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Chapter 3

# **Evaluating Quality From the Perspective of Individual Consumers**

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# Evaluating Quality From the Perspective of Individual Consumers

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## INTRODUCTION

For some time, physicians and other medical professionals have assessed the performance of their peers. From Florence Nightingale in the field hospitals of the Crimean War to E.A. Codman in surgical wards of Boston during the early twentieth century and Osler Peterson among general practitioners in North Carolina after World War II, medical professionals motivated by a deep concern for their patients' welfare have strived to measure the quality of medical care so that providers could improve it. Along with medical professionals, concerned people from fields such as statistics, politics, and religion have pioneered techniques to evaluate the efficacy and safety of technologies, and, in turn, the quality of medical care (628).

Quality assessments have customarily taken the perspective of the medical provider. Recent events, however, have promoted consumers' role in evaluating providers and making decisions about medical care. Efforts to advance consumers' interests are occurring throughout society, and the changing role of consumers within medical care reflects this societal trend. The increased emphasis on consumers also reflects the influence of strategies to increase price competition in medical care. People have always had a legitimate in-

terest in the quality of their medical care. But recent policy changes have created a milieu in which the consumers and providers of medical care have become more sensitive to price. In that milieu, information about the quality and cost of care is needed by consumers to aid them in selecting physicians and hospitals.

Given that context, it is important to examine the perspective of individual consumers on the quality of medical care. Do consumers' needs and concerns differ from those of medical providers in ways that should be taken into account in the design and content of quality assessments? This chapter explores that question. The chapter first develops a definition of the quality of medical care that incorporates its many dimensions. In a section presenting a framework for assessing quality from an individual consumer's perspective, the chapter describes the progression of a patient through the spectrum of medical care. Then it discusses approaches to assessing quality and aspects of medical care that affect health and patient satisfaction and presents possible indicators of quality. The chapter concludes with a discussion of the indicators selected for evaluation in this report.

## DEFINING THE QUALITY OF MEDICAL CARE

Like other intangible concepts, the quality of medical care is difficult to define. Indeed, quality acquires concrete properties only when one measures it. But attempts to define quality in the medical field are plagued not only by the abstract nature of quality but also by particular characteristics of medical care.

Medical care is intended to promote, maintain, and restore health (186). Although the purpose

of medical care is to help patients, appropriate care and desirable outcomes vary tremendously depending on the individual patients' circumstances. Healthy infants require immunizations to prevent once-common childhood diseases and ultimately to lengthen their lives. Screening during infancy and adulthood may detect conditions that treatment can correct or ameliorate. Throughout life, treatment may cure acute conditions and relieve the symptoms of chronic ones. Medical

care may also help people deal with their physical and emotional problems. For people facing death or intractable conditions, medical care may offer palliative measures that reduce suffering and help people to die with dignity. Thus, the appropriate content of medical care stretches from the prevention of illness to diagnosis, rehabilitation, counseling, and other therapy, and desirable outcomes of care range from reduced illness, deterioration, and pain to increased longevity, mobility, and emotional well-being. And all of the activities and outcomes of care presume that people seeking care, especially in emergencies, promptly reach providers who can manage their conditions.

To a large extent, the diversity of acceptable outcomes for patients reflects the many dimensions of health. According to the definition of health adopted by the World Health Organization: "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (718). This definition stresses the positive aspects of health while incorporating the notion that health relates to physical functioning, mental health, and social functioning.

Noting the complexity of medical care, prominent scholars have stressed the importance of evaluating both its technical and interpersonal aspects. Technical care is the application of medical science and technology to a problem; and interpersonal care or the art of care refers to the personal interaction between patient and medical care provider (105,183). In practice, the technical and interpersonal aspects of care are intertwined; sensitivity and caring enter into technical care, and technical expertise is part of interpersonal care. Both these aspects deserve attention in evaluations of the medical care that patients receive.

Besides taking into account the many dimensions of medical care and health outcomes, a definition of the quality of medical care must recognize the limits and continuing evolution of medical knowledge. Medical knowledge and its application in medical technology cannot guarantee improvement in a patient's health. At best, medical care applied appropriately can improve the likelihood that a patient will get better. Rarely is a medical technology 100-percent efficacious. The use



Photo credit: March of Dimes Birth Defects Foundation

Technical and interpersonal aspects are intertwined in medical care, such as the rehabilitative therapy shown here, and both deserve attention in evaluations of the quality of care.

of medical technology also carries some risk, and this must be weighed against the likely benefit.

The probabilistic nature of patient outcomes flows from the variation in patients, providers, and environments. Even medical technologies found to be efficacious for treatment populations in the ideal circumstances of randomized clinical trials may not benefit a particular patient. Patients' physical and emotional conditions differ in ways that affect treatment results, and these differences may be unknown or unpredictable when medical decisions are made. Another point relevant to the quality of hospitals and physicians is that providers themselves vary in ways that may affect what happens to patients' health.

In a larger sense, the uncertainty surrounding patient outcomes stems from the fact that medical care is but one influence on the health of an individual or a population. In fact, an individual's genetic makeup, environment, and lifestyle seem to play a greater role than medical care in

explaining the causes of death and illness that now predominate in the United States.

What is considered appropriate care evolves with advances in medical science and technology. As knowledge continues to expand, some technologies (e.g., gastric freezing for ulcers) become obsolete and should be discarded, and others (e.g., cimetidine) are shown to be efficacious and should be adopted.

Over the years, scholars have taken many different approaches to incorporating these complexities into a definition of the quality of medical care. Quebec's Commission of Inquiry on Health and Social Services (the Castonguay Commission) refused to define quality and commented that "... choosing among the possible definitions of the quality of care leads to rejecting part of reality and to reducing the meaning of quality to one or some of its dimensions" (505). Rather than defining quality, the commission identified how perspectives on quality differ: Producers evaluate technical aspects of services, mostly for care of the sick, but pay scant attention to access or distribution of care; consumers wish a minimum level of technical competence but emphasize more heavily ease of access, continuity and humanization of care, and prevention of disease; and society, from another level, focuses on how care affects the population's health and how the social and economic efficiency of the system conforms to society's priorities.

In a similar vein, Donabedian acknowledged the different views of providers, consumers, and the overall society: Physicians have usually confined their evaluations to technical performance, patients have shown more sensitivity to how they are treated, and society has had more interest than individual providers or consumers in the equitable distribution of medical care and the public health benefits of care, such as prevention of communicable disease (186). But Donabedian also stressed that all view both the technical and interpersonal as important (183).

Donabedian's discussion culminates in "... a unifying concept of the quality of care as that kind of care which is expected to maximize an inclusive measure of patient welfare, after one has taken account of the balance of expected gains and

losses that attend the process of care in all its parts" (183). To the extent that the patient bears the cost of care, Donabedian includes cost in this concept of quality on the grounds that one may add cost, as an unwanted consequence of care, to expected risk in assessing the patient's net benefit. However, Donabedian keeps accessibility, the ease with which care is initiated and maintained, separate from quality.

Although it was not developed specifically for quality assessment, Palmer has used an Institute of Medicine definition of a quality assurance system that also refers to resource constraints: "The primary goal of a quality assurance system should be to make health care more effective in bettering the health status and satisfaction of a population, within the resources that society and individuals have chosen to spend for that care" (475).

Another definition stresses the response to needs and defines quality as "the degree to which health care needs (educational, preventive, restorative, and maintenance) of an individual or group are identified in an accurate, complete, timely manner, and the resources (human and other) necessary to meet these needs are applied in a timely manner and as effectively as current knowledge allows" (524).

This OTA report examines several possible indicators of the quality of care provided by hospitals and physicians, not the quality of care of a managed health care system or the quality of the entire U.S. health system. Reflecting this task and the points discussed above, the report uses the following definition of quality to guide the discussion:

The quality of a provider's medical care is the degree to which the process of care increases the probability of desired patient outcomes and reduces the probability of undesired outcomes, given the state of medical knowledge.

Under this definition, medical care consists of the technical and interpersonal interventions that providers apply to improve patients' health and satisfaction. The quality of medical care delivered by a hospital or physician is judged by the likelihood that the care will achieve the patient outcomes desired, and this likelihood depends on the

relationship between certain medical practices and the effects on patients. Desired and undesired outcomes, comprising positive and negative effects, relate to the many dimensions of health and patient satisfaction. Which ones predominate varies with the individual patient or condition.

The definition of quality of care used in this report incorporates some, but not all, aspects of people's access to care. A host of factors—psychological, physical, social, and economic—determines whether a particular person decides to seek care for a medical condition. All of these factors relate to the accessibility of care to an individual (i.e., the ease with which a person can gain entry into the medical care system). One important factor is the cost that the person expects to pay, which in turn depends on insurance coverage (or the lack of it) and the provider's charges (386,463).

Although the choice of health insurance coverage and the decision to seek care wield great importance, scholars have usually separated issues of access from those of quality, and this report generally follows that convention. But two aspects of access overlap with quality and have such strong implications for patient outcomes that they are included in this report: providers' responsiveness to urgent or emergency care and providers' referral of patients to the appropriate level of care. Even after a person decides to seek care from a specific provider, barriers may prevent the person from obtaining care or from reaching the appropriate level of care. At the same time, the responsiveness of hospitals and physicians, especially to urgent or emergency situations, may well affect the person's eventual health outcome. The procedures of a hospital or physician may keep the patient from seeing a health professional in a timely manner. A hospital emergency room that transfers a patient in an unstable condition to another institution because the patient lacks insurance may jeopardize the person's health. On the other hand, failure to transfer a high-risk mother or baby to an institution with a higher level neonatal intensive care unit may also jeopardize health.

Most hospitals and physicians practice independently and typically do not assume responsibility for a clearly defined population. It would

not be reasonable to hold these providers responsible for the ease of access perceived by all the people in a certain area, even if barriers had impeded people's access to care and harmed their health. Physicians and hospitals operating as separate units have not had the same responsibility for ensuring that certain facilities and personnel are available as health care systems, such as prepaid group practices. On the other hand, hospitals and physicians have a core group of people who rely on them for care. Once that relationship has been established, it seems reasonable to hold providers responsible for making their services easily accessible to these patients. Moreover, it would be reasonable to include issues of access in evaluating the quality of a health care plan that assumed responsibility for a given population and the quality of a national health care system, which bore responsibility for the country's population.

Excluded from this report's definition of the quality of care are considerations of cost and efficiency. Conceptually, medical care's effects on patients' health and satisfaction differ from its effects on costs. Even more important, however, when making decisions about medical care, consumers, providers, and policymakers weigh the likely health benefits against their costs. Costs indicate what people must forgo in other goods and services in order to obtain the health outcomes that they desire. Indeed, behind recent changes in payment policies has lain the intention of heightening the cost consciousness of consumers and providers who make decisions about using medical services. From a policy perspective, separating cost from quality or health effects permits analysts to monitor any changes in health that occur as costs change and to identify what is being gained or lost. Such information also permits one to evaluate the efficiency of the provider, in this case the use of resources (costs) to achieve a given level of health benefits.

<sup>1</sup>In spite of the conceptual distinction between cost and health effects or quality, it is unlikely that peer reviewers will incorporate the distinction into actual assessments of providers' performance. Either implicitly or explicitly, quality assessors develop indications for the appropriate use of a certain procedure, such as coronary artery bypass surgery, or identify medical interventions deemed necessary to manage a particular diagnosis. With the increased cost consciousness in the U.S. medical community, peer reviewers most likely will factor cost as well as health effects into their criteria.

Also excluded from the definition of quality in this report are amenities that may be provided in the course of medical care. What sets the activities that are considered medical care apart from these other areas is that medical care is undertaken expressly for the purpose of affecting health. Although amenities such as office furnishings and hospital food certainly influence patients' satisfaction, in keeping with this interpretation of medical care, this report excludes such amenities because their main purpose is not to improve health status (201).

In addition to people who receive medical services, many individuals and organizations are consumers of medical care in the sense that they make decisions about purchasing such care. Parents arrange for the care of their children, and grown children may arrange for the care of their elderly parents. Third-party payers, both governmental and private, decide which services are covered, under what circumstances coverage applies, and how much will be paid; insurers may also con-

tract with selected providers. In the workplace, employers and unions make many such decisions that affect the availability of workers' medical care. In addition, public interest groups and associations of particular types of consumers, such as elderly people, represent the interests of individuals in policy decisions. And all of these organizations provide information that is intended to help individuals choose medical providers.

In constructing a framework to assess a medical provider's quality, this report takes the perspective of the individual consumer. This restriction reflects the fact that medical professionals provide care to benefit individuals. As discussed in chapters 1 and 2, however, the perspectives of both individual and organizational consumers are clearly germane to the feasibility of using certain indicators and to the policy implications of publicizing information on quality. The report therefore considers both organizational and individual consumers in its sections on feasibility and policy implications.

## FRAMEWORK FOR ASSESSING THE QUALITY OF CARE

### Progression of a Person Through the Spectrum of Medical Care

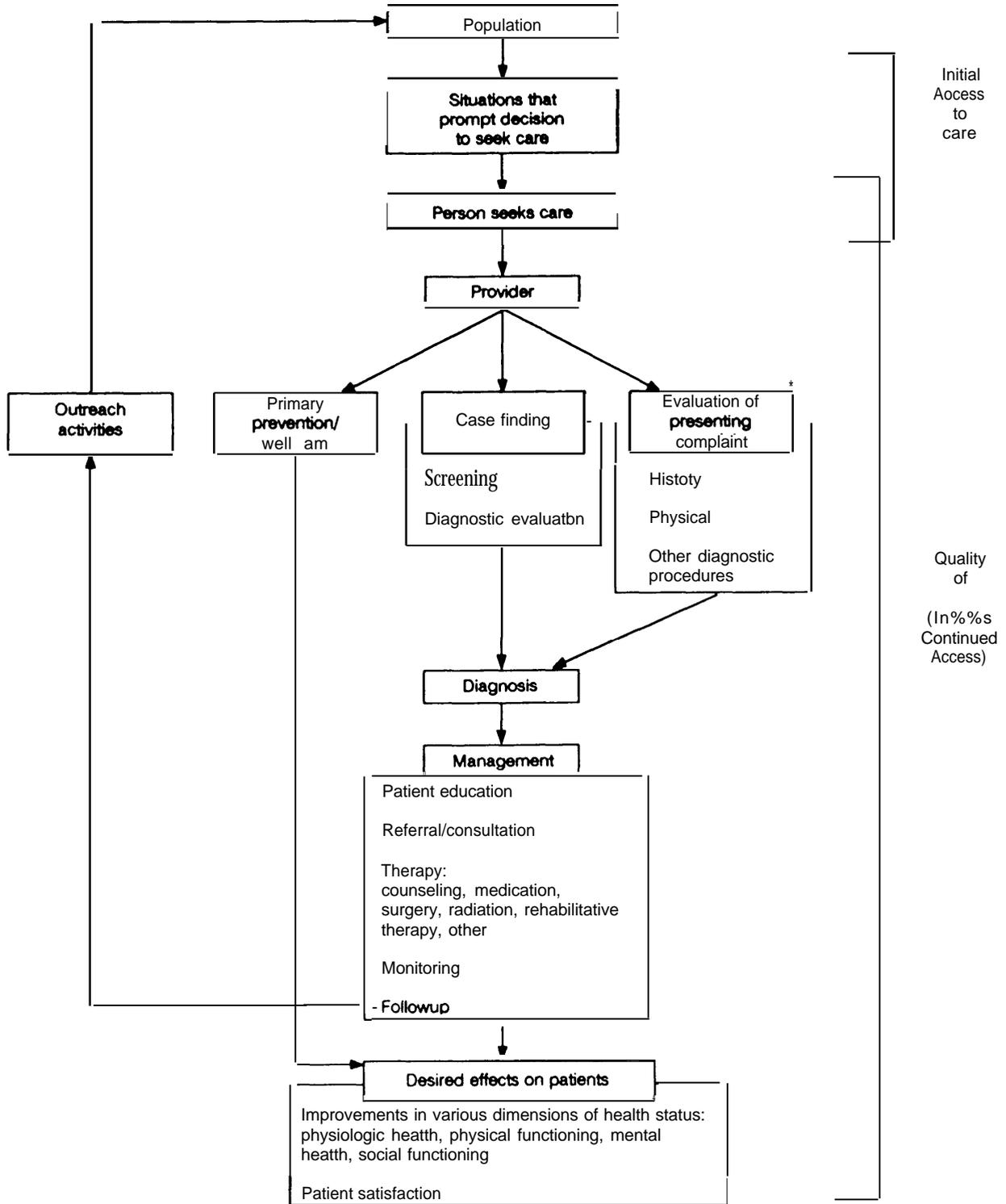
A framework for individual consumers to assess quality should address the choices that people face and the care that they receive as they enter and proceed through the medical care spectrum during an episode of care. Figure 3-1 describes the key elements in the progression of a person through that spectrum.

The population consists of the people who may use a particular provider for medical care. For a hospital or physician within a prepaid group practice, the enrollees of the group comprise the population at risk. Enrollees are covered for care in the group's facilities and, presumably, will use the group's providers in most circumstances. By comparison, most hospitals and physicians in the United States have a population that is much less well defined. A given hospital may draw most of its patients from a certain area, but people from other areas or their physicians may also prefer that

hospital and use it for hospital care. The same situation applies to physicians who provide care on a fee-for-service basis. Especially indistinct is the population of a specialist or subspecialist (e.g., a radiologist or neurosurgeon) who obtains patients primarily through the referrals of other physicians. Even physicians in an individual practice association (IPA), a type of health maintenance organization (HMO) in which physicians continue to practice separately but agree to provide covered services for a monthly per capita payment, do not have a defined population for whom they are responsible. IPA enrollees, like others who pay fees for services, may choose their physicians from several who participate in the plan.

As shown in figure 3-1, conditions arise that prompt people to seek medical care. As noted earlier, many factors influence the decision to seek care and the ease with which people obtain appropriate care. Of key importance for evaluating the quality of medical care are how providers respond

Figure 3-1. -Progression of a Person Through the Spectrum of Medical Care



SOURCE Office of Technology Assessment, 1988

to people attempting to obtain care, especially in urgent or emergency situations, and whether people reach the appropriate level of care. Issues of access with quality implications arise not only when a person initially seeks care during an episode of illness, but also when a person tries to return for followup care or to pursue referral services.

The middle part of figure 3-1 illustrates the different components of medical care. If a person seeks care for a specific complaint, the physician should obtain relevant information from the patient, perform an examination, and conduct any appropriate tests needed to make a diagnosis. Whether a person seeks care for a particular problem or for a checkup, the physician should follow certain procedures to screen for the presence of certain chronic conditions (e.g., taking the patient's blood pressure to detect hypertension) and to prevent the occurrence of disease (bringing immunizations up to date).

In many of these steps, the physician or other health professional requires more than physiologic and physical information. To evaluate and diagnose a patient's condition, the provider must often know the patient's psychological state; lifestyle; and environment, including working conditions and social interaction with family and friends. Whether the provider can elicit such information depends on the relationship that the provider has established with the patient.

The pervasiveness of the patient-provider relationship and its importance for many aspects of medical care are evident as one proceeds beyond diagnosis to the management of a patient's condition. Developing a strategy to manage the patient's condition requires that the physician know the patient's preferences and goals. For example, appropriate therapy for an orthopedic injury in a professional athlete may well differ from what would be appropriate for someone less interested in athletic competition. Whether to seek a consultation from another physician or to refer the patient for more specialized care may also depend on the patient's preferences and goals. The relationship established with a patient would be ex-

pected to have major importance in any situation in which a physician was trying to persuade a patient to engage in certain behavior—in counseling the patient about prevention, a chronic condition, medication or other regimens, rehabilitative therapy, and followup care.

As figure 3-1 indicates, medical care is intended to maintain or improve patients' health status across a wide range of dimensions and to satisfy patients. In some cases, medical care can improve a condition by curing disease, alleviating symptoms, arresting disease progression, restoring function, or reassuring a person who is worried but well. Medical care may also benefit a person whose condition cannot be improved if the provider can clarify a situation and reduce uncertainty. Because of the many factors besides medical care that influence health and satisfaction, even the most effective medical care provided in the most sensitive way may not result in the outcomes desired. Nevertheless, situations of different kinds prompt people to seek medical care, and patient satisfaction and health improvements are the intended results.

### Approaches to Assessing Quality

The quality of medical care can be assessed by evaluating the structure, process, or outcome of care (183). Each of the approaches in this commonly used schema focuses on the measurement of quality at different points in the spectrum of medical care.

The *structure* of medical care subsumes the resources and organizational arrangements that are in place to deliver care. Structural characteristics used in assessing quality include the number, type, and distribution of medical personnel, equipment, and facilities. The presence of a quality review committee; procedures for coordinating nursing and other services; and organizational arrangements of physicians, such as solo or group practice, also relate to structure. Behind using structural characteristics to assess the quality of care lies the assumption that such characteristics in-

crease or decrease the likelihood that providers will perform well. This assumption in turn raises the issue of whether specific structural characteristics of medical care are in fact associated with better performance or process.

The process of care refers to the activities of physicians and other health professionals in caring for patients. Assessing that process entails evaluating the performance of the different aspects of care considered important. The content of appropriate care evolves over time as science and technology progress and as consumers change their expectations of technical and interpersonal aspects of care. Although procedures to be followed may be specified by medical condition, what is appropriate under each aspect ultimately depends on the particular patient.

The major difficulty with assessments of process is the dearth of information about the efficacy of most medical procedures. It is reasonable to judge providers' performance only in relation to procedures likely to improve or harm patients' health and satisfaction. However, most medical practices have not been subjected to such analysis, and even for well-accepted medical practices, the link between process and patient health and satisfaction has often not been established (see ch. 1).

*Outcomes* of care refer to patient health and satisfaction. In assessments of quality, outcomes acquire importance to the extent that they have resulted from prior medical interventions. But attributing changes to medical care requires distinguishing the effects of care from the effects of the many other factors regarding patients and their environments that also influence health and satisfaction.

Because of these conceptual difficulties, process and outcome measures should be used as complementary indicators of quality rather than alternatives. Process measures acquire validity as indicators of quality only to the extent that they have been found likely to improve or harm patient outcomes. And particular outcomes are valid indicators of quality only to the extent that they can be linked to prior process.

Indicators of the quality of care maybe viewed in terms other than their relationship to structure,

process, or outcome of care. Indicators may pertain to specific diagnoses, conditions, and procedures or to overall care for a person or episode. Indicators vary in the sources of information required. Evaluating whether appropriate procedures were followed for a certain condition or diagnosis requires examination of patients' medical records, while other indicators, such as a physician's specialty or a hospital's mortality rate, may be published or publicly available. Relevant information may also be drawn from claims to third-party payers, from routinely prepared hospital discharge abstracts, and from special surveys. Indicators may be applied to perform different functions. Some indicators may be used to screen large data bases for cases that are especially likely to entail poor performance. Other indicators may be applied to evaluate care more intensively, perhaps by reviewing the practices documented in medical records.

### Aspects of Medical Care To Evaluate

A framework for assessing quality from the perspective of individual consumers starts with the identification of technical and interpersonal aspects of medical care to evaluate. Table 3-1 lists 10 aspects of medical care that surveys of individual consumers (see ch. 2) and the literature have indicated affect the desired outcomes, namely patients' health and satisfaction. A provider's responsiveness to urgent or emergency situations may control whether patients obtain medical care in time for their conditions to be helped. Similarly, referring patients to the appropriate

**Table 3-1.—Aspects of Medical Care To Evaluate**

1. Responsiveness to urgent/emergency situations
2. Referral to appropriate level of care
3. Humaneness
4. Communication of information
5. Coordination and continuity of care
6. Primary prevention
7. Case finding
8. Evaluation of presenting complaint
9. Diagnosis
10. Management:
  - Patient education
  - Referral/consultation
  - Therapy
  - Monitoring
  - Follow up

SOURCE: Office of Technology Assessment, 1988.

level of care, perhaps through transfer to another facility or referral to a particular specialist, may affect the care that patients receive and the extent to which their medical conditions are improved. How physicians and hospitals respond to people seeking urgent care and handle transfers certainly affects patient satisfaction.

The inclusion of a provider's humaneness and communication of information as aspects of care to evaluate reflects the importance that consumers place on being treated respectfully and on having their conditions and treatments explained to them. People place a high value on physicians' taking the time to answer questions and offer explanations. Although all patients may not want very detailed information, physicians face the difficult task of sensing how much is wanted by a given patient and providing it.

Five of the categories in table 3-1—prevention, case finding, evaluation of presenting complaint, diagnosis, and management—relate to the steps that are taken during an episode of care, regardless of the setting(s) in which care is delivered (see figure 3-1). Having the desired effects on health and patient satisfaction require that patients receive appropriate medical care, both technical and interpersonal, at each of these steps.

Coordination of care is singled out for particular emphasis. Even if each health professional in each setting performed each step appropriately, poor care could result from lack of coordination across professionals, sites, and steps. Researchers have found that continuity improves patient satisfaction and compliance (177), although its importance, like that of other aspects of medical care, varies according to the situation (183).

### **Possible Indicators of Quality for Individual Consumers**

A number of indicators have been suggested for assessing the quality of medical care provided by hospitals and physicians. Tables 3-2 and 3-3 list commonly cited indicators and relate them to the 10 aspects of medical care that are important to consider. Despite the application of many of these indicators in the research literature and the popular press, few have been subjected to rigorous evaluation of their reliability and validity as meas-

ures of quality. Moreover, the evaluations that have been performed have found little to support the validity of many commonly used indicators, such as board certification of physicians (477). Nevertheless, possible indicators have been compiled in these tables to illustrate different approaches to measurement and to exemplify the wide range of quality measures that have been suggested or used.

The appropriate indicators for measuring the quality of care depend on the characteristics of the patient and the aspect of quality that is being considered. The indicators in tables 3-2 and 3-3 relate to general characteristics of hospitals and physicians or general review of their patients' cases. If shown to be valid, such indicators could guide a consumer who wished to choose a physician or hospital for all-purpose care. The exception is the volume of specific procedures or diagnoses, such as cardiac bypass surgery, hip replacement, or acute myocardial infarction. People with a condition or others acting on their behalf would probably wish information only on a specific procedure. For other indicators listed, such as physician specialization, evaluation of performance for particular conditions, and hospital mortality rates, the resulting information could relate either to general care or to more specific conditions. Consumers evaluating a particular hospital might wish to know the mix of specialties available or the specialists available to treat one condition. Quality assessors could review medical records across all conditions or restrict the sample to a specific condition. Similarly, hospital mortality rates could pertain to the entire institution, a department, or a procedure or condition.

Tables 3-4 and 3-5 provide selected information on the use of medical specialists and provide a context for understanding how information on specific physicians could help consumers select a physician. As shown in table 3-4, which physician specialists people use depends to a great extent on the patients' age (and sex). The reason is partly that some specialties, such as *pediatrics*, concentrate on the care of one age group, and partly that most specialties focus their practice on certain medical conditions, which in turn vary according to patient age. Table 3-5 shows for four

**Table 3-2.—Possible Indicators of Hospital Quality and Their Relationship to Aspects of Medical Care**

<b>Structural indicators:</b>	<b>Structural Indicators (cent'd):</b>
Accreditation by Joint Commission on the Accreditation of Healthcare Organizations (overall performance)	Availability of home health services (5,10)
Affiliation with medical school (overall performance)	Community education program (6)
Credentialing process to admit physicians to staff (overall performance)	Certification of blood bank (5,10)
Medical staff organization (overall performance)	<b>Process indicators:</b>
Ombudsman/mechanism for handling complaints (overall performance)	Disciplinary actions (overall performance)
Organization of nursing staff (overall performance)	Performance for specific medical procedure(s) or condition(s) (overall performance, 2,4,5,6,7,8,9,10)
Proportion of staff graduated from foreign medical schools (overall performance)	Autopsy rates (8,9,10)
Staff turnover (overall performance)	Removal of normal tissue (8,9,10)
Teaching status (overall performance)	<b>Outcomes:</b>
Registered nurses in direct patient care per patient (overall performance, 4)	Adverse events (overall performance)
Volume of specific procedures or diagnoses (overall performance, 10)	Patient ratings (overall performance)
Scope of services, including emergency facilities and physician services (overall performance, 1,8,9,10)	Malpractice compensation (overall performance, 3)
Specialization of physicians (overall performance, 2,5,7,8,9,10)	Nosocomial infections (overall performance, 10)
Procedures of quality assurance committee (overall performance, 1,2,4,5,6,7,8,9,10)	Hospital mortality rates (overall performance, 2,5,7,8,9,10)
Active ethics committee (2,3,10)	Measures of functional status (overall performance, 2,5,8,9,10)
Certification of laboratory (5,7,8)	Hospital readmission (overall performance, 8,9,10)
	Drug and transfusion reactions (5,8,9,10)
<b>Key to numbers representing aspects of care:</b>	
1 = Responsiveness to urgent/emergency situations	6 = Primary prevention
2 = Referral to appropriate level of care	7 = Case finding
3 = Humaneness	8 = Evaluation of presenting complaint
4 = Communication of information	9 = Diagnosis
5 = Coordination and continuity of care	10 = Management

SOURCE: Office of Technology Assessment, 1988.

major age groups the most frequently used physician specialties along with the major causes of hospitalization, disability, and death that they treat.

One might place high priority on assessing the quality of the physician specialties on whom people rely most, namely the primary-care specialties including general or family practice, internal medicine, pediatrics, and obstetrics/gynecology. Or priority might fall to specialties that manage conditions that pose substantial risk to patients, because the conditions require hospitalization or jeopardize mobility or life. People seeking a family physician would benefit from evaluations that

spanned the range of conditions a specialty commonly manages, while people choosing a physician for a particular condition would desire information that related to that condition. Whether for overall care or care for specific conditions, the content of a specialty's care could guide quality assessors' selection of cases and outcomes to evaluate.

Known deficiencies in medical care could also guide the choice of what to assess for consumers (186,704). Assessors could focus on the most common or most dangerous hazards to patients or the areas in which errors can be corrected and the greatest benefits for patients achieved.

**Table 3-3.—Possible Indicators of Physician Quality and Their Relationship to Aspects of Medical Care**

<b>Structural indicators:</b>	<b>Process indicators:</b>
Type of medical school (teachingv. nonteaching) (overall performance)	Disciplinary actions (overall performance)
Trained in medical-school hospital (overall performance)	Performance for specific procedure or condition (overall performance, 2,4,5,6,7,8,9,10)
Graduate of foreign medical school (overall performance)	Drug use (8,9,10)
Specialization (overall performance, 2,5,7,8,9,10)	<b>Outcomes:</b>
Volume of specific procedures or diagnoses (overall performance, 10)	Patient rating (overall performance)
Hospital admitting privileges (overall performance, 2,5)	Adverse events (overall performance)
Emergency coverage arrangements (1)	Malpractice compensation (overall performance, 3)
	Patient drug reaction (5,8,9,10)
<b>Key to numbers representing aspects of care:</b>	
1 = Responsiveness to urgent/emergency situations	6 = Primary prevention
2 = Referral to appropriate level of care	7 = Case finding
3 = Humaneness	8 = Evaluation of presenting complaint
4 = Communication of information	9 = Diagnosis
5 = Coordination and continuity of care	10 = Management

SOURCE: Office of Technology Assessment, 1968

## INDICATORS OF QUALITY SELECTED FOR OTA EVALUATION

### Criteria for Selection

In selecting indicators of the quality of medical care for evaluation, OTA considered the perspectives of consumers, the medical profession, research, and policy. As indicated in table 3-6, OTA attempted to incorporate indicators perceived to be valid by consumers and by those in the medical, research, and policy communities. Each of these groups is using certain indicators to assess quality, often without thorough evaluation of the indicators' validity. Subjecting such indicators to intensive examination could validate their appropriateness or elucidate problems with their use.

Since OTA'S task is to evaluate indicators of quality that consumers could use to choose physicians and hospitals, the public's requirements for information received high priority. People are most likely to face decisions about medical care for the conditions that have the highest incidence and prevalence in the United States. The most common causes of physician office visits, hospitalizations, disability days, and death were the basis of the entries in tables 3-4 and 3-5. As one would expect, the most frequent afflictions vary

by age and sex. In addition, the circumstances and type of medical condition influence how consumers choose providers. One survey organization reported that, on average, 22 percent of consumers selected a hospital on their own, without their physicians' advice; in cases involving accident or injury, however, 33 percent chose the hospital independently. People were also more likely to act on their own in choosing a hospital for general tests and treatment (29 percent) and for illness and maternity (27 percent) than for surgery (17 percent) (320).

Also important in OTA'S selection was that the indicators taken together relate to the aspects of care that are important to people (see table 3-1 and ch. 2). People have reported being particularly concerned about humaneness and communication of information, including information on primary prevention (392).

Other considerations in selecting indicators to evaluate hinged on the state of medical knowledge. Given current information and technology, certain events, such as maternal deaths, should

**Table 3“4.—Distribution of Office Visits to Physicians, by Physician Specialty and Patient Age, 1985“**

Physician specialty	Percent of visits by patient age					Total population
	Birth-14 years	15-24 years	25-44 years	45-64 years	z 65 years	
General or family practice. . . .	25.0% <sup>o</sup>	35.6% <sup>o</sup>	31.9% <sup>o</sup>	32.0% <sup>o</sup>	29.0% <sup>o</sup>	30.5% <sup>o</sup>
Internal medicine . . . . .	2.2	6.4	9.1	15.7	22.0	11.6
Pediatrics . . . . .	55.2	6.0	1.1	0.4	0.2	11.4
Obstetrics/gynecology . . . . .	0.5	18.8	19.3	4.7	1.4	8.9
Ophthalmology . . . . .	2.5	4.0	3.9	7.0	13.5	6.3
Orthopedic surgery. . . . .	<b>2.9</b>	<b>6.2</b>	6.1	6.1	3.4	4.9
General surgery. . . . .	1.4	<b>4.1</b>	<b>4.5</b>	<b>6.6</b>	<b>6.2</b>	<b>4.7</b>
Dermatology . . . . .	1.4	6.4	4.6	3.8	3.4	3.8
Psychiatry . . . . .	0.7	2.3	5.8	3.0	0.9	2.8
Otolaryngology . . . . .	3.5	2.2	2.3	2.6	2.1	2.5
Urology . . . . .	0.5	0.8	1.4	2.4	3.5	1.8
Cardiology . . . . .	0.1	0.3	0.6	3.1	3.8	1.7
Other. . . . .	4.3	6.7	9.4	12.5	10.5	9.0
Total . . . . .	100% <sup>o</sup>	100% <sup>o</sup>	100% <sup>o</sup>	100% <sup>o</sup>	100% <sup>o</sup>	100% <sup>o</sup>

<sup>o</sup>Percentages may not add to 100 because of rounding.

SOURCE: US Department of Health and Human Services, Public Health Service, National Center for Health Statistics. Unpublished data from the National Ambulatory Medical Care Survey, Hyattsville, MD, Nov 17, 1986.

occur only rarely, and their occurrence often raises concern about the quality of care. Especially in the past 50 years, medical advances have enabled providers to intervene in the natural progression of many medical conditions, to restore function or to prevent further decline. But most techniques, even well-accepted ones, have not been well evaluated, and many may lack efficacy. Consequently, it is reasonable to restrict evaluations of quality to the application of technologies with demonstrated efficacy and to conditions with efficacious interventions.

By drawing indicators from the different research approaches used to evaluate quality (structure, process, and outcome), OTA hoped to gain insight into advantages and disadvantages of each approach. To ensure the feasibility of its own research, OTA limited its analysis to indicators for which sufficient published and unpublished information existed to support an evaluation.

Reflecting the interest of Congress and other policymakers, OTA paid particular attention to indicators that quality assessors are using or considering, especially for public programs. Also in line with policy interests, OTA wished to target conditions or interventions where quality problems are likely because of overuse or underuse of particular procedures.

## Indicators Selected for Evaluation

OTA selected the following eight categories of indicators for intensive evaluation:<sup>z</sup>

- hospital mortality rates, for the overall institution, by department, and by condition or procedure;
- adverse events that affect patients, as exemplified by nosocomial (institutionally acquired) infections in hospitals;
- formal disciplinary actions by State medical boards, sanctions recommended by utilization and quality control professional review organizations (PROS) and imposed by the U.S. Department of Health and Human Services (HHS), and malpractice compensation;
- evaluations of physicians' performance for a specific condition, as exemplified by physicians' care for hypertension;
- volume of services performed in hospitals and by physicians;
- scope of hospital services, with particular emphasis on emergency services, cancer care, and neonatal intensive care units;
- physician specialization; and
- patients' assessments of their care.

<sup>z</sup>App. A contains more information about the selection process.

Table 3-5.—Management of Specific Conditions as Possible Indicators of Quality

<p><b>Patients from birth to 17 years:</b>  <i>Pediatrics, general and family practice</i>            General medical exam, including childhood immunizations            Earache/otitis media            Respiratory symptoms            Asthma            Anemia            Gastrointestinal symptoms            Acne            Head trauma, including use of skull X-rays  <i>Otolaryngology</i>            Otitis media            Allergy  <i>Orthopedic surgery</i>            Orthopedic impairments  <i>Ophthalmology</i>            Vision problems  <i>Dermatology</i>            Acne            General surgery            Appendectomy            Hernia repair</p>	<p>Patients from ages 18 to 44:  <i>General and family practice, internal medicine</i>            General medical exam            Hypertension (screening and treatment)            Respiratory symptoms            Allergy            Arthritis            Pneumonia  <i>Obstetrics/gynecology</i>            Prenatal care and delivery            Gynecological disorders            Complicated pregnancy (including performance of cesarean section)            Hypertension (screening and treatment)  <i>Orthopedic surgery</i>            Back symptoms/disc disorders            Fractures and dislocations            Orthopedic impairment  <i>Dermatology</i>            Acne  <i>Psychiatry</i>            Depression            Alcoholism (treatment)  <i>General surgery</i>            Hemorrhoids            Cholelithiasis  <i>Otolaryngology</i>            Hearing impairments</p>
<p>Patients from ages 45 to 64:  <i>General and family practice, internal medicine</i>            General medical exam            Hypertension (screening and treatment)            Diabetes mellitus (screening and treatment)            Respiratory symptoms            Arthritis            Allergy            Angina pectoris            Pneumonia            Influenza  <i>Ophthalmology</i>            Vision problems  <i>General surgery</i>            Hernia repair            Cholelithiasis            Malignant neoplasm of the lung  <i>Orthopedic surgery</i>            Back symptoms/disc disorders            Fractures and dislocations  <i>Gynecology</i>            Hypertension (screening and treatment)            Diabetes mellitus (screening and treatment)  <i>Dermatology</i>            Skin disorders  <i>Cardiology</i>            Angina pectoris  <i>Otolaryngology</i>            Hearing impairments  <i>Urology</i>            Calculus of kidney and ureter</p>	<p>Patients aged 65 and older:  <i>General and family practice, internal medicine</i>            General medical exam            Hypertension (screening and treatment)            Congestive heart failure            Ischemic heart disease            Diabetes mellitus (screening and treatment)            Arthritis            Chronic obstructive pulmonary disease            Influenza            Pneumonia            Respiratory symptoms  <i>Ophthalmology</i>            Cataract removal            Other vision problems  <i>General surgery</i>            Cataract removal            Malignant neoplasm of lung            Malignant neoplasm of breast            Varicose veins  <i>Cardiology</i>            Congestive heart failure            Acute myocardial infarction            Ischemic heart disease  <i>Urology</i>            Prostatectomy  <i>Dermatology</i>            Skin disorders  <i>Orthopedic surgery</i>            Fracture of neck of femur  <i>Otolaryngology</i>            Hearing impairments</p>

**SOURCES:** *Morbidity and Mortality Weekly Report*, "Premature Mortality in the United States," 35(25):1S-11S, Dec. 19, 1988. U.S. Department of Health and Human Services, Public Health Service, National Center for Health Statistics, "1985 Summary: National Hospital Discharge Survey," *NCHS Advance Data*, No 127, Hyattsville, MD, Sept. 25, 1986. U.S. Department of Health and Human Services, Public Health Service, National Center for Health Statistics, unpublished data from the National Ambulatory Medical Care Survey, Hyattsville, MD, Jan. 16, 1987. U.S. Department of Health and Human Services, Public Health Service, National Center for Health Statistics, unpublished data from the National Health Interview Survey, Hyattsville, MD, Nov. 7, 1986.

**Table 3-6.—Considerations in Selecting Indicators of Quality for OTA Evaluation**

**Consumer interests:**

- High-frequency conditions or reasons for seeking care
- Indicators together cover range of what is important to people
- Indicators together relate to general population, particular age-sex categories, and vulnerable groups

**Medical interests:**

- Conditions for which medical care can alter the natural history
- Events that should not occur
- Conditions or interventions where quality problems are likely from overuse or underuse of particular procedures
- Indicators perceived as valid by medical community

**Research interests:**

- Information available to support an evaluation
- Indicators that relate to different approaches to assessing quality (structure, process, and outcome)

**Policy interests:**

- Indicators frequently considered to assess quality
- Indicators being used to assess quality

SOURCE: Office of Technology Assessment, 1988.

Taken together, these eight indicators relate to a range of medical providers, types of medical care, aspects of care, approaches to quality assessment, and sources of data (see table 3-7). Hospital mortality rates and scope of hospital services apply only to hospitals, and physician specialization applies most directly to physicians. Five of the indicators—adverse events, disciplinary actions and malpractice compensation, evaluation of physicians' performance for a specific condition, volume of procedures, and patient ratings—could apply to both physicians and hospitals. This report does not explicitly consider indicators of quality for HMOs and other alternative delivery systems; however, quality assessors could use these indicators to evaluate physicians and hospitals associated with such organized delivery systems as well as physicians and hospitals operating more independently.

All but one of the eight indicators evaluated in this report pertain to the evaluation of general rather than condition-specific care. Only the evaluation of physicians' performance through hypertension screening and management pertains to a specific condition, but the evaluation of other indicators touches on age- and sex-specific conditions for which people frequently seek care. The

analysis of hospital mortality rates examines mortality rates for specific departments, such as neonatal intensive care units; and the analysis of volume of procedures examines procedures for several specific conditions, such as appendectomy, hysterectomy, coronary artery bypass graft, total hip replacement, prostatectomy, and acute myocardial infarction. Whether a hospital's scope of services is adequate depends on what medical conditions the hospital treats. Although this report does not explore them in depth, some adverse events, such as maternal death, relate to specific conditions.

Each of the indicators that OTA chose for evaluation is associated with 1 or more of the 10 specific aspects of medical care that were listed in table 3-2. As shown in table 3-7, hospital mortality rates, adverse events, State disciplinary actions, PRO/HHS sanctions, and malpractice compensation could result from deficiencies in any of several aspects of care. Patients' assessments are associated with a number of matters of particular concern to consumers: the responsiveness of a provider to urgent situations, the personal respect or humaneness accorded a patient, the communication of desired information, and the performance of primary preventive activities. Review of the care given for hypertension would give information on almost the entire range of medical care aspects.

The eight indicators encompass the range of approaches to assessing quality: structure, process, and outcome. Two indicators—hospital mortality rates and adverse events that affect patients—enumerate undesirable effects on patient health. Both pertain almost exclusively to physiologic health and physical function. State disciplinary actions, PRO/HHS sanctions, and malpractice compensation are indicators that straddle the process and outcome categories; patients or colleagues may undertake malpractice and disciplinary actions because of providers' negligence in the provision of medical care, but the allegedly negligent behavior may attract notice because of adverse effects on patients' health or satisfaction. The review of physicians' care for a specific medical condition, such as hypertension, entails scrutinizing aspects of the medical care process. Three indicators—volume of procedures provided

**Table 3“7.—Issues Addressed by the Indicators Selected for OTA Evaluation**

	Hospital mortality rates	Adverse events	State disciplinary actions, PRO/HHS sanctions, and malpractice compensation	Evaluation of physicians' performance: hypertension	Volume of services	Scope of hospital services	Physician specialization	Patients' assessments
<b>Providers:</b>								
Physicians		X	X	X	X		X	X
Hospitals	X	X	X	X	X	X		X
<b>Type of medical care:</b>								
General care	X	X	X			X	X	X
Condition-specific care	X	X		X	X	X	X	X
<b>Aspects of medical care:</b>								
Overall performance	X	X	X		X		X	X
Responsiveness to urgent situations	X	X	X			X		X
Referral to appropriate level	X	X	X	X		X		
Humaneness			X	X				X
Communication of information		X	X	X				X
Coordination and continuity of care	X	X	X	X	X	X		X
Primary prevention		X		X				X
Case finding	X	X	X	X				
Evaluation of presenting complaint								
Diagnosis								
Management								
<b>Assessment approach:</b>								
Structure					X	X	X	X
Process		X	X	X				X
Outcome	X	X	X	X				X
<b>Source of data:</b>								
Large data bases	X	X	X		X	X	X	
Chart review		X					X	
Special survey		X						X

SOURCE: Office of Technology Assessment, 1988.

by a hospital or physician during a year, scope of hospital services, and physician specialization—represent structural measures of quality; that is, they all measure the existence of certain medical resources, including expertise and facilities. Patients' assessments of their care occupy a dual position in this schema. Patients' assessments may serve as a measure of patient satisfaction, one of the desired outcomes of medical care. Or patients may rate *or* report structural and process characteristics of care (e.g., a provider's responsiveness to urgent situations).

### Evaluation of the Indicators: General Issues

Applying the method described in appendix C, OTA evaluated the reliability, validity, and feasibility of using each of the eight quality-of-care indicators to inform the public about the quality of physicians or hospitals. *Reliability* relates to whether a measure of the same case will produce the same results on successive trials, *validity* to whether an indicator measures what it purports to measure, and *feasibility* to whether it is practical to use a certain indicator to convey information to the public about quality. Although each indicator raises different considerations, the reader should be alert to certain general issues that relate to many of the indicators and threaten their reliability, validity, and feasibility.

Making reliable comparisons of providers' quality requires that providers be assessed by the same standards and that the measures conform to uniform definitions. But developing information to construct or to interpret each indicator evaluated in this report requires people to make judgments: physicians and other medical professionals to set standards and to review the performance of their peers, judges and public administrators to interpret laws and regulations, statisticians to analyze data, or patients to assess their care. The decisions of experts in a field often differ because the experts have different knowledge and opinions (the problem of interrater reliability). Even the same person may judge the same situation differently at different times (the problem of intrarater reliability). This situation calls into question the reliability of the eventual evaluations of providers'

quality. For example, one researcher reported that, among reviewers who had received no training in evaluation, agreement on assessments of medical records approached only 50 percent, no better than chance (479).

Researchers and quality assessors have attempted to mitigate this problem by specifying explicit criteria for reviewers to use. Although this approach may improve interrater reliability, it may simultaneously reduce validity (184). With the use of explicit criteria, reviewers may have little flexibility to take into account what is appropriate for specific patients. In an attempt to identify the advantages and avoid the disadvantages of each method, quality assessors, including PROS, are combining approaches by using patient outcomes or explicit process items to identify problem cases that receive subsequent implicit review (see ch. 5 on adverse events and ch. 7 on evaluations of physicians' performance for a specific condition).

Questions of reliability also arise in connection with common data sources and definitions. Diagnostic information entered on hospital discharge abstracts, a primary source of information for quality assessment, may differ among hospitals because coders use different definitions (166). Even apparently straightforward facts such as death may not be recorded reliably and in any case are subject to differing definitions, depending, for example, on whether the death occurred before or after hospital discharge.

Several considerations threaten the validity of the indicators. As described above, each of the three major approaches to measuring quality—structure, process, and outcome—has shortcomings. Structural measures describe the potential of a hospital or physician to deliver good quality care, but cannot guarantee it. Structure is at best a necessary, but not a sufficient, condition for good quality care. Elements of the medical care process have validity as predictors of the quality of care only to the extent that research has established their efficacy in achieving desired patient outcomes. Conversely, to establish the validity of an outcome measure, one must be able to attribute the results to prior medical care, as opposed to the host of other factors that may influence what happens to patients.

Regardless of the approach, quality assessors face the problem of how to set the criteria and standards by which to evaluate medical providers. Following the work of Donabedian, criteria refer to the elements to be measured in an evaluation, and standards pertain to what is considered acceptable or good (184). The validity of the criteria and standards that are set is threatened by dependence on the judgments of experts. Some problems arise because of the subjectivity of experts' decisions about what does or does not constitute good quality care. But a perhaps more serious problem is the lack of scientific information on the efficacy and safety of most medical practices. The less information comes from studies documenting efficacy and safety, the greater the role of experts' judgments, with all their subjectivity.

An additional validity issue concerns the generalizability of results and whether evaluations should relate to a provider's entire practice or only to specific conditions. Each level of aggregation has a role to play in quality assessment and complements the other. How a physician or hospital manages a specific condition, such as hypertension or coronary artery bypass surgery, has clinical relevance to other health professionals and to individuals or organizations seeking a provider

for a certain purpose. As a rule, however, one cannot generalize from how well a medical provider handles one condition to how well that provider handles other conditions and performs overall. Conversely, evaluations across the range of conditions that a medical provider usually manages would convey information to quality reviewers about the provider's overall performance and could help people seeking a primary care physician or a physician in a certain specialty.

In the area of feasibility, inadequate data pose the most important and most pervasive problem. Both outcome and process measures of quality require clinical data that are generally lacking in routinely available data bases, such as providers' insurance claims and hospital discharge abstracts. Furthermore, because existing sources do not combine ambulatory and inpatient records, reviewers are unable to evaluate an episode of care and attribute responsibility for the results among providers.

The underlying question that remains is whether any of the possible indicators of medical care quality provide reliable and valid assessments that consumers can use to select physicians and hospitals. The subsequent chapters of this OTA report address that question for the eight selected indicators.