. Resumption of malaria cases, which we had few years ago in some regions of Armenia, has changed the demand for related specialists/services there.

The demand for a radiologist would never have been predicted before the discovery of X-rays, this is an example of unpredictable fact related to technical methodological changes.

Finally *modifications in the organization of health services* influence both the available supply of health workers and the demand. For example, as a health ministry "ruralize" its health services, more demand for health services may develop.

3. Productivity analysis and projection

Measurement of productivity in the health sector is special, complex and varies for different levels of staff.

A complex example is a hospital staff offering a variety of services ranging from brief outpatient visits to complex surgical procedures and including staff from janitors to endocrine surgeons. The measurement of productivity of a hospital complex or its individual members calls for the use of modern methods of industrial engineering, systems analysis, and detailed time and motion studies.

After careful measurement of the time actually required for given procedures, and the administrative time which must be allocated to them, equivalency units can be established. For example, one surgical procedure may equal ten out-patients visits, or one medical in-patient day may equal five out-patient visits.

4. Matching supply and demand

After the future demand and future supply have been estimated for example ten to twenty years in the future; it is necessary to analyze and resolve the discrepancies between them.

The most common problems in health personnel planning include:

- ◆ too few trained and available personnel
- ◆ too many trained and unemployed personnel
- ◆ distributions problems
- ◆ inappropriate use of personnel
- ◆ unproductive/demoralized staff

In general, for most specialties in most countries, the analysis will reveal future potential shortages, more so in some regions of the country than in others. However, in some cases there may be predicted surpluses of certain categories of health workers may be predicted.

To overcome a predicted personnel shortage, a personnel planning body can apply for the following types of actions: **training of additional personnel, substitution, and increase in productivity.**

Additional personnel. The numbers of trained personnel can be increased either by increasing the annual intake per training institutions, or by increasing the number of the institutions. Government subsidies may have to be provided for the students and for the training institutions.

In some situations special measures can be instituted to deal with a shortage. For example, difficulties in filling rural posts may call for reserving places in training institutions for candidates from rural areas. Moreover, the training can be oriented to rural needs, and provision may have to be made for salary supplements for rural services.

In a case where graduates are lost because of migration, training initiatives may have to be coupled with compulsory service and a restriction on migration for a period of time following graduation. Some training institutions in Armenia are using this approach.

Substitution. Another way to avert shortages in personnel is to substitute one category (usually less skilled) for another. Such substitutions imply changes in training programs to fit professionals for their new roles. Such changes often call for new patterns of supervision and quality control.

Increased productivity. The third type of action to overcome personnel shortages is to increase productivity. Regular sessions of in-service training can enhance morale, increasing competence, including group practice or other modified organizational arrangements as effective action. In this cases supervision is essential to optimum performance.

As you have seen from the recommendations presented above, the ways to balance out supply and demand have social and economic costs. The ultimate policy decisions are not in the hands of the health personnel planner, but rather are made at higher government levels. However, although personnel planners cannot make the decisions themselves, they must post reasonable, clear and detailed alternatives for implementing programs to alleviate shortages as well as to describe various possible constraints (educational, social, economic, political, and professional concerns) which must be faced in practice.

We have completed the series of lectures related to the planning in health care systems. We have discussed the key issues such as steps of the generic planning model as well as health personnel planning and hope you have found them interesting and useful.

Self Assessment Questions**1. Health care sector is**

- a) low labor-intensive field
- b) moderate labor-intensive field
- c) highly labor-intensive field

Answer: c). See page 1.

2. Health personnel expenditures may account for about of total expenditures.

- a) 60-75%
- b) 10-30%
- c) 75-100%
- d) 30-75%

Answer: c). a). See page 1.

3. The estimation of the average number of services per health worker per unit of time and projecting changes is done in

- a) Supply analysis and projection of supply
- b) Demand analysis and projection of demand
- c) Productivity analysis and projection
- d) Matching future supply and demand

Answer: c). See page 1.

4. Basic biologic need, status quo, comparative method, established standards of practice, and effective economic demand are the approaches to measure

- (a) Supply
- (b) Demand

Answer: b). See page 3.

5. Non-predictable factors affecting change of demand are changes in

- a) population size
- b) population age pattern
- c) geographic distribution of population
- d) in disease patterns

Answer: d). See page 5.