QUALITY ASSESSMENT AND ASSURANCE IN PRIMARY HEALTH CARE

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WORLD HEALTH ORGANIZATION
GENEVA
1988
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INTRODUCTION

This discussion of quality assessment and assurance for primary health care is intended to summarize, in relatively brief form, the principal aspects of a large subject. The quality of health services has been a subject of research and controversy for many years. It has been considered by some to be intangible and undefinable. Others consider it measurable in certain aspects and elusive in others.

In any event, the large amount of literature that has accumulated on health care quality has been oriented almost entirely to the problems of clinical medicine. Relatively little work has been done on the evaluation of public health programmes in general and primary health care in particular. Even less has been done to assess the quality of primary health care in developing countries, and to consider how care of a high quality can be maintained. It is hoped that this publication may indicate some approaches to this important task.

This publication is addressed to everyone concerned with the planning, teaching, administration, delivery, and evaluation of health services in developing countries. It is hoped especially that discussion of the goals and methods of quality assessment and assurance may stimulate all health workers to explore the many strategies available for improvement of primary health care.

The analysis presented has drawn freely on publications in the WHO "Health for All" series, especially:

No. 4 - Development of indicators for monitoring progress towards health for all by the year 2000 (1981),

No. 6 - Health programme evaluation (1981), and

No. 8 - Seventh General Programme of Work covering the period 1984-1989 (1982).
The references and the annotated bibliography provided in Annex 1 may help the interested reader to become more familiar with the details of the current state of the art as regards health care quality and assurance.

Comments on the first version of this paper were received from many members of the WHO Panels of Experts, and other colleagues, and they confirm that the issue of quality is considered a crucial one for primary health care and that this publication may well be expected to serve a useful purpose as a tool for information, training and practice. The contributions of the following persons have been integrated into the present text and are here gratefully acknowledged: D. Banerji, F. Beske, J. Blanpain, H. Blum, P. Brudon-Jakobowicz, B.J. Cooper, R. Cook, H. Duran, H. Doron, A. Davis, C. Evans, N.H. Fisek, A. Fakhro, R.A. Gomaa, A.A. Ghazali, Hoang Dinh Cau, R. Henderson, D.H. Irvine, E. Kalimo, B. Kleczkowski, A.O. Lucas, S. Lwanga, E. Lauridsen, J. McCusker, D. Michaeli, S.N. Otoo, S. Plianbangchang, G. Ramanohisoa, J. Rohde, I. Russell, Z.A. Sebai, R.J. Sahl, M. Subramanian, R. Thapa, R. Vannugli, H. Vuori.
1. MEANING OF QUALITY OF HEALTH CARE

The word "quality" has several different meanings, but in the context used here it refers to the merit or excellence of a thing or activity. With respect to health care, it concerns the degree to which the resources for health care or the services included in health care correspond to specified standards. Those standards, if applied, are generally expected to lead to desired results.

The concept of "quality" in health care - its assessment and its assurance - originated mainly in the world of clinical medicine. There is a vast literature on assessment or evaluation of the quality of care provided to individual patients (1,2,3). Most of the reported studies have been made in hospitals, and the vast majority have been in industrialized countries. A great deal of this work has focused on the care of patients with specific diagnoses, and data have been collected on relatively fine points of diagnosis or therapy or the results of these actions.

In large programmes, such as primary health care (4) in a country (especially a developing country), the types of information sought for quality assessment must be quite different. It is seldom feasible to obtain the sort of refined measurements that can be made in the orderly conditions of a ward in a large hospital. The objectives of quality assessment and the methods used to measure it must be realistic. One must often be satisfied with estimates made on the basis of relatively simple observations or relatively perfunctory records. There are difficulties in making measurements, and in quantification of phenomena, in most developing countries, where information systems are typically weak. The level of quality to be expected, furthermore, and the criteria to be applied are still modest in many areas. One must therefore be cautious and selective in drawing conclusions.

Two levels in the conceptualization of quality

Quality as a characteristic of health care may be understood at two different levels. At the more general level, one may speak of the
quality of the health care system as a whole (5,6). In this approach, the resources, the activities, the management, and the outcomes of health care are all implicated: quality is the merit or excellence of the system in all its aspects (3).

At a more restricted level, quality may be considered to be one of the features of the health care resources and activities. Do they comply with certain established standards? Thus, it may be stated that the attributes of a given set of resources include: their category or type, their quantity, their unit cost, and their quality. The attributes of a set of activities include: their type, quantity, effectiveness in regard to the health problems addressed, coverage of the target population, and quality. In this perspective, the outcomes or effects of the system would depend on the attributes of the resources and activities, including their quality. The quality and the other attributes of the resources and activities would themselves depend on the financing, resource development, planning, organization, and management of the system. The more restricted view of quality makes it possible to handle it as a set of variables, that can be easily defined, measured, assessed, and improved. It is, therefore, quite appropriate for operational purposes.

There is no opposition or mutual exclusion between the two approaches; there is only a need to clarify the level at which the concept of quality is being utilized in each particular case. Fig. 1 presents the various elements involved and their relationships.

Assessment of the quality of the health care system as a whole

The more general approach to the notion of quality of care seems to have been based mainly on experiences of evaluation in clinical medicine. Indeed, when appraising the quality of care provided to an individual patient it is only natural to take into account the immediate results of such care, e.g., was the patient cured or not? It is also customary to use a summary measurement of such individual results when assessing the quality of a hospital, e.g., what was the cure rate and the mortality rate among patients?
However, when judging the health care system from the point of view of the health of an entire population, such individual or institutional results have to be seen as only particular or intermediary outcomes. What matters most in terms of the health of a country or a district are the changes in survival, morbidity, disability, and physical and mental development of the total population that can be attributed to the health care provided; this is the final outcome of the system.\(^1\)

\(^1\) As will be seen later, the immediate results of certain activities may be utilized as indicators of the quality of those activities, even when applying the notion of quality in a restricted sense.
An example will help to demonstrate the issue of overall evaluation of the health care system in relation to the population of a district, i.e., from a public health point of view. The example refers to the structure and resources, to some primary care activities, and to the corresponding outcomes in an area with 50 000 inhabitants.

**Structure and resources.** One health centre and four health posts exist in the area. The health centre is staffed by one general physician (serving as a trained health care director) and 12 other personnel; each health post is staffed by a community health worker, a trained midwife, and two aids. A small supply of essential drugs is available at each location. Vaccines are available for immunization and are properly stored to ensure potency.

**Process and activities.** During the last year, the above resources provided services in the field of maternal and child health as follows:

- In connection with 1500 childbirths (birth rate of 30 per 1000 population), prenatal services were rendered to 700 pregnant women. A total of 2100 prenatal visits meant an average of 3.0 per expectant mother served, but 800 such women were not served (being seen predominantly by untrained traditional birth attendants).

- Of the 1500 childbirths, 1450 infants were born alive and lived for at least one month. More than 1000 of these infants were brought back to the health post or health centre for examinations and guidance, amounting to a total of 2000 consultations. Complete or partial immunization for diphtheria, pertussis, and tetanus (DPT) was given to 900 infants.
- Of the 700 expectant mothers seen prenatally, 600 were delivered by the trained midwives. Of these, 200 were offered and accepted contraceptive advice, in order to plan subsequent pregnancies.

Outcome or effect. Beyond the first month, an additional 30 infants died before reaching one year of age. Of the 50 products who did not reach one month of age, 40 had been born alive (10 being stillbirths). By the end of the year, therefore, there had been 70 infant deaths out of 1490 born alive - an infant mortality rate of 47 per 1000 live births for the district.

This infant mortality rate (IMR) may be compared with the IMR of other districts, or of the same district in previous years. Within the district, the IMR may be calculated separately for the mothers (a) receiving or not receiving prenatal care, and (b) delivered by trained midwives compared with those delivered by traditional birth attendants. However, it is not always easy to carry out these calculations and analyses.

The above illustration may clarify the meaning of the widely-used model concerning "structure, process, and outcome", when applied to health experience in a population.

The availability and quality of physical and human resources ("structure") are relatively easy to measure. By implication, in the previous example, it would mean that the health personnel in the various facilities render services to the 50 000 inhabitants of the district. The population would be served by one physician plus 28 other personnel in the formal programme of the ministry of health (ignoring traditional healers, private pharmacies, or other resources). This amounts to a ratio of 2.0 physicians and 56 other health personnel per 100 000 population. The number of staff, as expressed by such indicators, must be taken into account
in any appraisal of quality. However, a judgement of the sufficiency of the personnel or facilities depends upon the standards assumed. Other questions to be asked on quality of resources would be: have personnel been trained properly for their jobs? are they making use of appropriate technologies? is essential equipment (such as blood pressure apparatus) available? are in-service training courses held regularly?

The measurement of services rendered is somewhat more difficult to make, but the information is undoubtedly more significant, since it comes closer to telling us what happened to the people. Collection of the data depends on having systems of recording and reporting. The various encounters must be faithfully recorded in some systematic manner. The interpretation of the data, furthermore, will still depend on standards of quality. Regarding the 1500 childbirths, only 700 or 47% of the mothers received any prenatal care. Among those receiving such care, the visits amounted to only 3.0 per mother - some receiving fewer and others more than this. Is this frequency of service satisfactory? One might compare it with the frequency in another district, or that in the same district during a previous year. The content and value of each prenatal consultation remain uncertain. More than a mere count of prenatal visits would be necessary for more careful assessment of the services; it would require evaluation of the content - counselling, blood pressure measurement, urine analysis, etc. - of each consultation. When medical records indicate the procedures performed, a "medical audit" can be carried out. It is then necessary to ask if the various procedures are being done with proper care.

Measurement of the effects or outcome of care, such as changes in the infant mortality rate, is generally still more difficult to carry out and is less frequently done. Calculation of the infant mortality rate requires the collection of accurate information on all births and all deaths of infants (children under one year of age) in the district. Reporting of these events in many developing countries is well known to be incomplete - especially for small infants who are born
alive but die very soon thereafter. Sometimes a birth may be reported, and not the death; or a death may be reported and not the birth. If comparisons are made with the IMR in another district, or in the same district for a previous year, the comparison data may be faulty in one direction or the other. Aside from mortality rates, development of simple and practical measurements of the health status of populations would make a great contribution to evaluation efforts in developing countries.

Even if all the infant death data are accurate, additional problems must be faced in the interpretation of outcomes. These may be slow in becoming evident and this delay is an obstacle to the evaluation of the interventions. Furthermore, how can one be sure that the health changes are attributable to the programme? They may be due to an improvement in the weather or in the overall economic situation, so that more food was available to everyone. Perhaps a better water supply was made available, so that improved environmental conditions were mainly responsible. There are ways of taking account of and "controlling" for such additional or confounding variables, but they usually require numerous areas of observation, sophisticated statistical techniques, and greater expenditure on research. An evaluative conclusion is more reliable if it is confirmed in several places by different observers.

Conclusions about the effect of a health service, under non-controlled conditions, may sometimes be supported by "circumstantial evidence"1, for example, the time trends of the effect and of the intervention may be parallel, the effect may be observed in places of intervention but not elsewhere, the size of the effect may be proportional to the magnitude of the intervention, the effect may persist even when other possible causes are eliminated in

the field or statistically, or the observed relationships may appear logical. Thus, while absolute proof of the effectiveness of care may be lacking, there may be a sufficient basis for practical decision-making.

Still another dimension of outcome may be determined through measurement of patient satisfaction with services; this may be inferred to reflect, even if crudely, the quality of care that has been rendered. All in all, one must learn whether a given health service meets the felt needs of the community.

Quality as a specific feature of the health care resources and activities

As mentioned above, the more restricted notion of quality does not exclude the measurement of the other components and dimensions of the health care system. On the contrary, it facilitates the concrete definition of each one and helps to clarify the cause-effect relationships within the system (Fig. 1). It might be said that in a population-wide context the outcome is too important to be subsumed under the idea of quality.

Because of its operational usefulness, it is the simpler notion of quality that will be mainly adopted in what follows. Outcome will be considered as the litmus test, rather than as a component, of quality.

What, then, is included in this more specific definition of quality?

In regard to health care resources, quality may simply be described as the suitability for providing the programmed services in a reliable manner. It is indicated, for example, by the training, skills, knowledge, attitudes, and behaviour of the personnel, by the degree of cleanliness and safety of the health care facilities, and by the adequacy of the equipment and supplies found in them.
For health care activities, the concept is usually associated with technical excellence, that is, how well the activities undertaken comply with the relevant technological prescriptions aimed at effectiveness and safety. However, it should also be taken to include other aspects or "qualities", such as the humanistic dimensions of personal, social and cultural acceptability and of compliance with ethical norms. The activities should be delivered in a manner that integrates attention to the essential physical and psychological health care needs, combining preventive and curative aspects, as well as an educational component. The balance of the various levels of complexity of the care available to the individuals, families, and communities is also an aspect of quality, as is its provision to all in a continuous, dependable way.

The example used to illustrate the more comprehensive use of the quality concept refers to one element of primary health care - a maternal and child health programme. In this case the information required could be taken mainly from routine statistical reports. Other interventions may require very different kinds of data. Sometimes quality assessment requires direct personal observation of performance. Sometimes records must be studied in detail to learn exactly what was done by health personnel - on the assumption that the facts have been faithfully recorded. The special medical examinations and laboratory tests ordered may have to be assessed for their relevance, their results, and the use made of them. Such an evaluation of the quality of activities is called a medical audit. A survey among the patients served by a unit or programme may also yield elements for an appraisal of such aspects of the quality of the activities, the courtesy of staff, or the clarity of the explanations provided.

A number of immediate results of the activities may be used - with appropriate precautions - as indicators of their quality. Examples are: the accuracy of the diagnoses formulated; the proportion of patients cured; the hospital survival rate; the percentage of complications among deliveries or among surgical cases attended.
Activities in a health education programme would be expected to be followed by such immediate results as improvements in health knowledge, attitudes, and practices among the target groups. In so far as it may be possible to measure the satisfaction of individuals or communities with the care received, this can also be considered as an indicator of quality of the activities performed. As indicated before, "immediate results" do not amount to "outcomes" of the system as a whole, particularly in regard to the objective of improving the health status of an entire population. For example, an increase in hospital survival rates, which may or may not be a positive indicator of the quality of hospital care, may co-exist with a deterioration of the general mortality rate or of other important health indicators in the community.

It was noted above that the interpretation of data, reflecting any of the viewpoints toward evaluation, usually requires the prior existence of standards. These can seldom be absolute, but must be formulated according to the conditions in each country. Ordinarily, standards are set by the health leaders of a country, in the light of historical conditions and current capabilities. Standards are often derived from the consensus of a group of experts in a country, for example, through the Delphi technique.\(^1\) Over time, of course, standards change, so that they must be reformulated periodically (more on standards in Chapters 3 and 4).

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\(^1\) The Delphi technique is a method for technological or social appraisal or forecasting. It begins by repeated questioning on the subject being appraised, addressed individually to a certain number of experts. The replies of the other experts are provided to each one of them in each round of the procedure. The specialists may change their initial assessment on the basis of the new arguments and information received. Thus, in the end, consensus - or at least a predominant opinion - is achieved.
The purpose of assessment

The ultimate purpose of quality assessment of health care, or any other kind of public service, is to improve the outcomes or effectiveness of the programmes. Quality assessment will show not only the accomplishments of a programme, in relation to the standards or in comparison with other equivalent programmes, but it may also suggest the point or points of difficulty. Efforts can then be focused on the weak links in the chain. Even when such points cannot be identified, overall programme efforts may yield improvements. Hence quality assurance and quality assessment are inseparable; they are dealt with here in succession only for clarity of presentation. There is no point in initiating assessment if assurance is not simultaneously built into the health care programmes.

Quality versus quantity

Much of the difficulty in understanding and doing quality assessment arises from the semantics. Thus, if quality refers to the merit of a thing, can it be considered as the opposite of quantity?

In fact, quality in primary health care should not be set in opposition to quantity. It is not something separate from the coverage or accessibility or utilization of health services. These attributes of health services are essential elements of their quality. If in an area, there is no coverage of the population with primary health care or the services are not accessible to people, or the services are not used by the people, the quality is obviously not measurable and must be rated as zero.

In the last analysis, quality itself must also be quantified, although, as noted earlier, it can be evaluated only by comparison with something else - care at another place, another time, or a specified standard.
Standards for assessing quality of health care generally concern certain attributes or characteristics that are quantifiable or defined as present or absent. These characteristics are sometimes called indicators. For example, the percentage of samples of drinking-water taken in an area that are found to be safe is an indicator. In a particular country, the standard of quality specified by health authorities for this indicator may be 50%; at another time or another place it may be 80%.

Indicators may be identified and standards specified for each of the elements of primary health care discussed below, as well as for the several health system components that are necessary to make possible the provision of primary health care. With respect to maternal and child health, the percentage of pregnant women receiving prenatal care of a certain standard is a common indicator. Reasonable quality standards may vary greatly among countries, depending on their resources, their wealth, and their managerial policies at a given time. With respect to endemic diarrhoea in a certain area, the indicator may concern the use of oral rehydration therapy, and the quality standard could be some point along a range of percentages.

Standards should be changed from time to time, usually upwards. Accordingly, at certain times and places, standards may be regarded as goals, toward which a country or a district should work. With or without quality standards (e.g., six prenatal visits per pregnant woman), a comparison can be made, as noted above, between two points in time. Often this is before and after a certain innovation. Alternatively, comparisons may be made between two programmes at different places that are otherwise "comparable" or similar. Even more persuasive are evaluations made across both time and space (2). At the same time, these comparisons may even offer an

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indication of the merit of the standards themselves. Making any such comparisons, or even simple and objective descriptions of conditions in a health system, is a type of health systems research.

With respect to quality and equity, it is sometimes claimed that a certain country may provide a "very high quality" of medical care for certain of its citizens, although many other persons have access only to poor quality care. Another country may provide a modest quality of care to everyone, and this is condemned as "mediocrity". The contrast highlights the intimate relation between quality and quantity. It may be illustrated as follows:

<table>
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<tr>
<th>Country (with quality differentials)</th>
<th>Groups</th>
<th>Percentage of population</th>
<th>Group quality scores&lt;sup&gt;a&lt;/sup&gt;</th>
<th>National quality score</th>
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<tr>
<td>A</td>
<td>X</td>
<td>25</td>
<td>70</td>
<td>17.50</td>
</tr>
<tr>
<td></td>
<td>Y</td>
<td>75</td>
<td>30</td>
<td>22.50</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td></td>
<td>40.00</td>
</tr>
<tr>
<td>B</td>
<td>Total</td>
<td>100</td>
<td>50</td>
<td>50.00</td>
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</table>

<sup>a</sup> Maximum: 100.
Thus, in country B, although the average quality score of the health services received by everyone is modest (50), the value of the national quality score is higher than the final score of 40 in country A. The factors determining quality scores in the above example may include preventive techniques, diagnostic services, drugs, environmental measures, treatment modalities, etc. It is evident, therefore, that quality must be considered in relation to the number and proportion of the population affected - that is, including considerations of equity or "health for all".

In interpreting quality scores it is of crucial importance to bear in mind the aspects of quality that have an all-or-none relationship with the effectiveness of care. For instance, in the case of immunization, a score of 50% quality that might have been obtained by assigning positive points to the training of the vaccinators, the sterilization of the syringes and the right choice of target populations should really be taken as zero if vaccine potency is insufficient to produce immunity.

**Quality and primary health care**

The very fact that primary health care includes the provision of many services that some might consider "commonplace" heightens the importance of assessing and assuring its quality. It is all too easy to assume that the lower need for advanced technology in primary health care implies a lower need for quality standards. On the contrary, the very simplicity of many primary health care activities means that they are subject to faulty performance, and various safeguards must be established to ensure their proper provision (see Chapter 4). For example, women who previously delivered at home are now encouraged to deliver in rural maternity centres: if these have no safe water supply and no individual clean bedding, they can easily become foci of infection. The high technological quality attained by some vertical programmes should be maintained when their activities are integrated into comprehensive local health systems.
Finally, the special problems of defining primary health care quality, particularly at the periphery of the health system, should never imply that such care is casual or "second class". Its provision may be according to a wide variety of patterns - manpower, facilities, organization, financing - but its merit depends on its correspondence to standards and on the final effects. Without safe and effective front-line care, secondary and tertiary care are likely to be inefficient and perhaps even ineffective. Bypassing of peripheral facilities is one of the inevitable consequences of low quality. Medical care using high technology, on the other hand, is not necessarily of high quality. It may be inappropriate and even unnecessary or unsafe. It, too, should correspond to reasonable standards. Besides, quality in teaching hospitals is not enough: coverage with quality care must be extended to all areas in each country.

Thus primary health care quality encompasses a range of attributes that contribute to define the conditions for implementing any policies and plans oriented towards the attainment of "health for all".

2. SYSTEM DETERMINANTS OF THE QUALITY OF PRIMARY HEALTH CARE

The elements of primary health care

Before considering in more detail the assessment and assurance of quality in primary health care, we must clarify the requirements for such care. Child health services, discussed above, are one of the elements of primary health care. As stated in the report of the Alma-Ata International Conference on Primary Health Care (4), the following eight elements are considered essential:

1. education concerning prevailing health problems and the methods of preventing and controlling them;

2. promotion of food supply and proper nutrition;
3. an adequate supply of safe water and basic sanitation;
4. maternal and child health care, including family planning;
5. immunization against the major infectious diseases;
6. prevention and control of locally endemic diseases;
7. appropriate treatment of common diseases and injuries; and
8. provision of essential drugs.

It is evident that the simultaneous provision of all these elements in a comprehensive programme may create a risk of superficial handling of some of them; hence quality assessment and assurance are all the more important.

The capabilities to provide high quality primary health care services and to implement the primary health care strategy rest upon a complex infrastructure. In addition, a series of factors in the environment of the system influence both the nature of the health problems that affect the population and the characteristics of the infrastructure.

These two groups of determinants are briefly discussed below, since they should be taken into account in both the assessment and the assurance of quality.

The health system environment:

The social, economic, political, and cultural situation and trends in a country or a district, and also the corresponding factors at the international level, influence the policy objectives and the infrastructure of the health care system. The nature of such influences is highly variable and interactive. For example, a low gross national product (GNP) limits the financial possibilities for
health care; however, political and social factors can determine how much of that GNP is assigned to health and the efficiency with which the resources are organized and handled with - among other objectives - the aim of producing high coverage with services of the best possible quality. The role played by the other sectors influencing health is also variable; for example, agricultural development which should be beneficial by its very nature, may at times be deleterious.

The health system infrastructure

The health system infrastructure of any country is broader than the ministry of health, which may not, in fact, play the largest part in the ultimate provision or delivery of health services. The basic composition of the system infrastructure may be described under five major headings (5,6):

- resources and their production,

- organization,

- economic support,

- management,

- delivery of services.

All these components are necessary for the implementation of primary health care. A modification of one inevitably affects all the other components. It must also be appreciated that all five components may be studied and evaluated at any level of a health system infrastructure - local, intermediate, or central - and all are interrelated. The results of an evaluation of performance at the local level may ultimately depend on circumstances at the intermediate or central levels.
It may be noted that the quality of health care is an inherent characteristic of two of these components - resources and their production plus delivery of services. The other three components - organization, economic support, and management - are essential determinants of quality. However, their substantial influence in this domain is sometimes overlooked. They, in turn, should be backed by the necessary legislative and policy framework.

The availability of resources and their production are obviously basic for provision of primary health care. In any health system, resources are of four types: health manpower, health facilities, commodities (including drugs), and knowledge or its application in technology. One may note some simple examples of each: health manpower includes various categories of personnel, all of whom have to be educated in order to produce primary health care. Facilities include health centres, health posts, hospitals, with their installations and vehicles, which must support the delivery of care of the desired standard. Commodities include simple equipment and drugs, which must be manufactured and distributed. Knowledge and associated technology include the scientific basis on which appropriate interventions rest. The assessment and choice of appropriate technology are crucial factors for the attainment of quality in primary health care.

The organization of resources into programmes is necessary for the provision of health services of proper quality. Most important in developing countries is the organization of a ministry of health or some equivalent national health authority, and some corresponding organization at regional or district level. Other governmental agencies, such as a social security institute, may also have responsibilities for the health of certain populations, or for certain elements of primary health care, such as environmental sanitation under a ministry of public works. Educational institutions may be involved in providing health services as well as training health personnel. Non-profit-making organizations may render assistance to crippled children, and industrial enterprises may provide preventive and
curative care for workers at the workplace. Finally, in every country there is a private market, in which independent practitioners - both modern and traditional - render care to those who can and wish to pay for it personally. The relative strengths and balance of these several types of organizations inevitably influence quality.

**Economic support** to a health system is indispensable. Governmental organizations are supported mainly by general tax revenues, but in many countries there are programmes resting on social insurance or social security, separate from the public treasury. Charitable donations or donated labour may provide economic support. Industrial or agricultural enterprises may support the provision of health services to workers out of their earnings. Groups of families may support a cooperative health programme (voluntary insurance). The private market is sustained by money from individuals or families; the quantity of care purchased, under varying conditions of supply, demand, and competition, varies with the affluence of the family and the price of the service. Great deficiencies in primary health care quality may result from an insufficient overall amount or an unbalanced distribution, or both, of these several sources of economic support (8).

Appropriate **management** must support the entire health system infrastructure. There are various ways to conceptualize management; here it is interpreted as encompassing planning, administration, regulation, and evaluation. The planning of a health system must, of course, include planning of community health care; all too often it is the planning of secondary and tertiary care that attracts the greatest attention. Regulation and administration are, in a sense, the other side of the coin of planning. Regulation includes the many monitoring actions carried out to ensure the fulfilment of plans. The plans may, for example, call for a period of rural service by medical graduates to provide care to underserved populations (as well as for their own training); inspection and regulation may be necessary to ensure that this policy is carried out. Evaluation is also related to planning and regulation; it is conducted in order to determine how well the plans
are being implemented and where, in the programme, some improvement should be sought.

"Administration" is sometimes used as a synonym for management, but in this context it is regarded as the aspect of management that concerns the relationships among the several parts of a programme, necessary to ensure that it functions smoothly as a whole. Thus, administration includes leadership and supervision; it includes communication and coordination; as tools of all administrative activity, it involves personnel procedures and financial administration and accounting; it comprises logistics as needed for the reliability of supply lines, and the regular maintenance of facilities and equipment; and it requires an orderly flow of information.

All of these processes are relevant for the operation of primary health care, and in modern health systems two approaches to management require special emphasis. One is community participation or the involvement of local residents in the supervision and operation of the programme; this may take many forms - elected local government, development councils, health committees, public meetings, etc. The other feature is intersectoral collaboration or the maintenance of productive communication between health personnel and personnel of other sectors (education, agriculture, housing, transport, etc.), in order to help ensure that health matters are seriously considered in the policy-making of the many other influential sectors of society. In many countries, developments in industry, in mass education, and in science and technology are the crucial determinants of an effective national health system. Community participation and some aspects of intersectoral collaboration, e.g., with education, deserve priority consideration among the standards of quality for primary health care activities in the context of the strategy for health for all.

The delivery of health services is the last link in the chain of components comprising a health system infrastructure. It is also a major object of examination and analysis with regard to the quality of
primary health care. Such analysis should take into account the degree to which judicious self-care and a healthy life-style are promoted.

The preventive and curative services at the primary level are arranged in each country, or each section of a country, in accordance with the prevailing policies of the entire system. In some countries, where the overall level of organization is high, almost all essential services are delivered at health centres or health posts by salaried, government personnel working in teams. In other countries, private medical or other practitioners, paid in various ways, provide most of the care. Different groups of people may receive primary level care by different methods in the same country. Secondary and tertiary care, mainly provided in hospitals, are necessary to support health activities conducted in the community and in peripheral facilities. These more sophisticated services may also be delivered through various patterns, depending on system policies. The organization of the medical staff and the mode of work in a publicly owned hospital usually differ from those in a private hospital. These diverse patterns of health care delivery have impacts on its quality, both directly and indirectly. For example, team work among various types of personnel generally contributes to the achievement and maintenance of quality. Patterns of health care delivery also affect the acceptability of health services to patients.

3. **ASSESSMENT OF THE QUALITY OF PRIMARY HEALTH CARE**

**IN DEVELOPING COUNTRIES**

The main purpose of quality assessment, as noted earlier, is to promote the improvement of programmes. More accurately, it is to identify points of weakness within programmes that call for strengthening. In addition, the very process of evaluation of a programme has, in itself, certain benefits. The personnel involved in a programme should participate to some extent in its evaluation, and this experience is bound to heighten their appreciation of the factors contributing to quality. For some years, quality evaluations have been
made in industrialized countries - particularly in hospitals - but in developing countries, quantitative deficiencies have been the main concern and quality evaluation has had low priority. In developing countries, therefore, quality assessment and assurance are relatively new challenges.

The who, when, and where of an assessment

When should quality evaluations be carried out? Surely not the first day a programme is in operation, although the methodological groundwork may be laid. It is reasonable to evaluate the quality of a primary health care programme only after it has become fairly well established - after all or nearly all positions have been filled, and once services are provided on a more or less regular basis. If some administrative or technical crisis has occurred, the evaluation should be delayed until it has been resolved. In primary health care, population coverage is crucial, and if a point has been reached where the population of a certain district seems to be fairly well covered as regards certain important activities, this is a good time to undertake quality assessment.

No cross-sectional assessment can have permanent meaning: once initiated, quality assessment and assurance must become a continuous and integral part of the provision and management of the services and the situation should be examined periodically in a formal manner. The frequency need not be regular, but assessment and assurance should be carried out whenever a significant new procedure has been introduced. To some extent an initial evaluation serves as a baseline for subsequent quality evaluations. Before a new form of primary health care programme is initiated in an area, it is valuable to conduct a general situational analysis in which some basic indicators of quality should be incorporated. This will help determine a level from which progress can be measured.

Who should conduct the formal quality assessments? Of course, it must be a person who is technically qualified, but should he/she be
from the organization responsible for the programme (e.g., the ministry of health) or from outside (e.g., a university)? There are merits and weaknesses in either approach. The "inside" person is likely to be familiar with the inherent problems and realities, but he/she may be biased. "Outside" people are more likely to be objective, but they may be naive with respect to the problems that must be faced in the programme and their judgements may therefore be too critical. Sometimes the best evaluator is an outside person, who has been thoroughly oriented concerning the realities of the situation. Alternatively, an inside evaluator should be in a position that ensures independence, irrespective of the findings. Perhaps collaboration between inside and outside evaluators is the ideal.

Realistically, not all the resources and activities of a programme can be assessed in a field setting, and selections must be made - preferably on the basis of criteria such as potential effects on health care, safety of the activity, and implementation of primary health care principles.

Problems encountered

There are inherent difficulties in evaluating the quality of services provided to the entire population of an area from the various sources of health care. For example, there is often a gap in the information concerning the private sector, both profit-making and non-profit-making, which in some countries is extensive and has a considerable influence on the quality of care received by some sections of the population. The weakness of record-keeping is pervasive in respect to all the elements of primary health care, but for some elements it is more difficult to obtain information on quality than for others. Health education, for example, is difficult to assess in any country, as regards both its quantity and its quality. The treatment of common ailments, particularly in ambulatory patients, also causes problems as regards conventional quality assessment. These arise from the difficulty of knowing from the records the diagnosis, the degree of
severity, the examinations performed, the prescriptions and advice provided, and the compliance of the patient.

On the other hand, the expectations of the quality level to be achieved should be related to the context. For example, a programme with little preventive content may be considered to be of poor quality (9). Yet, in almost all communities, one may expect people to take action more readily for the relief of some symptom than for a preventive purpose. Moreover, if new health workers in the field do not offer some response to complaints of illness, people are not likely to trust them or to seek or accept any preventive service from them. Evaluation of quality must take account of these realities.

In spite of these and other constraints, it is almost always possible to make some assessment of the quality of essential aspects of health care resources and activities. Various methods are available for the purpose.

**Main approaches to quality assessment**

There are four main approaches for gathering information on health care quality: through the normal recording and reporting procedures (including supervisors' reports), through special studies of the health services, by means of patient surveys, and through household surveys.

In many instances, quality is and should be only one of a series of characteristics being assessed. It is not infrequent to see that good opportunities to examine the quality of health services in the context of broader information efforts are lost, or that only a few uncoordinated items are included, almost by chance, for lack of a careful specification of objectives.

The four approaches are, of course, not mutually exclusive. If appropriate, two or more of them may be combined.
Assessment through normal recording and reporting procedures

Quality assessment may be included in the basic health information process.

For instance, it is expected that each echelon of the health services should report annually on resources. This may extend beyond a merely quantitative account to include qualitative aspects such as: the compliance of current manpower allocation with national staffing standards, the adequacy and maintenance of buildings, or the implementation of plans for continuing education for staff of specified categories. Also on an annual basis, information may be provided by the national and provincial levels on the existence, updating, and use of quality standards and on mechanisms for quality assurance.

Likewise, routine monthly or quarterly reports on health care activities might include a few selected items on quality. For example, district level reports may contain data on "quantitative aspects of quality", such as the average number of antenatal consultations per mother, or the distribution of first antenatal consultations by month of pregnancy, or the incidence of cases of specific diseases notified to the epidemiological surveillance unit with adequate promptness. Provincial reports may refer, perhaps on the basis of data collected in rotation from different units, to aspects such as the proportion of time spent by hospital staff in outreach activities, or the frequency and results of tests of the quality of drinking-water or of food.

Also on a sample or rotation basis, provinces and districts may report on certain immediate results that serve as indicators of the quality of activities; among these, the proportion of patients with certain diseases that are cured, the mortality rate in hospitals, and the rate of surgical infections have been mentioned earlier.

At the community level, and for individual facilities, quality aspects may be included in routine supervision checklists and report forms. For example, a supervision format valid for all types of health
care establishment and tested by the Ministry of Health of Haiti comprises 26 items on management and quality that are each given a number of points adding up to a maximum possible score of 100 (10). Examples of quality assessment components from this instrument are listed below.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Assessment criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultations register</td>
<td>2 points if it exists and is up to date.</td>
</tr>
<tr>
<td>Community activities</td>
<td>1 point for each &quot;contact visit&quot; in the community, up to a maximum of 10 in a month.</td>
</tr>
<tr>
<td>Soap and water</td>
<td>4 points if both are present.</td>
</tr>
<tr>
<td>Condition of drugs</td>
<td>3 points if none are beyond the expiry date or damaged.</td>
</tr>
<tr>
<td>Oral penicillin</td>
<td>2 points if in stock or ordered in time.</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>5 points if it is functioning.</td>
</tr>
<tr>
<td>Cleanliness of premises</td>
<td>3 points if clean inside, 2 points for external cleanliness.</td>
</tr>
<tr>
<td>Scales (for infants)</td>
<td>2 points if in working order.</td>
</tr>
</tbody>
</table>

It is essential that the supervisor also observes how certain essential procedures, such as patient examination or sterilization of instruments, are carried out. If the supervision includes home visits, then indicators of quality of family and self-care, such as the appropriateness of child-feeding procedures, may be recorded in the reports.
Assessment through special evaluation studies in health services

When a special evaluation of health services is being planned, either as a one-time or as a periodic activity, quality should be considered as one of the objects for evaluation. Some items from the 1979 evaluation exercise of the health sector in the United Republic of Tanzania (11), related to rural health care units, are presented below as examples.

- Check the condition of the following:

<table>
<thead>
<tr>
<th></th>
<th>good</th>
<th>acceptable</th>
<th>bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>general surroundings</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>buildings</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>kitchens</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>storage of food</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>water supplies</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- What equipment is available and which of the following are functioning?

<table>
<thead>
<tr>
<th></th>
<th>number working</th>
<th>number not working</th>
</tr>
</thead>
<tbody>
<tr>
<td>stethoscope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>thermometer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>microscope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vaccination kit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bathroom scale</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Is there a medical laboratory? Yes No

- Are there in-service training programmes? Yes No

If yes, please describe ____________________________________________________________
What is the overall quality of services provided at this institution?

- above standard
- of standard quality
- below standard
- very bad

Does the dispenser fill appropriately the prescriptions ordered? Yes  No

In the evaluation conducted in the United Republic of Tanzania, answers to these and other questions provided a basis on which the appraisal team could report, for instance, that lack of medical equipment and drugs was a serious problem, affecting the quality of work. Regarding the condition of the health facilities, the water supply and sanitation were the least satisfactory. The examination of patients was very quick and the quality of the examination in dispensaries was rated as high. Treatment was fully correct for about half the patients, and half the patients received full instructions. In respect of these and other conclusions, relevant recommendations were formulated by the planning unit of the Ministry of Health.

WHO has developed a set of protocols for joint overall reviews of primary health care with countries.¹ These include questions that allow for an appraisal of quality both in terms of the adequacy of resources - staffing, training, equipment, and supplies - and the correctness of technical procedures.

More detailed and specific assessments of quality can be carried out independently or within general studies of health services; they can be done regularly or sporadically, as and when the need arises.

Such studies, when focused on activities, are usually known as health care or medical audits; when addressed mainly to the quality of the resources, they are akin to accreditation procedures.

**Assessment through patient surveys**

Questionnaires addressed to patients are a useful means of assessing the human, or interpersonal, aspect of health care quality. An example of such an instrument, utilized in the context of a study of health care in a district in India,\(^1\) included questions such as:

- Did the doctor ask you any questions about your complaints? Yes - No -
- Did the doctor examine you? Yes - No -
  If yes, which parts of your body did he examine?
- Did he tell you what was wrong with you? Yes - No -
- Did he give you any medicine? Yes - No -
  If yes, what type of medicine?
  Did he tell you how much to take each day? Yes - No -
- Did he give you any other advice or instructions about your illness? Yes - No -
  If yes, what instructions did he give?
- How long did you have to wait before the doctor examined you?
- Has the treatment made you feel better? Definitely - A little - Not at all -

Assessment through community surveys

Information on health status, health care coverage, health-related behaviour, knowledge and beliefs, and also on health care quality, may be obtained from household surveys. In fact, this is the best source from which to find out the quality of community, family, and individual self-care, as well as the quality of health education, nutrition, and the environment. If the results of such surveys are to be useful, it is necessary to select a representative sample of households in representative villages or municipalities, to prepare questions - only essential ones - with skill and sensitivity to local conditions, to train interviewers, to process the data, and to have the ability to analyse the results. It is evident that the interviewers must be culturally suitable, as well as sufficiently knowledgeable about health matters to make reliable direct observations.

The method for joint primary health care reviews, mentioned on page 30, includes a section addressed to families and is based on cluster sampling of households.

If the conditions for conducting a proper survey are not available, interviews and observations in some households may, if interpreted with caution, provide a complement to data from other sources.

It may be helpful to suggest examples of the type of information, attainable through household surveys, that may contribute to quality assessment of primary health care.

Health education. To assess the quality of health education, questions should be asked about exposure of family members to formal health educational activities at various sites, and the interest and acceptability of these activities to them. Are any pamphlets or other health educational materials to be seen in the house? How effectively do they seem to convey their messages? A simple oral test might be administered, investigating knowledge of matters such as:
- the relation of mosquitoes to malaria,

- the nutritional value of various local foods,

- the safety of the local source of water,

- breast-feeding and bottle-feeding,

- action to be taken in cases of infant diarrhoea.

**Nutrition.** Information should be solicited on the quality of food consumed, for example the types and amounts of food eaten by each family member on the previous day. Questions should be posed also on the existence of family plots for growing certain crops, and on domestic animals. Where does the family purchase foods, and what types? With respect to nutritional outcomes, weight or height of children might be measured. If nutritional supplements are handed out, are they presented in acceptable form and are their value and use explained?

**Water and sanitation.** The interviewer should make observations on the quality of the immediate environment of the house. Is there evidence of proper solid waste disposal? Is there a latrine (or similar device) that is used regularly by the family and properly maintained? What is the family's usual source of water? Is water boiled when it is to be ingested by infants, children, or others? Depending on the region, are there nearby environmental hazards, such as breeding places for vectors of disease?

**Maternal and child care, including family planning.** Questions should be asked on the quality of care during childbirth and the use of prenatal care. What were the circumstances of the last birth in the family? Were there complications of the delivery for the mother or the baby and if so, what attention was provided? Was prenatal care available for the last pregnancy? How many prenatal visits were there and when did they occur? During prenatal examinations, if any, what
procedures were conducted (blood pressure measurement, urine analysis, physical examination, etc.)? With respect to family planning, is this practised? What method is used and are there any difficulties? Regarding children, was the youngest (or index) child weighed at birth? Have there been any illnesses in the recent past? If so, what action was taken? If any bouts of diarrhoea occurred, was use made of oral rehydration therapy? For preschool children, are weight and height measured regularly and are the results explained to the mother? Is breast-feeding being encouraged?

Immunizations. After ascertaining the coverage of children in the household as regards vaccinations included in the national programme, the quality of recording in the immunization cards may be reviewed and the mother may be asked about explanations received regarding any complications arising after vaccination.

Endemic disease control. If the local area studied is affected by any endemic disease, such as malaria or schistosomiasis, is there evidence of appropriate action being taken to control it? Has the house, for example, been sprayed properly with residual insecticide? Are people informed about the respective roles of snails and human habits in the transmission of schistosomiasis? If the prevalence of tuberculosis in the area is high, are case-finding activities carried out? Is there evidence of trachoma or other eye diseases in any member of the family? Is treatment being received?

Treatment of common ailments. Since this element of primary health care is often the most frequently utilized of any, the household interview should seek qualitative information only for a recent period, when a person's memory could be expected to be reliable. The person interviewed should be asked if any member of the family had an illness or injury in the last two weeks for which health care was sought. What was the source of this care - the local health post or any other source? What was the nature of the care given - oral medication, an injection, a surgical procedure, advice on diet, rest, or some other therapy? Did the patient comply with the advice given? What was the
apparent outcome of the therapy? How satisfied was the patient with the treatment - technically and personally? Did he or she have any complaint about the personal service at the health post or elsewhere? Was there an excessive wait for attention?

**Essential drugs.** With respect to any medical care received at a health post or health centre in the recent past, was there any indication that the drug supply was of poor quality, or that a drug wanted or ordered by the health care provider was not available? Was the patient advised to obtain the drug at a private pharmacy?

After a household survey has been completed in one or more localities, it is necessary to tabulate and analyse the findings. For the different activities quality scores may be assigned. The percentages of favourable scores among the households may be calculated and then compared with appropriate standards. If the sample has been properly drawn, the results should be valid for the entire population.

Community surveys may be done on other than a household basis. For example, a survey conducted in an area of the United Republic of Tanzania with the aim of assessing the quality of distribution and dispensing of prophylactic chloroquine for children, and the community factors influencing it, used the village schools as one of the main entry points.¹

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Indicators of quality

It may be helpful to cite examples of quality indicators for the various elements of primary health care that are obtainable from observations at the regional, district, community, or household levels.

The indicators of primary health care quality should take into account several criteria. They should: (a) be relevant to the objectives of national health policy, (b) be valid (i.e., they should measure what they are intended to measure), (c) be simple and inexpensive to obtain, (d) permit differentiation of persons or groups receiving a high or low quality of care (1). It is also evident that the main orientation of the assessments discussed here is at the community, peripheral and first referral levels.

Several examples of health care quality indicators have been given above, and additional important ones are presented below. A more comprehensive list, from which a selection may be made, will be found in Annex 2.

Health education. With respect to a simple cognitive test, calculate the percentage of correct answers. Also calculate overall scores of households, categorized according to the educational grade level attained by the respondent.

Water and sanitation. On the basis of the water samples collected, calculate the percentage of specimens that meet the standard (bacteriological count of Escherichia coli) of water purity. Also from household observations, tabulate the households with suitable and properly maintained latrines (or other sanitary method of excreta disposal). What is the percentage of survey households with satisfactory sewage disposal?

Maternal and child health, including family planning. Many indicators of quality are applicable in this field. For example, the percentage of pregnant women who have had at least three prenatal examinations,
or the percentage of pregnant women whose blood pressure was determined at least twice during the gestational period.

With respect to births, indicators may be the percentages of deliveries attended by persons with different levels of training.

Regarding children, the percentage of reported episodes of diarrhoea in which oral rehydration therapy was correctly administered may be used as a simple indicator of quality.

Regarding family planning, the number of women of child-bearing age in a household sample may be used as a basis for calculation of the percentage using birth control methods properly, in the way recommended by the national programme.

**Immunizations.** Through supervision, it may be determined whether the refrigerators for storing vaccines (at local health posts and at health centres) are in working order and are well utilized. Another indicator is the percentage of children who received the full series of inoculations.

**Endemic disease control.** With respect to endemic diseases (such as malaria, schistosomiasis, tuberculosis, trachoma, etc.), a possible indicator of quality is the percentage of expected cases who have completed treatment, according to specified norms. Regarding prevention, have vector control measures been thoroughly applied in the local environment?

**Treatment of common ailments.** An indicator of quality might be the percentage of patients suffering from a specific ailment who received the right therapy or advice at the local health unit. The percentage of treated patients who reported improvement within a few days or of
patients who were satisfied with the care received may be calculated from survey data and also be used as an indicator of quality.

**Essential drugs.** The percentage of households surveyed in which a sick member was not able to obtain the essential drug prescribed at the health post or health centre might be calculated. What percentage of patients were compelled to purchase a prescribed essential drug in a commercial pharmacy?

**Hospitalizations.** In district level hospitals, an assessment may be made - through examination of records or structured supervision - of the proportion of patients admitted for whom a history and physical examination were done according to standards, who were provided treatment according to standards, or who received satisfactory nursing care. Regarding the measures of outcome, such as the rate of recoveries or rate of deaths, one must be careful to take account of the severity of "case mix" for the patients using the particular hospital. A hospital attracting exceptionally sick patients may be expected to show higher rates of death and complications than other hospitals, even if the care it gives is of acceptable quality.

Cutting across the above indicators of the quality of various primary health care activities, one may also determine the qualifications of health personnel and the attributes of different health facilities, as a reflection of the quality of input of resources. For health personnel, such indicators might include:
- the duration of basic training provided to primary health care field personnel;

- the proportion of an established list of health care skills, in which primary health care workers have been thoroughly trained;

- the frequency and duration of continuing in-service training sessions.

With respect to health facilities, one could determine:

- the ratio of the space available for examination and consultation in health centres to the number of patients seen;

- the proportion of consultation rooms that have one facility in working order for washing hands;

- the proportion of facilities with toilets that are clean and in working order, for use by patients;

- the proportion of health posts and health centres with easy access at all times to a telephone or a radio transmitter/receiver.

With respect to essential supplies, one could determine:

- the proportion of a standard list of such supplies found to be in stock during a field visit;

- the proportion of a standard list of supplies that is found to be properly stored and maintained.

Sources of information

The main potential sources of information for assessing the quality of primary health care are the following:
(a) Household surveys (these are referred to extensively on pp. 32-35).

(b) Routine reports, from both central and peripheral levels, on such indicators as the average frequency of maternal and child health consultations, completion of treatment for tuberculosis, availability of specific categories of personnel, the basic and in-service training of staff, and hospital mortality.

(c) Client records, preferably on a standardized form, for information on preventive services, diagnosis, treatment, referrals, and follow-up. Their use for these purposes is usually described as "medical audit".

(d) Direct, structured observation, which may be done, for example, during supervisory visits to facilities. These visits should be used to assess the performance of techniques, such as plotting weight on a growth chart, immobilizing a fractured bone, giving an injection, or spraying a house with insecticide. Direct observation may also be used to test the knowledge of personnel, measure the time spent with patients and waiting periods, assess the physical condition of facilities, equipment, and supplies, and evaluate family visits. Observation in home visits is the best way to assess the quality of family and self-care.

(e) Follow-up interviews of patients after they have received a service, to determine compliance with health care advice or the impact of health education messages, as well as the degree of patient satisfaction with the services, and also the short-term outcomes of services received. For example, visits to the homes of infants discharged from a paediatric hospital of a large city in a developing country after being "cured" of pneumonia revealed that a high proportion had died within one month of their return home.

(f) Laboratory examinations, such as measurement of the antibody levels in immunized children as a means of evaluating the potency of
vaccines, or the bacteriological tests used to assess the safety of drinking-water.

Even if it is possible to compute only a few of the above indicators, the very discussion of them may exert some influence on future information policy.

**Critical events and tracer conditions**

Some important methods of quality assessment are implemented in a selective way. Through their use, the necessary information can be obtained from a small number of cases by either random or purposive sampling of the patients, populations, activities, or facilities to be assessed.

Following this line of thought, some services have introduced the **analysis of critical events**: these are serious and easily recognized incidents that could have been avoided, such as preventable deaths, clinical complications, or epidemics of communicable disease. Investigation of the backgrounds of these events should disclose weak links or failures in the chain of health-related steps that led to the unnecessary negative outcome. The application of this approach to maternal and infant deaths has been followed by measurable health improvements (12).

Another technique for efficient assessment of the quality of routine care is to focus on **tracer diseases**: only patients with a condition of particular importance who offer a special opportunity to identify common problems of management are selected for study (13). Otitis media, which may progress to chronicity and deafness when poorly treated, is a frequently used tracer condition. The choice of tracer conditions will probably be different in developing countries than in industrialized ones, as illustrated by a report from one developing country (14).
All these methods offer a possibility for the active participation of the staff concerned, including the community health workers. If this occurs, the educational potential of the assessment process will contribute directly to improvement of the quality of care.

Setting standards

Whatever method is employed to determine the value of an indicator selected to illustrate the quality of health care in a country or community, it is necessary to choose a specific value of that indicator that will constitute the standard for comparison. For example, a standard for the quality of antenatal care might be that at least 80% of all the pregnant women covered should have had their height measured and at least two urine tests and two blood pressure readings taken. Setting a standard involves preparing an exact description of the aspects of an activity or a resource that will be assessed; in regard to the management of specific conditions this implies establishing the procedures for diagnosis, treatment and follow-up.

Standards should (a) have a scientific basis, in the sense that their application ensures a certain level of effectiveness of health care; (b) be relevant for the region where they are applied; (c) be realistically implementable and measurable; (d) be changed when and if necessary; and (e) be applicable to specific situations. This last requirement refers to the fact that standards for prevention, diagnosis, and treatment should be able to be related to the specific conditions of each case. This may be assured by designing standards as "branching pathways" for reaching decisions by sequential steps (15).

How can appropriate standards be generated? A good idea is to establish, at ministry level, "normative groups" or committees of national experts (with both knowledge and experience) for each of the main areas of primary health care, who would be given the responsibility of reaching consensus on the standards to be set and on maintaining them up to date. Alternatively, the experience of other countries or areas might be adapted.
Once adopted, the standards should be presented in a form suitable to the different educational levels and to the different cultures within each country, and compiled in manuals for training and for guidance of day-to-day work at each level of the health care system.

4. ASSURANCE OF THE QUALITY OF PRIMARY HEALTH CARE

Following the discussion of the concept, the determinants, and the assessment of health care quality in the previous three chapters, the central question that remains to be answered is: what can be done to ensure a satisfactory level of quality in primary health care?

Firstly, health administrators require a very specific definition of what is to be assured. Second, the circumstances of quality assurance must be defined: for whom? where? and when? Third, the how of quality assurance should be spelt out. All this should be done in a manner that is relevant and useful for the implementation of primary health care in each individual country and in each district of it.

What is to be assured

What is to be assured is the delivery of relevant and effective health interventions in line with standards. The objective is to ensure that the simplest effective activities needed are executed in a proper manner. This presupposes that the technologies offered in the fields of promotion, prevention, diagnosis, treatment, and rehabilitation will be appraised and selected on the basis of their potential for making an impact on the main health problems of the population, with safety as an absolute requirement. It is no use
performing a certain intervention with the greatest conformity to standards if the intervention is not effective. Likewise, it is a waste of resources to implement an intervention that is efficacious, with no attention to the quality of its execution. Further, it is idle to strive for 100% coverage with interventions that are either not efficacious in the first place or which are efficacious but become ineffective in the field because the standard of implementation is poor. These axioms appear obvious, yet experience in both developing and industrialized countries shows that they need to be stressed.

Experience shows that quality in health care has no direct relation to the sophistication, price, or novelty of the interventions. Neither does it have a direct relation to the frequency with which a certain "fashionable" intervention is carried out. Indeed the opposite may be true. An unduly high proportion of caesarean sections, tonsillectomies, appendicectomies or fetal monitoring procedures in a population is unnecessary, wasteful, and harmful, and should be considered as a negative quality indicator. In short, quality care must be based on the use of appropriate technology.

On the other hand, the assurance of quality as part of a policy of health for all requires the introduction, as far and as rapidly as possible, of standards for all the components of primary health care and for each level of care. A simple procedure carried out in the most peripheral units, such as the sterilization of syringes, should comply strictly with standards of performance if it is not to endanger the health of people. The same expectations of quality - not more and not less - apply to the work of hospitals.

Standards of quality should therefore be developed by health systems in a comprehensive and balanced manner. In addition, they should not refer only to the technical aspects of effectiveness and safety. Other related aspects should be included: compatibility of the services and their environment with human dignity; good communication with communities, with patients, and with other sectors, including a sufficient explanation of health-related events and programmes and the promotion of collective responsibility for health.
Quality assurance for whom? where? and when?

In a system based on primary health care, the quest for quality concerns all the services provided to the entire population. It is assumed that the services provided are distributed in an equitable manner, according to the needs of the individuals and communities.

Since the programming, management and evaluation of the health resources and activities is best done at local level, equity in regard to quality at district level means equivalent quality in all the districts of a country, rural and urban. In operational terms, quality assurance for all means quality assurance in every district health system.

Another way of ensuring equity in quality is to implement quality assurance in all health care units of all categories - hospitals, health centres, health posts - public and private, throughout each district.

Another objective of quality assurance in the context of primary health care is to maintain continuity over time of the level of quality achieved, avoiding breakdowns as much as possible.

Thus, there should not be high quality care for some citizens and low quality care for others; high quality care for some districts or areas or units and low quality for others; high quality sometimes but not always. In other words, quality assurance should be understood to be for the whole health care system; it should not be based on a magnified vision of a few areas but, on the contrary, it should be guided by a normal vision of the whole. Such is the practice of quality assurance based on the principles of primary health care.

How may quality be assured?

Quality assurance is an important component of the planning, management, and evaluation processes for health care. In this context, there are two complementary ways of looking at it.
The first way is to place quality assessment and assurance as steps in the overall system of monitoring, evaluating, and reprogramming of health care based on a comprehensive (but manageable) health information system. Such an information system is expected to comprise basic or core indicators for each of the steps to be analysed, including quality. Using a problem-solving approach, the process would flow in the following way:

- Is the current health care effective, i.e., are health status indicators improving as planned?

- If not, is the selection of health problem priorities in the plan adequate?

- Is the choice of interventions (technologies) adequate?

- If so, has sufficient coverage of the population with all essential interventions been reached?

- If so, is the quality of the activities adequate?

- If the quantity and/or quality of the coverage is insufficient, are the relevant resources sufficient in quantity? Are the resources adequate in quality?

- If so, what can be said about the organization and management of the system and the development of resources?

- If no adequate explanation of the situation results from answers to the previous questions, the policies, strategies, and environment of the system should be analysed.

- Finally, the diagnoses produced in a reprogramming activity should be used to correct the deficiencies identified.
For this general information-for-management approach a few indicators of quality should be incorporated into the basic health information system. They may be selected from the comprehensive list provided in Annex 2. Examples of indicators that may be easy to record and report on a routine basis include: fatality rates among attended cases of major diseases known to respond to good quality care, such as typhoid fever, gastroenteritis, acute respiratory infections, or head injuries; hospital mortality rates; rates of surgical and obstetrical complications; proportion of preventive activities over all activities; average duration of a consultation; timeliness of first antenatal control; accuracy and timeliness of reporting; comments on quality of care appearing in the press or arising in parliamentary debate; etc. Threshold acceptable values for such indicators should be determined in advance. Failure to achieve these values should lead, within a general reprogramming process, to the design of corrective mechanisms in respect of the activities, areas, or units involved.

(b) A second, more specific approach to quality assurance, complementary to the one described above, consists of the systematic monitoring and correction of quality. Again, this process is relevant to the central and provincial levels as well as to districts and individual units.

The process, presented in outline in Fig. 2, involves a series of action and feedback cycles. One may begin to describe it at the supervision stage. Supervision is an essential activity for all aspects of management, and is especially important for quality assurance. Supervision, and the checklists used for it, must always include some simple elements of assessment of quality, based mainly on direct observation. In regard to activities, supervision in a peripheral unit or in a community may be directed to the procedures used for cooperating with other sectors and community organizations, undertaking health education, visiting homes, examining patients, giving injections, weighing children, spraying houses, recording, etc. In regard to resources, the supervisor should observe the staffing, state of maintenance of the building and equipment, cleanliness and
Fig. 2. Process of systematic monitoring and correction of quality in health care

participatory SUPERVISION: observation of quality

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routine recording and reporting system

↓

INFORMATION on quality

↓

IDENTIFICATION of quality issues

↓

NOTIFICATION of problems

organizational mechanisms at district, provincial and national level

↓

INITIATION OF ACTION:
training, reorganization of work, logistics, standards, information to the public, legislation, manpower policies, etc.

↓

IMPLEMENTATION and FOLLOW-UP

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order in the uniforms, the premises, and the site of the facility. The opinions, praise, or complaints of community members should be listened to. Indicators, selected from those listed in Annex 2, may be recorded as part of the supervision visit report. Deviations observed should be followed up on the spot by education of the local staff on the proper procedures and the possible consequences of not adhering to them. In this discussion, the active participation of the staff should be sought and local responsibility for quality assurance in the future should be encouraged. The community and peripheral health workers, in particular, should never feel isolated. Supervision must be given with sensitivity for their feelings. Criticism should be constructive and not demoralizing. The best "manuals of procedure" can only provide a technical foundation of knowledge, which must be reinforced by frequent consultation and advice.

If it is found to be both necessary and feasible to obtain more information on the quality with which certain programmes are performed, other specific assessment methods, such as those mentioned in Chapter 3, may be utilized. Medical audits and accreditation procedures may be carried out in relation to critical events or to tracer conditions. In developing countries, infant deaths are a particularly important category of critical events: their analysis should not be restricted to the quality of the terminal care provided, but should cover in retrospect all the care the infant received (or did not receive) from birth, and also the care of the mother during pregnancy. If carried out in this way, such an assessment will throw light on the quality of the entire health care and social system.

If one adds to these two sources of data the routine recording and reporting scheme with its few general indicators on quality, it is clear that a continuous flow of relevant information is generated. This information should be compared with the standards that have been established in the system for the various aspects of the main activities that have been programmed: their contents, procedures, duration, timeliness, frequency, and required resources.
On the basis of this comparison, the next step in the quality assurance cycle consists of the identification of the main shortcomings in health care quality, either at national scale or in the provincial or district scenes.

The tasks of identification, notification, initiation and follow-up of corrective action to assure quality should be assigned to an appropriate department or unit - preferably an existing one. According to the location and nature of the problems, such responsibilities may be assigned to the health unit itself, the district health management team, the provincial or state health directorate, the relevant department in the ministry of health, a group of specialists, or a combination of any of these.

Corrective action for better quality consists, in many cases, of intensification or improvement of basic training, continuing education, and supportive supervision. Particularly important for maintenance of quality - and therefore requiring careful training - are supervisory nurses and midwives, laboratory personnel, and the trainers themselves. Health professionals need to re-examine their concept of quality and to link it with the notion of effective and affordable technologies responsibly applied for the benefit of all those in need. Those who participate in the quality assurance process should of course learn the pertinent concepts and techniques.

Action for improving quality should permeate the entire health care system and will require many kinds of support. The role of the various components of the system as determinants of quality was indicated in Chapter 2. Some kinds of support specifically required for ensuring quality are listed below.
Forms of support to quality assurance

Legislation and other types of regulation of health care

Examples of these are the licensure laws, the codes on quality control of drugs, the safety regulations for health care buildings, etc. It is certainly not desirable for health regulations to be enforced in a rigid or punitive manner. However, the existence of regulations, often encompassing standards, may protect a programme against laxness and provides formal support to the purely managerial measures aimed at ensuring quality. In addition, regulations provide justification for periodic inspections of health activities by officials from other levels.

Social control and responsibility

Development and health committees, government authorities, members of legislative bodies, extension teams, schoolteachers and, in general, all individuals and social organizations have a role to play in demanding and supporting quality in the health care that they receive. People who tolerate untidiness in their local clinic are likely to receive low quality care in general. On the other hand, community leaders and volunteers may take the initiative in raising funds or organizing labour to improve the furniture, equipment, and other aspects of their local facility. Users should demand information on the standards required in the performance of common activities, such as immunizations or control of food safety, and providers should respond positively to such questions.

Professional ethics

The organized health professions should participate in ensuring the highest possible quality of health care on an equitable basis. This is a fundamental ethical issue for health professionals in their roles as implementors, managers, and supervisors of health care for all sections of the population.
Structure of the system

Given a certain fixed level of resources for health care, the quality of care received by the average person depends on good management of these resources. A proper geographical distribution of facilities, staff, essential drugs, communications, and transport will increase the accessibility and timeliness of care. Integration of activities into programmes and coordination of their delivery to families and communities can achieve greater coverage with less cost to the consumers and therefore belong among the standards of quality to be complied with. The division of the population into sectors, with each sector assigned to a health team, increases the accountability of the latter, and also facilitates their attention to such quality aspects as human relationships, management of certain diseases in families, follow-up of defaulters, etc. The definition of the district as the basic unit for health care programming, implementation and evaluation, with the corresponding decentralization of authority and resources, should by itself raise the potential for assessment and assurance of quality care.

The definition of levels of care and of mechanisms for referral of patients between levels is essential for ensuring that all persons receive the level, and therefore the standard, of care that they require, whatever their place of residence and their ability to pay for care.

Management of the system

Certain aspects of management also deserve to be emphasized here, because of their influence on quality. Among these, management of human resources is the most important. The way in which the providers are paid may influence the quality of services; for example, pre-payment of a fixed sum tends to cause underprovision of necessary services; while a fee-for-service system tends to lead to provision of an excess of services to those who can pay. Incentives - both moral and material - to stimulate quality performance may have positive
results, particularly when planned in relation to a salary system of payment. Sometimes a grading system, in which local health care units are classified according to their results in a self-assessment scheme, has been used to stimulate efforts to improve performance; an example of such a system is the "stratification of health centres", used by the Ministry of Health of Indonesia. The scores are based on a number of criteria, including compliance with quality standards. In at least one province of Indonesia, "prestigious" health centres and "exemplary" doctors and paramedics are selected in conjunction with the celebration of Independence Day every year. In the Philippines a detailed appraisal outline was prepared to assess the quality of the municipal health officers. In Chile, prizes were assigned by the Medical College to the best rural health teams on the basis of their reports of the work done and the results obtained over a three-year period.

Other elements that are necessary for providing quality care and which are closely related to management functions are:

- the timely distribution of supplies, including drugs, to all districts and units; this requires appropriate programming and logistic support;

- the proper selection, operation and maintenance of medical equipment and of communications and transport material;

- the proper planning, building, maintenance and rehabilitation of facilities.

In conclusion, it may be said that the issues of quality assurance are closely interwoven in all aspects of the organization and
functioning of health care systems, including the development of adequate resources, the use of appropriate technology and the close integration with the social and economic conditions of each country.

5. OPTIONS FOR FUTURE ACTION

This review of the meaning of quality of health care, the various methods of assessing it, and possible strategies for improving and ensuring high quality primary health care is meant to be more than a theoretical exercise. It is hoped that these thoughts will suggest possible actions to countries that are committed to extend primary health care as a basis for achievement of health for all.

In fact, many developing countries are already close to attaining high levels of coverage with the essential health activities mentioned in the Declaration of Alma-Ata. Therefore, striving for quality and equity in quality in addition to quantity will become the main objective of national primary health care strategies in the near future. In some countries it is already the first priority.

The success of health care systems based on primary health care depends on their ability to deliver care that will substantially improve the health status of the majority of the population.

For this to be achieved, high quality standards of performance are necessary. The quality issue is one that cannot be ignored. If the costs of quality are considered in relation to the economy of the country as a whole, they should not be beyond the reach of any society. "Quality" does not imply "sophisticated" or "exclusive" care. As discussed in Chapter 4, quality in primary health care signifies: proper performance (according to standards) of interventions that are known to be safe, that are affordable by the society in question, and that have the ability to produce an impact on mortality, morbidity, disability, and malnutrition. Such interventions exist and the most common problem is that they are not made available
to all those in need or - if they are - they are not properly executed. Most societies incur considerable expenditures on costly technologies that are not relevant to priority health problems, that are not delivered to those in greatest need, and that in some cases are no more effective than cheaper interventions or have not been proved to be effective at all. A better allocation of resources can go a long way towards obtaining better quality care for all.

Another consideration that must be borne in mind when discussing affordability of quality is the positive influence in this respect of rational organization and management of the health system. Countries with an efficient management system are in a better position than wealthier societies with fragmented and uncoordinated health systems as regards their likelihood of attaining equitable and sufficient quality in health care.

Most countries are introducing quality assessment and assurance of health care in a gradual manner. There are several paths that may be followed. If the initiative is taken at the central level by the ministry of health, it may be appropriate to organize field visits in order to observe any important shortcomings in the quality of care; alternatively a quality assessment aspect may be added to the objectives of supervisory or fact-finding visits of a more general nature. The implementation of a joint primary health care review would be a valid entry point for both assessment of quality against national standards and for quality assurance measures in the follow-up phase of the review. Meetings of clinicians or of health care administrators or, preferably, joint meetings of both groups may approach the subject and contribute to the initiation or intensification of action for quality improvement. A prelude to the introduction of such action may be the incorporation of the subject in the training of key categories of health students.

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1 See footnote 1, page 30.
In view of the importance of the district health system as the basic cell of the national health organization, it would be appropriate to start by integrating a well-designed, simple, quality assurance process in at least one whole district. A short period of learning-by-doing will allow for the scheme to be improved before it is extended. Manuals of procedures may be drafted at this stage. Comparisons between and within districts will provide a much needed perspective on equity in quality and on lessons that can be shared. In every country some local health teams will be found that have already taken initiatives for improving quality, and their contribution is likely to prove invaluable. Certain specific programmes may also have pioneered work in this respect, and their experience should be transmitted to all the other primary health care activities. Advances in one or another individual programme or district may collapse rapidly if not incorporated into the system. The exchange of experience may also take place across national frontiers, in the context of technical cooperation among countries.

As a result of the initial activities, the ministry of health may decide to develop quality assessment and assurance in a more systematic way. At this stage a basic set of national standards should be developed or reviewed. A permanent mechanism for updating and broadening the scope of the standards is necessary and may consist of a number of groups of national experts - one for each main programme or discipline - who are invited to meet when necessary and can be served by the relevant units in the ministry. The standards produced, possibly in the form of pathways or flow charts, should be distributed to all the implementing units and be taught in the basic curricula and refresher courses for health personnel.

When information is available on current practices in a country, it is reasonable to set the level of performance of, say, the most successful 25% of districts as the national standard towards which all districts should strive. Standards should be adapted to each level of care - front-line, secondary and tertiary - but within each level they should be uniform across the country for all agencies and units, both
public and private. In this way the standards may function as
effective instruments for the achievement of equity in health care.

It may be found necessary to create a board or committee for
quality assurance in the health sector. In Malaysia and Zimbabwe, for
example, this has been done. Such boards may have representatives of
the departments of the ministry and other main agencies, the
universities and other training institutes, the sectors responsible for
the procurement, manufacture, quality control, and distribution of
drugs, equipment and other supplies, and the main health professional
associations. One or several focal points in the ministry, as well as
in each province and district, may initially be given the
responsibility of systematic quality assessment and assurance processes
such as those described in Chapters 3 and 4. However, these processes
should be integrated as soon as possible into the general functions of
management, and in particular into activities for supervision,
information, monitoring and evaluation, personnel management, and
logistics and maintenance.

In some countries, particularly small ones, the need may be felt
for an international reference centre that is able to provide
information and other support for the selection of national indicators
and standards for quality assessment of health care and the
establishment of measures for quality assurance.

The incorporation of quality assessment and assurance at all
levels of the health care system may be expected to require
considerable work at the outset. Such efforts are sometimes not
considered a high priority, when there are obvious and major
deficiencies in the coverage of a country by primary health care.
However, investment in quality assessment and assurance is essential.
For example, once prenatal care has been fairly well established in a
district, efforts should be put into ensuring that the necessary
interventions are carried out at each examination. Such studies may
disclose problems that must be corrected if health care is to be
effective everywhere in the country.
Technical cooperation may be requested from the World Health Organization by any country that wishes to undertake an assessment of the quality of its primary health care efforts. Each country, of course, must decide which items of information, reflecting quality, could be routinely solicited. If a minimum set of quality indicators is built into the regular health information system and the normal supervisory procedures of the country, quality evaluation and assurance need not be very costly. It has even been argued that maintenance of good quality yields economies in the long run because of increased effectiveness and efficiency of services. Improvement in quality is, in fact, a natural phase of the process of development of national health systems envisaged in the Global Strategy for Health for All (6). Its importance will increase rapidly as countries approach satisfactory quantitative levels of coverage with primary health care.
REFERENCES


Annex 1

ANNOTATED BIBLIOGRAPHY

Listed below is a selection of useful sources on assessment of health services that have appeared over the last 65 years. The books and articles are listed in chronological order of publication.

The majority of works come from the United States of America, simply because in that country great attention has been given to development of methods for evaluating the quality of medical care. A very large body of literature has been developed there on evaluation of health care quality but the citations selected here are believed to contain concepts and methods that are adaptable for use in developing countries and in the assessment of primary health care. The same applies to the references from other national or international sources.

Most of the articles and all the books listed contain numerous other references to the literature on assessment of quality of health care.

Codman, E.A. A study in hospital efficiency as demonstrated by the case report of the first five years of a private hospital. Boston, Thomas Todd, 1918.

This work is of interest as one of the earliest attempts to judge the quality of a hospital, by examining the course of events following surgical operations.


A balanced overview of the problems and conditions of general medical practice in the United Kingdom, with discussion of the features that can and do contribute to high quality performance.

Describes a method of evaluating quality by study of patient records, in relation to explicit criteria for the diagnosis and treatment of each specific illness.


Report of a study of the quality of care provided, by direct observation of a sample of Canadian general practitioners.


A summary of several empirical studies of the outcome of certain medical interventions, presented as a contrast to the more common evaluative studies of process.


Explanation and critique of the review of written medical records as a basis for assessment of the quality of medical care provided.


A review of underlying requirements in health systems and strategies to influence the performance of health care providers, so as to promote and maintain a high quality of health services.

A review of numerous attempts to evaluate the quality of health centres throughout the world, in terms of the input of resources, the quantity and estimated quality of the services provided, and the health effects on the population served.


Explanation of a modified outcome measurement for evaluating medical treatment of selected cases, in which a sequel to the disorder can be identified (e.g., deafness following the treatment of middle-ear infection).


This book reviews the methods of assessment and conclusions drawn from different combinations of measurements of process and outcome in the treatment of patients with specific diagnoses.


A comprehensive collection of papers on the use of education, peer review, and other techniques for helping to ensure the quality of both ambulatory and in-hospital medical care.


A collection of 23 articles, examining many aspects of quality assessment, including its connection with the doctor-patient relationship, various methods of measurement, health care and the quality of life, and long-term implications and effects.

Review of the incompatibility of findings by application of both process and outcome approaches to the evaluation of ambulatory treatment given to groups of patients.


A concise review of various methods of evaluating ambulatory care, by analysis of measurements of both process and outcome.


A collection of papers demonstrating the effects of continuing education on the subsequent performance of physicians.


One chapter of this self-teaching manual for rural health workers addresses the subject of "improving the quality of services". A simple and clear text with examples and exercises.


A review of the evidence on the benefits of education as a strategy for helping to assure the quality of health services.

An account of the training and supervision of community health workers in a rural area of Guatemala, with presentation of findings on reduced infant and child mortality as evidence of the quality of care and benefits.


A thorough presentation and discussion of an analytical model for assessment of the quality of medical care as a whole, based on measurements of various aspects of structure (input), process (activities), and outcome (end results).


A review of the numerous ways in which regulation, mainly governmental, helps to assure maintenance of the quality of medical care.


A discussion of the principles that should underlie assessment of field health workers, as well as practical techniques for applying these principles. Detailed forms are presented, as instruments for recording the ratings given following observation of the performance of specific tasks.

A method for following patients through several different sources of care is described, involving the identification, treatment, and follow-up of one "tracer" condition.


A theoretical discussion of how the tracer method might be applied in developing countries; the possible applications to evaluation of nutrition programmes are discussed, with emphasis on the importance of careful records.
Annex 2

EXAMPLES OF INDICATORS OF QUALITY OF PRIMARY HEALTH CARE

1. Indicators for monitoring quality in specific components of primary health care

(a) Quality of antenatal care

First, the coverage of the population of pregnant women with antenatal care should be measured. This coverage may be expressed as the proportion of all pregnant women who have at least one antenatal consultation. Questions then arise as to the quality of the coverage and the kind of service being provided. Examples of indicators for measuring the pertinent characteristics of antenatal care might be:

- for the frequency of care: the percentage of women covered who have at least three consultations before delivery;

- for the timeliness of care: the percentage of women covered who have their first antenatal consultation at a gestational age of 16 weeks or less;

- for the content of care: the percentage of women covered who have their blood pressure taken at least a specified number of times, a urine analysis done at least a specified number of times, and who receive two doses of tetanus toxoid during their pregnancy;

- for the referrals to a doctor: the percentage of women who are referred among those who need referral (because of bleeding, hypertension, oedema, proteinuria, tuberculosis, or a history of early jaundice in previous babies);

- for the indication of delivery in hospital: the percentage of women needing hospital care (because of their obstetrical
background, current morbidity, age, height, or presentation of the fetus) who receive such a service.

These are characteristics of the antenatal care activity. It may be useful to assess also the quality of the resources with which that activity is carried out. Examples of indicators of such quality are:

- for the manpower providing antenatal care: the percentage of staff who have received at least a specified number of months of training in midwifery among those providing antenatal care in each specific geographical area;

- for the material resources with which antenatal care is given in each area: percentage of clinics, posts or health centres in which there is a clean space for examination with privacy and the minimum necessary equipment (examination table, measuring rod and tape, stethoscope, sphygmomanometer, haemoglobinometer, equipment for detecting proteinuria) and supplies (such as iron salts, tetanus toxoid, penicillin).

Indicators of the outcome of pregnancy - maternal and fetal/néonatal survival, weight at birth - should be measured if possible in the total population, as part of the overall monitoring and evaluation scheme of the health care system. However, several factors besides the quality of antenatal care influence these outcomes, which are therefore not always valid indicators of quality.

There are many other indicators of quality of antenatal care. For example, the quality of referrals may be reflected in the proportion of women whose referral was technically justified, among all those who were referred. The quality of manpower might be measured by the ratio between the number of qualified midwifery supervisors and the number of staff providing antenatal care at the primary level, in each specific geographical area.
However, in practice, it is probable that only a few of the indicators mentioned can actually be used, perhaps two or three that are pertinent to the activities and one or two relative to resources. Even for these few indicators it will be necessary to find the most economic methods of measurement.

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For each of the remaining PHC elements, only a selection of illustrative indicators will be mentioned. Readers may easily develop others, or adapt some from the literature, as the need arises.

(b) Quality of the attendance at deliveries

Indicators for measuring the quality of this activity may include:

- for the timeliness of the attendance: percentage of cases in which attendance began during the first phase of labour;

- for the content of care: percentage of cases in which an initial physical examination was done, and the pulse, blood pressure, frequency of contractions, dilatation of cervix, and fetal heartbeats were monitored;

- for the care of the newborn: percentage of cases in which the newborn was examined promptly and with clean hands, the umbilical cord was dressed aseptically, ocular prophylaxis was given, and the infant was kept warm;

- for follow-up to the delivery: percentage of cases in which an appointment was given for check-up and in which advice on birth-spacing and breast-feeding was provided.
The quality of the resources for carrying out this activity may be measured using indicators similar to those presented on pages 76-78 in connection with overall primary care.

The rate of complications during delivery and the puerperium in each area or institution is a complementary "result" indicator that may help in evaluating the quality of attendance at delivery. The same can be said of a rating of the satisfaction of the mothers after delivery.

(c) **Quality of child care, nutrition, and immunization**

In this case, one simple indicator may be the average frequency of contacts of each "covered" child with community health workers or health services staff. Another may be the percentage of cases in which certain minimum standard services have been delivered.

Nutritional surveillance may be appraised through the percentage of attending children for whom:

- the weight is accurately measured and correctly recorded on the growth chart; and

- appropriate indications are given to the mother regarding the weight of the child.

An improvement in the nutritional status of the child population covered, as measured by an increase in the percentage of children with normal weight or height for age or a normal arm circumference, would be an indicator of the quality of overall child care and nutrition activities, particularly if the role of other factors can be excluded.

The quality of immunizations depends largely on the quality of the resources employed. Immunization will only be effective if potent vaccines are administered. Vaccine potency is best controlled on a routine basis by ensuring that only vaccines that meet WHO requirements are used, and that the cold chain is intact. Vials of poliomyelitis
and measles vaccines may be taken from the point of use for potency testing. These are the least stable and most easily tested of the vaccines in the Expanded Programme on Immunization. Cases of the target diseases occurring in vaccinees should be investigated to determine whether vaccine efficacy is at expected levels. Antibody measurement in vaccinees is generally cumbersome and time-consuming, and should not be done as a routine. The cold chain can be checked using the time/temperature monitors provided by UNICEF and WHO, and by determining what proportion of refrigerators are in good working order and are used in accordance with the existing technical norms. Reductions in disease incidence are the best overall indicators of programme quality, and may be most easily documented for measles, poliomyelitis and neonatal tetanus. Estimates may be obtained from routine national reports, from selected sentinel sites, or from surveys of disease incidence.

(d) **Quality of health education**

One possibility of an indicator consists of measurement of the percentage of people exposed to health education activities who, according to a simple test, have understood a specified proportion of the contents and find them acceptable. Simple tests could be given to children and adults on such matters as safe water, nutritious food, immunizations, insect vectors of disease, etc.

(e) **Quality of environmental health efforts**

One example is the percentage of water samples that satisfy established criteria in regard to the presence of *Escherichia coli*, salinity, and other locally important characteristics.

The percentage of water samples with an appropriate level of fluorine may be an important indicator in some areas.
(f) **Epidemiological surveillance and control of epidemic and endemic diseases**

Indicators of quality may refer to:

- the percentage of cases of specific diseases that are notified to the nearest epidemiological surveillance unit within a given time after the diagnosis is suspected;

- the percentage of cases of specific diseases in which the suspected diagnosis is confirmed;

- the percentage of outbreaks of specific diseases in which standard prescribed action is taken within a given number of days after the initial report;

- the percentage of a sample of houses sprayed with insecticide, in which the spraying is done according to a standard prescribed technique;

- the proportion of patients with tuberculosis who complete their prescribed course of treatment over all those diagnosed.

(g) **Treatment of common diseases and provision of essential drugs**

For specific common conditions, such as diarrhoea, upper respiratory infections, dental caries, skin diseases, or eye problems, the following may illustrate the possible indicators of quality of care:

- percentage of cases of diarrhoea in children in which dehydration was looked for and treated;

- percentage of children with intestinal parasitic infestation that has not been treated;
- percentage of cases of skin disease in which the correct diagnosis is made and correct treatment given;

- proportion of visits to the peripheral facilities of an area in which a certain essential medicine (such as oral rehydration salts or tetracycline ophthalmic ointment) was found to be out of stock or beyond its expiry date; this is a resource quality indicator;

- the proportion of the population who live within one hour’s travel from a point where a minimum provision of essential drugs (as defined by the ministry of health) is continually available (as shown by periodic supervision and the absence of negative reports from the staff and the patients);

- the ratio of repairs to extractions for dental caries.

(h) Family care and self-care

Possible indicators of quality can be assessed during home visits, and include the percentage of homes in which:

- utensils for feeding children under five years old are of the right type and are correctly cleaned;

- no insects are seen in the room where children under five sleep;

- stored water is kept in well-covered containers;

- any children under five are within sight or hearing of adults;

- fires or lighted stoves are out of reach of young children.
2. **Indicators for monitoring the quality of health care in districts**

First, one should assess the general aspects of quality of district and local care that relate to the principles of the primary health care strategy. Some of these aspects and possible indicators for them are:

- proportion of districts and local areas in which activities are programmed locally;

- proportion of activities performed in defined areas, that have a preventive aim;

- proportion of districts and local areas in which all the elements of primary health care are carried out on a continuous basis (comprehensiveness);

- proportion of time spent by specified categories of health workers in home visiting and community health work;

- proportion of conditions (such as pregnancy, malnutrition, tuberculosis) that are spotted through active case-finding in the community;

- proportion of districts and local areas in which the limits of the catchment area and population are well known by the local staff;

- proportion of time spent by specified categories of health workers in meetings with community leaders, committees, groups, and intersectoral agencies.

Some management indicators are also relevant to the quality of overall local care; for example, the average frequency of supervisory visits from the district level to each of the most peripheral facilities, in each district.
Second, health managers may wish to examine the quality of the most common activities and procedures that are employed in delivering primary health care - consultations, home visits, hospitalizations in district level institutions, etc. They might measure, for example, the proportion of consultations in which:

- a history is taken according to standards provided;

- a physical examination is done according to standards;

- at least a specified number of minutes of service are given;

- a correct diagnosis is made;

- treatment is provided according to standards;

- the attendant person is the same as in the previous consultation (continuity);

- the advice and prescriptions given are understood;

- necessary referrals and special examinations are, in fact, requested;

- referrals and special examinations requested are justified;

- waiting time did not exceed a certain number of minutes.

Regarding hospitalizations in district level institutions, which may have either curative or preventive aims, their quality may be measured by the proportion of hospitalizations in which:

- history-taking and physical examination are done according to standards;

- a firm diagnosis is reached before discharge;
- treatment is given as required in the standards;

- nursing observation and care are performed correctly;

- the patient's bed and immediate environment are kept clean;

- emergency care is constantly available.

Simple and useful indicators of the quality of hospitalizations are found in the domain of "results" measures. Some examples are: the percentage of patients cured, the percentage of patients who die in hospital, the percentage of postsurgical complications.

For routine procedures, such as injections, one quality indicator may be the percentage of visits to facilities in which it is observed that needles are correctly sterilized.

Assessing the quality of the resources available to provide overall health care in districts and communities is also important. The following are some examples of indicators that may be relevant in developing countries.

For manpower:

- the duration of basic training of specific categories of personnel;

- the proportion of a minimum list of defined skills which have been learned by specific categories of personnel;

- the average frequency and duration of in-service training periods;

- the number of laboratory technicians per million population.
For facilities, installations and equipment:

- a score for the state of the health services buildings in a defined area;

- a score for cleanliness of the premises;

- a score for the safety of the buildings;

- the percentage of hospital beds that have clean mattresses and sheets and not more than one occupant;

- the percentage of consulting rooms and hospital wards that have one hand-washing facility in working order;

- the percentage of facilities with a standby generator in working order;

- the percentage of facilities with a continuous and safe water supply on the premises;

- the percentage of facilities where the toilets for use by patients are found to be clean and in good working order;

- the proportion of facilities with at least one blood pressure manometer, weighing scales for adults and for infants, and a measuring rod and tape (or other equipment considered essential);

- the proportion of district hospitals and health centres with a basic functioning laboratory;

- the proportion of district hospitals and health centres that have a certain number of vehicles in working order, as established in national standards;
- the proportion of health posts (the most peripheral units) that have easy access at all times to a telephone or to a radio transmitter/receiver.

For essential supplies:

- the proportion of a standard list of such supplies that are found to be in stock during supervision visits, in a defined category of facilities;

- the proportion of such supplies that are correctly stored, according to existing standards;

- the proportion of essential drugs in use that have been tested for potency and safety (this may be an indicator for the national level, but is also relevant for users throughout a country).

The quality indicators listed in this Annex are mere examples. Moreover, these examples and any others that may be suggested, should be the subject of study, selection, and elaboration through the appropriate mechanisms of the health care system.