BASIC PRINCIPLES AND PRACTICES OF UTILIZATION MANAGEMENT

Terry Golash, MD

At the request of his attending, Dr. Price, a resident physician, visits Ms. Ross on her third postoperative day following an uncomplicated total hysterectomy for uterine leiomyoma. Dr. Price finds that Ms. Ross is comfortable, tolerating the oral diet started on the previous day, and able to get out of bed and walk without significant pain. Physical examination reveals that Ms. Ross is afebrile, her surgical wound is clean, she has normal bowel sounds, and her lungs are clear. Dr. Price makes a quick note in the chart, ending it with "d/c tomorrow in am if stable." He then goes to the operating room to assist his attending with morning cases. At about noon, Dr. Price receives a call from the hospital's utilization review department informing him that only 2 postoperative days were approved by Ms. Ross' health plan on their prospective review of her case prior to her admission. Because her surgery was uncomplicated, the third day was subject to concurrent review by the health plan's utilization reviewer, who determined that it did not meet guidelines for medical necessity. Upon learning this, the hospital's utilization review department attempted to reach Ms. Ross' attending but could not find her. As a result, Dr. Price was paged and asked to contact the medical director of Ms. Ross' health plan.

Later that afternoon, Dr. Price attends a grand rounds given by Dr. Chung, chief of infectious diseases, who describes a program her section developed in collaboration with the hospital's emergency and pharmacy departments. The program was initiated following release of state-wide data on patients hospitalized for community-acquired pneumonia, which showed the hospital's average length of stay was 1 day longer and average total billed charges were $1200 higher than the state average, with no difference in patient mortality. Although the initial response was that the patients were probably sicker, examination of emergency department (ED) admission records using a severity rating scale revealed that most patients were not severely ill on admission. Further analysis also showed wide variation in the choice of antibiotic agent and in the time between entrance into the ED, examination by a physician, and receipt of the first dose of antibiotics, with an average time of 16 hours. Dr. Chung outlines reasons for physician choice of a particular antibiotic agent and work flow processes that delayed receipt of antibiotics after they were ordered. She then cites literature supporting improved outcomes for patients who receive antibiotics within 8 hours of appearance in the ED [1]. In an effort to achieve similar outcomes, she proposes a clinical decision pathway to improve the speed at which diagnostic tests are performed and to reduce the choice of antibiotics available from the pharmacy without special approval. The goal of the program will be to shorten the time between a patient's appearance in the ED with clinical signs and symptoms of community-acquired pneumonia and the time blood cultures are drawn, antibiotics are first given, and the decision to admit is made.

Terry Golash, MD, Network Medical Director, Aetna, Inc., Clinical Instructor, Department of Psychiatry, Columbia University College of Physicians and Surgeons, New York, NY.

This glimpse at a day in the life of Dr. Price reveals 2 examples of utilization management (UM) at work—the use of an external review process to determine whether Ms. Ross' continued hospitalization is medically necessary and the use of internally derived utilization data to improve the delivery and outcomes of care for patients admitted to the hospital with the diagnosis of community-acquired pneumonia.

The first example is what usually comes to mind at the mention of "utilization management." The term often evokes thoughts of nonphysician "outsiders" making decisions about whether medical services provided in the course of patient care are necessary. These images have been reinforced by reports that the external utilization review process may undermine the medical profession by imposing "cookbook" standards for clinical practice and by creating distractions and administrative burdens for physicians [2–5].

Despite these concerns, in actual practice, control over the use of medical services generally resides with physicians, who either provide services directly to patients or order others to provide them. Because physicians control most decisions made in the delivery of

Table 1. Selected Managed Care Tasks Deemed Important to Effective Practice in the Next 5 Years

Competency Areas	Managed Care Tasks
Cost-effective clinical decision making	Weigh the costs versus the probable yield of a particular diagnostic procedure in managing a patient with a specific condition
	Compare the costs and probable benefits of different treatment plans that use varied mixes of inpatient/outpatient procedures and/or specialist services*
Case management	For patients with complex disease processes, ensure access to necessary clinical services, coordination of care, and efficient use of resources
Disease management	Contribute to the development of management plans for patients with a specific chronic condition to address patient satisfaction and treatment effectiveness
Referral management	Evaluate referrals to specialists for appropriateness and quality and initiate strategies for improving their effectiveness
Practice profiling	Compare one's own practice profile to that of peers and make appropriate changes in one's practice behavior
Utilization management	Weigh the benefits of case-by-case concurrent review versus practice profiling in addressing a particular clinical issue
Gatekeeping	Perform the "gatekeeping" role for a panel of patients, maintaining quality and cost-effectiveness of care
Managing multiple managed care organizations	Reconcile your own treatment approaches with the potentially contradictory guidelines of multiple managed care organizations
	Adhere to the regulations of several managed care organizations in implementing referrals and ordering procedures
Clinical efficiency	Conduct time and work flow analyses to enhance productivity

NOTE. Importance was rated by residency program directors and managed care medical directors for 10 of the 11 tasks. These tasks and associated data are from Yedidia MJ, Gillespie CC, Moore GT. Specific clinical competencies for managing care: views of residency directors and managed care medical directors. JAMA 2000;284:1093–8.

*The importance of this task was substantiated in an earlier survey of residents by the same investigators.

patient care, they play a major role in achieving the broader goals of UM, which are illustrated by the second example. Thus, it is important to recognize that UM also includes systematic, physician-driven efforts to improve the delivery and outcomes of medical services across the broad spectrum of health care.

In 1989, the Institute of Medicine defined UM as a "set of techniques used on behalf of purchasers of health benefits to manage costs through case-by-case assessments of the clinical justification for proposed medical services" [6]. Today, UM is rooted in a concern for quality management, so a broader definition is appropriate. UM has been defined as any activity whose principal objective is to reduce clinical practice variation by establishing parameters for cost-effective use of health care resources while ensuring that appropriate, best clinical practices are applied [7,8].

Physicians require appropriate skills and knowledge to be accountable for providing care that is clinically appropriate, efficient, and cost-effective. Both primary care residency program directors and managed care medical directors recognize these competencies as critical for practice (**Table 1**) [9]. The purpose of this article is to provide an introduction to the principles, common practices, and value of UM so new physicians may be better prepared to apply them in the course of patient care. In addition, the article briefly discusses the evolution and possible future of UM as well as concerns regarding potential adverse effects it may have on the medical profession.

Evolution of UM

The Beginning

UM was first practiced by hospitals in the 1950s as *retrospective utilization review* of hospital records of discharged patients [10]. The intention was to use the findings of the review process as an educational tool for the hospital's physicians to assess admissions, services provided, and lengths of stay. In 1965, when the federal government began to finance the cost of hospitalizations for senior citizens through the Medicare program, an amendment to the Social Security Act (1935),

Title XVIII, led to *concurrent*, or *continued stay review* and applied utilization review practices to extended stay facilities and hospitals that participated in the Medicare program [10]. The Social Security Amendments of 1972 created *professional standard review organizations* (PSROs), which were physician-controlled review organizations. In 1982, PSROs were replaced by *peer review organizations* (PROs) in which physician representatives participated [11]. The significance of these changes was that utilization review activities were managed by external organizations rather than the hospital itself, with reliance on nonphysicians (usually nurses). In addition, the focus shifted from retrospective review to concurrent and continued stay review.

Early Days of Managed Care

As more and more employers purchased health plans for their employees in the 1970s and early 1980s, the use of utilization review expanded within managed care organizations (MCOs) [11]. In the late 1970s, *prior review*, or *precertification*, became more commonly used by MCOs, with the intention of reducing costs by avoiding unnecessary services before they were provided. Over the 1980s, the number of people enrolled in managed care plans grew and the costs of health care rose rapidly, sparking growth in the number of private firms offering UM services to private insurers, MCOs, and even providers (eg, hospitals, physician groups) for the purpose of controlling the rate of cost increases.

The 90s to the Present

As managed care grew and achieved its initial goals of reducing hospital admissions and average lengths of stay, it also faced opposition from patients, physicians, and legislators about the aggressiveness with which it achieved its goals. A highly publicized example is the public outrage over "drive-by deliveries," which led to the passage of laws guaranteeing payment for 2 days of hospitalization following a normal vaginal delivery. In more recent years, UM has emphasized strategies for intervening earlier in the disease process to avoid future hospitalizations and use of provider performance profiles that allow physicians and hospitals to compare their patterns of utilization with their peers and with benchmarks for best practices.

Guiding Principles of UM

The primary goal of UM is to achieve the best patient outcomes using the most appropriate health care resources (ie, provider, setting, services). Although containing health care costs is a central concern, UM also seeks to reduce inappropriate variations in practice and promote cost-effective clinical decision making.

Minimize Inappropriate Variations in Practice

Efforts to collect, analyze, and report data on the use of medical services has resulted in a substantial body of literature documenting significant practice variations across a wide range of clinical circumstances and in virtually all health care settings, regardless of financing method [12]. Early reports focused on unexplained variations in the rates of common surgical procedures [13,14] and in rates of hospital admissions [15] from one geographic area to the next. However, variations in the utilization of medical services are now known to be widespread throughout the entire spectrum of health care. In 1997, Cowper et al [16] noted that variation in average length of stay and cost, when adjusted for severity, did not correlate with patient outcomes following coronary artery bypass grafting (CABG) procedures. In 1999, Ashton et al [17] noted significant variation in admission rates and length of stay for several common chronic medical conditions across the Veterans Affairs hospital system, which, they concluded, seemed related to community practice style rather than any patient-specific or compensation-related factors. In his comments on this study, Wennberg [18] noted that there also was a strong relationship between admission rates and local bed availability.

Such practice variations, which seem unrelated to optimal patient outcomes, form the rationale for the implementation of UM programs. By attempting to reduce variation in the use of medical services, the rate at which such services will be used can more accurately be predicted. For insurers who charge a set annual *premium* for all medical services covered in a subscriber's contract, or for a medical group that accepts a fixed *per member per month capitation fee*, reducing variation by identifying unnecessary or excessive services will allow better and more predictable management of the limited funds available to pay for such services. Likewise, hospitals will benefit from this approach, as they also operate with fixed budgets and restrictions on reimbursement, especially for Medicare patients.

For the recipients of health care, reducing inappropriate variations in the use of health care resources by applying best practices will ideally result in dramatic improvement in the quality of care received [19]. Efforts to improve physician accountability for best practices should lead to improved patient outcomes by encouraging access to appropriate care and discouraging misuse of resources and unnecessary treatment [12,20]. Furthermore, evidence shows that correcting such problems, particularly misuse and overuse, can translate into cost savings [21].

Promote Cost-Effective Patient Care

An important managed care skill is cost-effective clinical decision making. To manage a clinical problem cost-effectively, a physician must be able to weigh the cost against the probable yield of various diagnostic procedures and therapeutic interventions. Consider, for example, the management of severe headache. Should every patient who complains of a severe headache undergo magnetic resonance imaging (MRI) to rule out a brain tumor? While a "yes" may ease a particular patient's worries and satisfy a particular physician's concern about missing a serious diagnosis, it will also increase the cost of management without necessarily influencing the clinical outcome. If the patient has insurance that will cover the cost of an MRI regardless of the need for the test, he may not care. However, if the patient has no insurance and must pay $800 out of pocket, he may not wish to undergo an MRI unless his physician's suspicion of brain tumor is high.

Effective management of resources cannot be achieved if decisions regarding the use of medical services are determined by coverage rather than proven clinical need. Likewise, if physicians make decisions about the use of services based solely on their individual preferences, they may be unaware of how their utilization practices compare with those of their peers and with proven best practices. UM seeks to promote cost-effective patient care by evaluating the medical decision making patterns of many different physicians and providing feedback to individual physicians on how their patterns compare with those of their peers.

Components of UM

UM is a systematic approach to evaluate the necessity, appropriateness, and efficiency of health care services against established criteria for quality and cost-effectiveness. UM is used by all entities within the health care system, including 1) indemnity health insurance companies that reimburse for covered services provided to its policy holders), 2) MCOs that contract with physicians and hospitals to provide medical services for their policy holders, 3) MCOs that provide medical services directly through their own clinics and hospitals [ie, *staff-* or *group-model health-maintenance organizations* (HMOs)], 4) independent practice associations (ie, *network-model HMOs*), and 5) health care providers themselves (eg, integrated delivery systems, hospitals, physician practices). Each of these entities may hire an independent company to perform UM services for them.

UM activities, particularly reviews of medical necessity, typically are not performed by the individuals who provide the services but by outside agents called *first-line reviewers* (most often nurses who are trained in case management). First-line reviewers are supported by physician reviewers, who may go by the title of *medical director*, *peer reviewer*, *physician consultant*, or *physician advisor*. Physician reviewers hold sole responsibility for making decisions regarding the clinical need for any service under review. If the physician determines that the service is not clinically necessary, he is denying payment for the service, not prohibiting provision of the service to the patient. As illustrated in the case of Ms. Ross, the responsibility for determining when the discharge order is written lies with Dr. Price and his attending. External UM reviewers interact with a hospital's utilization review department, which also is composed of reviewers (most often nurses). Treating physicians may not be aware of the UM process unless a specific problem arises with a patient, as occurred with Ms. Ross. Thus, in many cases, particularly those involving uncomplicated hospital admissions, the UM process does not influence individual physician decision making.

UM generally is not focused on every medical service provided to every member of a population, but rather on services that are expensive or experimental or that show evidence of variation in use. Hospital admissions ordinarily are subject to review because, although uncommon occurrences for most people, they are expensive and subject to wide variation in the amount of services used. To illustrate, for the average under-65 HMO population, only 5% of members may be hospitalized in a given year, but these admissions may account for 40% of all medical expenses for the HMO.

UM encompasses several techniques that, when appropriately applied, should help physicians provide care that is clinically appropriate and cost-effective. The following is a description of common techniques with a brief look at how these activities are coordinated to accomplish the overall goals of UM.

Utilization Review

The first, essential step in managing use of resources is to accurately measure what is being used. This is the role of utilization review. Utilization review refers to the common practice of assessing information about the use of specific medical services such as hospital days, ambulatory physician visits, laboratory tests, radiographic studies, medical procedures, and prescription medications.

To do their job, first-line reviewers use written criteria that explicitly describe the clinical conditions that should be present for the service under review to be considered appropriate and necessary. If the service

involves a hospitalized patient, the reviewer relies on information obtained from a utilization review nurse at the hospital. If it is an outpatient service or elective admission, the reviewer may rely on information provided by the patient's physician (ie, from the medical record or physician's office notes). The physician rarely is asked to provide the information directly unless the medical record or notes are incomplete or the service does not meet criteria for approval. The criteria used to guide utilization review decisions may be developed by an independent organization (eg, Milliman and Robertson, InterQual) and purchased by the reviewing organization or they may be internally developed. Typically, criteria are based on a survey of the current medical literature, published national guidelines, and recommendations of specialty societies. They may be modified to account for local practice conditions based on the recommendations of locally practicing physicians.

Utilization review serves several purposes. It is used to identify the amount and type of medical services provided to a defined population, such as the number of people covered by a health plan in a given year who are hospitalized, the diagnostic categories and procedures for which they were admitted, and how long on average they stayed in the hospital. This information is used to discover trends or patterns in the use of medical services, such as the percentage of deliveries at a particular hospital that were cesarean sections and, if the rate was higher than the rate at other hospitals, possible reasons for the variance.

Utilization review also is used to assess the need and appropriateness of medical services under review. This judgment is based on how many requests for medical services met criteria for approval, how many services required review by the medical director, and how many services were denied as unnecessary. Individual hospitals, for example, may be compared for rates of denials and for differences in the average length of stay for common procedures such as hysterectomy, prostatectomy, or chest pain evaluation. Physicians may use this data to identify reasons why the results are what they are, as in the case of Dr. Chung's examination of why her hospital's average length of stay for pneumonia patients exceeded state-wide averages.

Measures of utilization typically are expressed as the rate of specific classes of services (eg, hospital admissions, referrals to specialists, radiology procedures) used per 1000 members per year. Thus, if 10,000 people were covered by a health plan and 550 admissions occurred in a given year, the admission rate would be 55 per 1000 members per year. Utilization also can be expressed as the average number of services individual members received, such as the average number of visits to a specialist after referral by a primary care physician. Thus, if the same health plan had 20,000 referrals to specialists and 40,000 actual visits, the average rate of specialty referrals would be 2 per member per year and the average rate of specialty visits would be 2 per specialist per year. Finally, utilization measures can be established for specific outcomes, such as the rate of admissions following planned ambulatory procedures or the rate of unplanned readmissions within 30 days of hospital discharge.

Table 2. Examples of Medical Services Commonly Subject to Prospective Review

Inpatient confinements (eg, elective medical and surgical admissions, skilled nursing facilities, rehabilitation facilities)
Surgical procedures (eg, tonsillectomy and adenoidectomy, bunionectomy)
Experimental or investigational procedures
Myocardial perfusion imaging (eg, pharmacologic, SPECT)
Transplantation surgery
Infertility services (eg, in vitro fertilization, GIFT)
Home health care
Injectable drugs
Possible cosmetic procedures (eg, blepharoplasty, rhinoplasty, venous ligation, breast reduction surgery)
Referrals to non-network providers and facilities

GIFT = gamete intrafallopian tube transfer; SPECT = single photon emission computed tomography.

Utilization review is classified as *prospective*, *concurrent*, or *retrospective* depending on when the assessment occurs in relation to the provision of services.

Prospective review (sometimes referred to as *precertification,* or *prior authorization*) is a review of the "need" for inpatient medical services or certain outpatient services that is performed prior to when the service is rendered. Prospective review usually is confined to elective inpatient procedures (eg, total abdominal hysterectomy for a patient with dysfunctional uterine bleeding), nonemergency services that are expensive or likely to be overused (eg, nasal endoscopy), and procedures that may be cosmetic (eg, breast reduction surgery). **Table 2** lists examples of services that are commonly subject to prospective review.

In some cases, the physician requesting coverage for the service (if the patient is in a managed care plan and the doctor is part of the plan's provider network) is required to notify the utilization reviewer before the

service is provided. In other cases, the patient (if the doctor is not part of the plan network or the patient is not a member of a managed care plan) will contact a representative from her MCO or insurance company, who will notify a utilization reviewer. The reviewer typically is located in a central office and can be reached via a toll-free telephone or fax line or, in some cases, by computer. The reviewer accesses a computerized database containing the names of health plan members, histories of previous requests for services, and clinical guidelines used to assist in making decisions regarding coverage. The physician is then asked to supply clinical information to obtain authorization to have the service covered by the payer. If the reviewer cannot approve the request for the service, it is referred to a physician reviewer to determine the final decision about coverage. The physician who is requesting the service may speak with the physician reviewer on disputed cases and, if not satisfied with the decision, may request an appeal along with the patient so that the decision can be reviewed by a different physician reviewer (of the same specialty) or a committee. If a service is being provided on an emergency basis, prior approval is not required, although the physician may still need to notify the reviewer as soon as possible after the service has commenced.

Because prospective review occurs before a service is provided, it allows consideration of alternatives to the proposed service and setting in which the service will be provided (eg, physician office, home). Individual physicians may have different experience or expectations about what services should be given in which settings. If decisions about the use of services are based only on personal experience as opposed to established standards, wide variations in outcomes will occur. Prospective review also allows for earlier identification of patients who would benefit from case management or disease management services. For example, early notification about a planned total knee replacement can trigger preparation of the home for the postdischarge rehabilitation needs of the patient.

Concurrent review is a review of a hospital admission that is performed during the time frame that the patient is hospitalized. This is most commonly done for emergency admissions, such as an admission for chest pain or an acute exacerbation of asthma.

Although most managed care plans ask the primary care physician to notify the plan about the admission, in reality, it is the hospital's admissions department that notifies the plan after the admission has occurred. The utilization reviewer may be located in a central office of the health plan or, if the plan has a large number of patients at a particular hospital, on site at that hospital, which allows the reviewer to work in closer contact with the treating physician. Once notified, the plan's utilization reviewer usually contacts the hospital's utilization reviewer, who provides the details on why the patient was admitted, what the care plan is, and what services are being provided. The plan's utilization reviewer uses clinical criteria to judge medical need and approves days that meet medical necessity criteria. Concurrent review commonly involves assigning and tracking a *maximum allowable length of stay* and initiating discharge planning [6]. In the example of Ms. Ross, 2 postoperative days were approved on a prospective review prior to admission; the third postoperative day was subject to concurrent review because another day was used. Some plans review every day; others approve a series of days and request another review if the patient is not discharged. Cases that do not meet criteria are referred to the physician reviewer, who may discuss the case with the patient's attending physician.

Concurrent review also provides an opportunity to initiate case management services for patients admitted emergently with complex needs (eg, a previously healthy 18-year-old with traumatic quadriplegia following a diving board accident) or disease management services for patients admitted for chronic disease exacerbations (eg, a newly diagnosed asthmatic who will need education regarding use of appropriate medications and a peak flow meter following discharge).

Retrospective review is performed after the medical service has been provided. The review most often is done by a specialized nurse or claims technician who reviews medical records, procedures, and diagnoses submitted on claims forms. One form of retrospective review is a *claims review* to determine whether the physician or hospital used the correct billing codes for the services they provided to a patient. Common problems revealed in this type of review are assignment of the wrong diagnosis or procedure code and assignment of a code that designates a more complex clinical problem than the patient actually had. Companies called *fiscal intermediaries*, which are hired by the Health Care Financing Administration (HCFA) to pay Medicare claims, usually are required to review a certain number of claims on a retrospective basis to determine whether Medicare is billed properly.

A retrospective review also may be performed to verify that services were provided. For example, a physician may request admission for a procedure that can be safely provided on an ambulatory basis, citing need for special observation status. A retrospective

review of the patient's claim may reveal that no special observation services were provided. The more critical roles of retrospective review, however, are to identify patterns of care and to review possible adverse events that occur during a service that had been approved prospectively or concurrently. Most MCOs and hospitals may require a review of the medical record if a patient has a major complication, such as aspiration pneumonia following a planned surgical procedure. Such reviews are typically done at the health plan's central office, although they may be performed at the hospital's medical record department or, if the review involves outpatient services, in the physician's office. A hospital's morbidity and mortality rounds is a form of retrospective review, in which physicians discuss individual cases that may have had unusual or unexpected outcomes. In this instance, the review process, which traditionally has been intended to be educational, can be focused on changing patterns of practice.

Other Techniques Used to Manage Utilization

Discharge planning. Although all patients admitted to a hospital must receive a discharge plan, discharge planning for UM purposes generally applies to patients with more complex needs. In such cases, the hospital and health plan utilization reviewers must think ahead as the care plan unfolds to determine the particular postdischarge needs of the patient. Specific clinical diagnoses and procedures serve as triggers for different types of care plans. For example, if the diagnosis is acute myocardial infarction, the discharge plan may include ensuring that the patient picks up a prescription for β-blockers, sees a dietitian for nutrition counseling, attends a smoking cessation class, and has his lipid levels checked by his primary care physician. Discharge planning requires coordination with multiple providers and a mechanism for follow up with the primary care physician and patient to determine whether the patient is receiving the appropriate care and understands the postdischarge instructions prescribed by the attending physician.

Because discharge planning requires close coordination between the attending physician (who directs the postdischarge services), the managed care plan (which may require the services to be given by network providers), and the patient's primary care physician (who may not see the patient while in the hospital), some managed care plans and hospitals have collaborated on developing a *hospitalist* program. A hospitalist is a physician with staff privileges who spends most of her time in the hospital managing a particular MCO's patients. These doctors work closely with specially designated discharge planners employed by the hospital or health plan to move the patient through the hospital as efficiently as possible (eg, tracking down surgical consults needed to determine whether a patient with cholecystitis needs endoscopic retrograde cholangiopancreatography or laparoscopic cholecystectomy). Hospitalists also may be used by large group practices to manage the admission of their patients and by hospitals to manage their traditional Medicare patients. Hospitalists may receive a set fee (ie, a *case rate*) for managing a patient, regardless of whether the patient can be treated in the ED, avoiding admission, or requires extended hospitalization.

Alternatives to acute care hospitalization. An acute care facility may not always be the best setting for care delivery. For example, a diabetic patient who has a nonhealing foot ulcer but is otherwise stable may receive greater benefit from referral to a specialized outpatient wound care center. Similarly, a terminally ill patient requiring only palliative care may be better served in a hospice program. Likewise, not all services requested for hospital admission require an acute care facility. For example, the growth of minimally invasive procedures, such as laparoscopic techniques for gallbladder removal, have made it possible for some procedures to be shifted to ambulatory surgery centers. Similarly, as home health care has grown, many patients can now receive services such as chemotherapy safely and more cost-effectively as outpatients.

UM programs can help identify appropriate cases for alternative care settings and assist physicians in working with experienced providers in their area. For example, a physician prescribing deep venous thrombosis prophylaxis for a stabilized patient following hip surgery may not be familiar with administering subcutaneous low-molecular-weight heparin on an outpatient basis as an alternative to intravenous unfractionated heparin. The patient's health plan, however, may be able to arrange for the patient to be treated at home through an affiliated home health care agency that commonly provides this service to other appropriate patients in that plan.

Case management is a technique designed to manage complex, often high-cost or high-need cases requiring specialized services through a coordinated effort to achieve the desired health outcome in the most cost-effective manner. Case management focuses on individual patients with acute catastrophic conditions (eg, traumatic spinal cord injury) or chronic conditions (eg, amyotrophic lateral sclerosis) who need a variety of medical services from different providers in different settings. The major goals are to reduce hospital length of stay, prevent future hospitalizations, promote access to

and use of alternative and more cost-effective resources and settings, and improve quality outcomes by minimizing or preventing complications and morbidity. A specially trained case manager (usually a nurse or social worker) coordinates and assists in the transition of care from the hospital to alternative settings and attempts to match the appropriate intensity of services with the patient's needs over time. When properly used, case management can greatly assist a physician who, while retaining responsibility for a patient, may not have the time, training, or skill to address all the patient's needs, which may involve social service agencies, support groups, and medical supply companies.

Disease management. Whereas case management targets the needs of individual patients, disease management is aimed at an entire population of patients with a specific disease. Disease management typically involves an organized effort to achieve desired health outcomes in populations of patients with common, often chronic diseases, for which care practices may be subject to considerable variation, sometimes at odds with recognized standards [22]. Goals of comprehensive disease management programs might include:

- Increasing the percentage of patients with diabetes who maintain a hemoglobin A_{1c} level below 7%
- Increasing the percentage of patients with congestive heart failure (CHF) who are appropriately treated with an angiotensin-converting enzyme inhibitor
- Increasing the percentage of patients with moderate to severe asthma who receive peak flow meters

Patient education often is the cornerstone of a disease management program, and health plans may reimburse physicians at an enhanced fee schedule if they provide this important service. By being better informed, patients are able to take a more active role in managing their illness, and in doing so, may reduce the incidence of short- and long-term effects of disease. For example, an asthmatic patient who knows how to use a peak flow meter and can adjust her medication based on peak flow readings will have a better sense of control.

Demand management refers to a variety of health plan activities designed to educate plan members and provide information in real time, thereby helping them access the most appropriate services for their needs. Examples include:

- Telephone lines staffed by nurses who can answer questions about problems members can manage themselves or who can steer members to the most appropriate medical setting to handle their medical issues
- Member newsletters with self-care information
- Mailings and telephone calls to targeted members to remind them about preventive services (eg, mammograms, immunizations)
- Health risk assessments of newly enrolled Medicare members; online health surveys to point members to Web sites that can provide information on specific diseases of interest
- Counseling services (eg, smoking cessation counseling, depression self-assessment)

Referral management. It is no longer common for HMOs to require review of specialty referrals by a primary care physician. However, managed care plans may assist physicians in identifying specialists who have been shown to achieve better outcomes or who offer a broader range of services and, thus, may influence referral patterns to those physicians with superior performance. Plans may evaluate a specialist against his peers based on the number of procedures he performs when he sees a patient on referral, the self-reported satisfaction of patients who saw the specialist, and feedback from the specialist to the referring physicians after the visits occurred. Health plans may periodically provide primary care physicians with "scorecards" on specialists within the network. If there is no primary care physician to act as gatekeeper for referrals (as is the case in *open access plans* or *preferred provider plans*), specialist performance may still be tracked and provided directly to patients. These quality measures are in a relatively primitive stage at present; most information about specialists is limited to board certification status, office hours, specific procedures performed in the office, and languages spoken. Outcomes data can have an impact on referral patterns, however, as in the striking example of coronary artery bypass graft (CABG) surgery in the state of New York. The likelihood of mortality after CABG surgery is reduced by about half if it takes place in a hospital that performs CABG surgery on 500 or more patients per year [23]. Such information is widely available to physicians practicing in New York state.

Profiling. Physician profiling is a technique often used by organizations that are affiliated with many individual physicians. Profiles provide physicians with feedback on their practice patterns relative to their peers and to established benchmarks or norms. Profiles contain aggregated data collected from utilization review activities and allow comparison of patterns of resource use, charges, and patient outcomes. For example, a profile may compare all internists in a health plan network

in a particular local community and show such items as 1) the percentage of referrals to a cardiologist for patients with type III or type IV CHF, 2) the percentage of patients who were provided a generic rather than a brand name drug prescription where generic was possible, or 3) the rate of radiology procedures that patients on each physician's panel received over the course of 1 year. By providing relative performance measures among providers, physician profiling can establish benchmarks for comparing physicians to each other. For example, a physician who uses twice as many radiologic procedures as her peers may have a practice of ordering routine chest radiographs on all preventive health care visits. The focus usually is on outliers (ie, the small percentage of physicians who have utilization rates that are significantly higher or lower than their peers).

Peer review. In the context of UM, peer review is a process whereby 1 or more physicians, of the same or similar specialty, review another physician's treatment plan to determine whether the care was medically necessary and appropriate. Peer review also is used when a hospital or MCO must make a decision regarding a physician's continued participation in a plan network or on a hospital admitting staff, when questions about the quality of care provided by the physician have been raised. As mentioned earlier, *peer review organizations* (PROs) are bodies originally created for Medicare and Medicaid, which review utilization for these government programs and sponsor quality improvement projects determined by HCFA (eg, working with hospitals to measure and improve the use of influenza and pneumococcal vaccines for hospitalized Medicare patients). PROs also are employed by insurance companies and state governments to perform *third party external reviews*, which are appeals of denials made by MCOs and insurance companies after their internal appeals process has been exhausted.

Criticisms of UM

The growth of managed care has been the impetus for fundamental changes in the way that physicians practice medicine in the United States, and with this evolution has come a new body of literature offering ethical analysis of managed care. UM in particular has been the target of significant criticism. Several studies have found that physicians perceive utilization review as a technique that undermines the practice of medicine by over-standardizing diagnostic and treatment regimens and by excessively distracting physicians from their clinical work [2–5]. Although it is beyond the scope of this article to describe the criticisms of UM in detail, a few of the more common concerns are briefly noted here.

Utilization review performed by a third party (ie, anyone other than the physician providing the service) has incurred much criticism in terms of perceived threats to physician professional autonomy [20]. Based on their 1993 study of many of the largest utilization review firms, Schlesinger et al [20] noted that utilization review represents a challenge to the authority of the medical profession over the review process and criteria. Standardization of the treatment under review is believed to encourage a "cookbook" style of practice that overlooks the idiosyncratic needs and circumstances of individual patients. Furthermore, the gradual enforcement of entrepreneurial interests rather than traditional professional values of medicine (ie, scientific rigor, patient beneficence) is thought to undermine ethical practice. The authors postulated, however, that external review could help to restore public confidence in physicians by encouraging them to embrace the role of patient agent, who carefully considers treatment options for individual patients and effectively educates patients about these options [20].

Schlesinger et al [20] also noted that many of the largest utilization review firms appear to make decisions based on their particular business model (ie, profit versus nonprofit), which may lead to significant variation in what is or is not determined by them to be medically appropriate and in how they respond to physicians who appeal their decisions for medical conditions that may seem very similar. (The authors, for example, focused on admissions of adolescents to psychiatric hospitals.) Physicians who are concerned about the unethical implications of such practices may be less eager to participate effectively in UM activities [20]. If there is inconsistency among different UM organizations, a physician may become confused and angered and see such actions as second guessing her clinical acumen in managing patients with seemingly similar medical conditions [20]. Lack of awareness of published clinical practice guidelines and confusion caused by multiple sources of guidelines on a given clinical topic further compound the problem [24,25]. In response to these complications, some have argued that in order for physicians to retain autonomy, it is their responsibility to implement and monitor practice standards to decrease inappropriate variation and improve quality of care [26].

Finally, a common claim among managed care critics is that third party reviewers routinely deny coverage for treatment doctors deem necessary [7]. At least 1 major survey, however, does not support this claim [27]. As noted, only properly licensed physicians can make medical necessity denial decisions. Many states

have also mandated external review of such denial decisions to further safeguard patient and physician rights. In response to relatively low denial rates, at least 1 major HMO has drastically cut back on utilization review and will rely instead on analyzing patterns of practice [28]. Most plans have reduced the number of services that require prior approval, and recently adopted prudent layperson language for access to EDs has further limited opportunities to restrict access to care regardless of its need.

The Future

UM has evolved over the past 40 years from occasional reviews of individual hospital charts, with respectful deference to a physician's personal authority, to a multidimensional industry that affects nearly every medical service provided in the United States. Although UM is currently a tangled web of many different procedures and participants, I propose that 2 factors will determine the future of UM: an increase in physician-driven UM activities, and advancement in information technology.

Chassin [12] notes that no single approach to managing health care utilization will produce the quality improvement UM seeks to achieve and suggests a need to combine techniques suited to the situation. Fabius [28] recommends that physicians, who may assume financial risk for the services they provide to patients, become more proactive and focus UM activities only in those areas where it can make a difference (eg, reduction in unnecessary hospital admissions, management of chronic or complicated conditions). Kerr and colleagues [4] have reported that physician groups in fully capitated markets have already adopted many formal UM techniques to control their own utilization (eg, preauthorization, physician profiling). Such physician-initiated UM activities might, for example, lead to a dedicated effort to enroll patients with poorly controlled asthma in a disease management program after profiling reveals inappropriately high hospital admission rates for asthma patients.

As the implementation of programs such as asthma disease management hinge on the availability of data, I believe that improvements in information technology and the growth of physician reliance on such technology will lead to more efficient use of UM techniques. As Internet access and use expand, UM activities will likely become more Web based. The Internet could enable a physician to access, in real-time, a patient's medical record and health plan information; current information on treatment options; decision-making aids that promote cost-effective, best practices; and consultations from clinical experts. Electronic systems could also be used to send orders to the pharmacy and to check on medication side effects, dosages, and potential drug interactions. Such systems would also automatically trigger disease or case management systems. In the future, external reviewers will ensure that quality, cost-effective care is administered, rather than police the choices of physicians. In short, UM will be built into the health care system at every step along the path of health care delivery.

References

1. Meehan TP, Fine MJ, Krumholz HM, et al. Quality of care, process, and outcomes in elderly patients with pneumonia. JAMA 1997;23:2080–4.
2. Emmons D, Chawla A. Physician perceptions of the intrusiveness of utilization review. In: Socioeconomic characteristics of medical practice. Chicago (IL): American Medical Association;1991:3–8.
3. Gold M, Physician Payment Review Commission, Mathematica Policy Research, Medical College of Virginia. Arrangements between managed care plans and physicians: results from a 1994 survey of managed care plans. Selected External Research Series; No. 3. Washington (DC): Physician Payment Review Commission; 1995.
4. Kerr EA, Mittman BS, Hays RD, et al. Managed care and capitation in California: how do physicians at financial risk control their own utilization? Ann Intern Med 1995;123:500–4.
5. Frank RG, McGuire TG, Newhouse JP. Risk contracts in managed mental health care. Health Aff (Millwood) 1995;14:50–64.
6. Gray BH, Field MG, editors. Controlling costs and changing patient care? The role of utilization management. Institute of Medicine, Committee on Utilization Management by Third Parties. Washington (DC): National Academy Press; 1989.
7. Kongstvedt PR. Managing basic medical-surgical utilization. In: Kongstvedt PR, editor. The managed health care handbook. 4th ed. Gaithersburg (MD): Aspen Publishers; 2000:294–330.
8. Citrome L. Practice protocols, parameters, pathways, and guidelines: a review. Adm Policy Ment Health 1998;25:257–69.
9. Yedidia MJ, Gillespie CC, Moore GT. Specific clinical competencies for managing care: views of residency directors and managed care medical directors. JAMA 2000;284:1093–8.
10. McSteen M. Problems of utilization review. Rocky Mt Med J 1968;65:45–9.
11. Tischler GL. Utilization management and the quality of care. Hosp Community Psychiatry 1990;41:1099–102.
12. Chassin MR. Assessing strategies for quality improvement. Health Aff (Millwood) 1997;16:151–61.
13. Wennberg J, Gittelsohn A. Variations in medical care

among small areas. Sci Am 1982;246:120–34.
14. McPherson K, Wennberg JE, Hovind OB, Clifford P. Small-area variations in the use of common surgical procedures: an international comparison of New England, England, and Norway. N Engl J Med 1982;307:1310–4.
15. Wennberg JE, Freeman JL, Culp WJ. Are hospital services rationed in New Haven or over-utilised in Boston? Lancet 1987;1:1185–9.
16. Cowper PA, DeLong ER, Peterson ED, et al. Geographic variation in resource use for coronary artery bypass surgery. IHD Port Investigators. Med Care 1997; 35:320–33.
17. Ashton CM, Petersen NJ, Souchek J, et al. Geographic variations in utilization rates in Veterans Affairs hospitals and clinics. N Engl J Med 1999;340:32–9.
18. Wennberg JE. Understanding geographic variations in health care delivery [editorial]. N Engl J Med 1999; 340:52–3.
19. Chassin MR, Galvin RW. The urgent need to improve health care quality. Institute of Medicine National Roundtable on Health Care Quality. JAMA 1998;280:1000–5.
20. Schlesinger MJ, Gray BH, Perreira KM. Medical professionalism under managed care: the pros and cons of utilization review. Health Aff (Millwood) 1997;16:106–24.
21. Pestotnik SL, Classen DC, Evans RS, Burke JP. Implementing antibiotic practice guidelines through computer-assisted decision support: clinical and financial outcomes. Ann Intern Med 1996;124:884–90.
22. Wennberg JE, Cooper MM, editors. The Dartmouth atlas of health care, 1999. Chicago (IL): American Hospital Publishing; 1999.
23. Grumbach K, Anderson GM, Luft HS, et al. Regionalization of cardiac surgery in the United States and Canada. Geographic access, choice, and outcomes. JAMA 1995; 274:1282–8.
24. Cabana MD, Rand CS, Power NR, et al. Why don't physicians follow clinical practice guidelines? A framework for improvement. JAMA 1999;282:1458–65.
25. Cabana MD, Lewis TC. Overcoming barriers to using asthma clinical practice guidelines. Semin Med Pract 2000;3:19–32.
26. Temianka D. Physician-controlled utilization management [letter]. Ann Intern Med 1996;124:856.
27. Remler DK, Donelan K, Blendon RJ, et al. What do managed care plans do to affect care? Results from a survey of physicians. Inquiry 1997;34:196–204.
28. Freudenheim M. Big HMO to give decisions on care back to doctors. New York Times 1999 Nov 9.
29. Fabius RJ, editor. A physician executive's guide to patient management for the '90s and beyond. Tampa (FL): American College of Physician Executives; 1995.

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