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Setting the Standards for Evaluation of Quality in Cancer Care

by Dale E. Fuller, M.D.

Radiology is no stranger to issues of quality assurance. For more than 20 years, radiology has followed the leadership of Avedis Donabedian, M.D., who has worked on the difficult task of defining quality elements in the structure, process, and outcome areas of health care. To develop appropriate criteria for measurement, he reasoned, we must first clearly understand the components and the outcomes of care that we want to assess. As Donabedian said, to proceed to measurement without a firm foundation of prior agreement in what quality consists of is to court disaster.

Historically, we have confined our efforts at defining quality to looking at the performance of practitioners and to the contributions of the health care system. In the future we must pay more attention to patient satisfaction as we look at the effects of care on their health status.

Quality assurance demands that we look at goals: What is maximally effective and what is optimally as effective? If we choose optimally effective quality, we will want to know who says what is optimal. Does the physician, insurance company, government, or society say what is the best we can afford? Society will no doubt play as great a role as the patient in deciding what is optimal.

Physicians sometimes view issues that relate to quality and appropriateness of care as encroachments on their autonomy. They may sometimes believe that if they tell others what to do, they in turn risk being told what to do. Therefore, some physicians reason, quality standards must be developed in a manner that least perturbs the status quo. If they are to support quality standards enthusiastically, physicians must be involved in the development of such standards and receive incentives for the time they spend doing so.

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WHAT IS QUALITY?

Development of radiation oncology standards requires that the following quality elements be assessed:

- practitioner performance, including technical and interpersonal skills
- structure, including facilities, personnel, and organization
- processes inherent in the giving and receiving of care
- outcome of care on patients' health status
- sampling methods
- measurement methods

Practitioner performance. Assessing practitioner performance is not difficult. Quality performance depends on knowledge and technical skills compared with the best in practice. The best in practice refers to that which is expected to produce the greatest improvement in the health of our patients.

Measuring the practitioner's interpersonal performance is more difficult and seldom done, despite the fact that good interpersonal skills are likely to help reduce malpractice risk, as well as possibly lead to better outcomes. Such skills need to be brought into the assessment process. This is a potential application of patient satisfaction surveys.

Structure. Assessing quality of structure requires looking at 1) material resources, facilities, and equipment, 2) human resources, including numbers and qualifications of personnel, and 3) organization, including medical staff, peer review, and reimbursement.

Process. Process refers to the transactions inherent in the giving and receiving of care, including patient activities and practitioner activities in making a diagnosis and recommending treatment.

Outcomes of care. Assessing outcome involves more than looking at the effects of care on the health status of patients. We must also assess improved patient knowledge, changed patient behaviors, and patient satisfaction. While some outcomes are immediate, others are delayed, especially in radiation oncology. Therefore, we must keep track of patients for a long time.

Sampling methods. When sampling practice at treatment sites, we can look at proportionally representative samples of cases using a variety of criteria, for example, looking at prostate, cervix, and lung cancers at a given facility. After acquiring a consensus of best current management standards for that disease process, conclusions can be drawn about the universe of patients served in that facility by comparing local management with the consensus standard.

Or, we could choose to examine illustrative cases. Looking at illustrative cases of individual problems is less representative, because one cannot be certain that the case selected for illustration truly represents local process.

We could also assess adverse outcomes. This is important for finding a problem, but will not give us the fundamental, broader view of process. When we examine the records of patients who experience adverse outcomes, we may find

variations from our consensus of best current management. However, we will likely not be able to judge local process properly.

Measurement methods. Measurement of what radiation oncologists do can be accomplished by hiring an expert to perform a case-by-case analysis. Such measures, which are based on the judgment of the expert, are expensive, imprecise, and vary from place to place, as well as from analyst to analyst.

A better choice is to assemble a panel of experts, who over a period of several days develop a detailed decision tree representing consensus on the best management for a given clinical problem. Although development of the product may be costly, once done it can be exported anywhere, is low cost to use, and is unresponsive to variability.

STANDARDS AND PRACTICE PARAMETERS

Many community-based cancer treatment centers are relatively small, with only a few oncologists on staff. The physicians, nurses, and administrators are all working full time in patient care. Thus, previously tested and peer-reviewed standards that can be adopted to local use are a valuable resource. Over time, each site can choose to emphasize those features of quality assurance that it finds to be of greatest value.

A number of resources are available to help local treatment facilities develop meaningful quality assessment/assurance programs. One such resource is already existing practice standards and practice parameters, many of which have come from the American College of Radiology (ACR). The ACR has developed standards for radiation oncology that address personnel (including whether physicians are available during treatment), equipment, patient and personnel safety, and quality assurance. In this context, quality assurance entails implementing a quality assurance committee, chart review, peer review, misadministration, mortality and morbidity conferences, physics quality assurance reports, outcome studies, and reported incidents.

Table 1.
The Growth of Radiation Oncology Services in the U.S.

Number of free-standing facilities providing radiation oncology services	
1986	216
1990	350
Number of hospital-based facilities providing radiation oncology services	
1986	890
1990	1,038
Number of patients using radiation oncology services	
1986	430,000
1990	481,000
Change in equipment	
1974	970 cobalt machines and 407 linear accelerators
1990	504 cobalt machines and 1,893 linear accelerators

The ACR has recently issued seven new practice standards covering diagnostic and interventional procedures. The standards cover:

- performance of adult chest radiography
- performance of bedside adult chest radiography (portable chest radiography)
- diagnostic arteriography in adults
- performance of the abdominal and retroperitoneal ultrasound examination
- performance of a scrotal ultrasound examination
- performance of the peripheral venous ultrasound examination
- performance of the peripheral arterial ultrasound examination.

New ACR standards are issued yearly and existing standards are updated as needed.

The ACR has also developed standards pertaining to physical aspects of quality assurance, which include:

- measurement of equipment
- external beam treatment equipment
- simulators
- treatment planning computers
- brachytherapy
- unsealed source procedures
- procedures for radiation, mechanical, and electrical safety.

At a minimum, it takes the ACR nine months for a standard to go from inception through seven or more review processes. Input is gained from all components of the ACR, including the state, specialty society, and national levels. Standards are extensively reviewed and well thought out, and thus enjoy good acceptance.

For nearly 20 years, the ACR has been conducting a study of patterns of care in radiation oncology. This "Patterns of Care" study consists of 64 articles and 17 newsletters, and includes reports of cancer patients over four different time periods (1973, 1978, 1983, 1986) at university and free-standing hospitals. The study provides a wealth of information (Table 1). For example, free-standing centers are becoming

more common, a fact that underscores the need for credible quality assurance and peer review. In addition, the number of hospital-based facilities is increasing, and the number of patients treated has grown by more than 10 percent between 1986 and 1990. There are 1,486 more linear accelerators and 466 fewer cobalt machines. These more complex treatment machines call for stronger quality assurance.

ACR's Radiation Therapy Oncology Group includes 185 facilities with 42 open studies under stringent research quality standards. The group may be the single most successful operation in multidisciplinary research modes of all groups supported by the National Cancer Institute. Other disciplines have elected to come along with radiation oncology and have panels within the group that represent medical oncology, gynecology, urology, and surgery.

A variety of standards, practice parameters, and outcome measurements can be adapted to radiation oncology (see Resource List). The American Medical Association (AMA), for example, has developed strategies for patient management that include standards and guidelines. The AMA publishes a directory of practice parameters that includes more than 1,500 listings, 70 of which are related to cancer and 21 related to screening. This directory is a source book of where to find already existing standards. (The *Directory of Practice Parameters, Titles, Sources, and Updates* is available from the Office of Quality Assurance and Medical Review, American Medical Association, 515 N. State St., Chicago, IL 60610.)

Although outcomes management may be further along in oncology than elsewhere in medicine, the heterogenous nature of the players in our oncology centers (administrators, nurses, radiation oncologists, medical oncologists, radiation therapists, and physicists) has resulted in a somewhat defocused view of quality in patient care. Many agencies and organizations have already produced bodies of work having to do with quality and outcomes. These materials can serve as excellent resources for centers as they develop quality review programs.

All of us are busy. The less we, as individuals or as centers, have to reinvent the wheel, the better off we will be.

RESOURCE LIST

- *Tumor registries.* Our tumor registries have important data we may find useful in new ways.

- *The Rand Corporation and the Health Outcomes Institute.* These two institutions have developed outcome measurements that establish guidelines for physicians to use in collecting clinical and follow-up information on patients. They urge 1) routine measurement of function and well-being of patients and disease specific outcomes, 2) pooling of clinical and outcome data nationally, and 3) analysis and dissemination of results of data collection to health care decision makers. Their instrument is a 36-item survey that can be used serially throughout a course of illness to enable the patient to express how his illness is affecting his life. (These outcome measurements are available from the Health Outcomes Institute, 2001 Killebrew Dr. #122, Bloomington, MN 55425.)

- *The Agency for Health Care Policy and Research.* Patient outcomes research teams are at work developing outcomes criteria for a variety of non-oncologic disease entities. Clinical practice guidelines, for example, were published on acute pain management. (*Acute Pain Management: Operative or Medical Procedures and Trauma. AHCPR Pub. No. 92-0032.* Rockville, MD: Agency for Health Care Policy and Research, Public Health Service, U.S. Department of Health and Human Services, February 1992.)

- *The Joint Commission on Accreditation of Healthcare Organizations.* Task forces are developing outcome indicators in obstetrics, anesthesia, cardiovascular disease, oncology, and trauma. (The Joint Commission on Accreditation of Healthcare Organizations, One Renaissance Blvd., Oakbrook Terrace, IL 60181; 708-916-5600.)

- *The AMA/Rand Corporation/American Medical Center Consortium.* Seven major medical centers and the Rand Corporation are working to develop appropriateness criteria for selected medical and surgical procedures, diagnosis, and conditions. These institutions include the Brigham & Women's Hospital in Boston, the Ochsner Medical Institutions in New Orleans, the University of Pennsylvania, UCLA, the University of Iowa, Duke University, and The Johns Hopkins University. Criteria have been developed for cataract surgery (University of Iowa), carotid endarterectomy (Duke University), and coronary artery bypass (Rand Corporation). Other topics include angioplasty, abdominal ultrasound, cholecystectomy, lower extremity bypass graft, ECG, hip replacement, prostatectomy, and laminectomy.

- *Intermountain Health Care.* This hospital system, which is based in Salt Lake City, Utah, is developing measures that give physicians "credible clinical data in a nonthreatening way." The flagship hospital is Latter Day Saints (LDS) Hospital in Salt Lake City. The physician heading its patient care Institute for Health Care Delivery Research is Brent James, M.D.

- *Texas Oncology.* Texas Oncology is developing a data set that will enable it to develop statistically valid samples from the various disease entities it treats. Comparisons in Texas Oncology's practice are being made with a consensus of best current management on a continuing basis.