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UTILIZATION MANAGEMENT: Issues, Effects, and Future Prospects

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■ **Abstract** Utilization management encompasses a diverse set of activities designed to influence the use of health care services and thereby constrain health care resource consumption. Utilization management, which has become one of the most widely used cost-containment approaches, has engendered debate and controversy. Physicians have been outspoken critics of utilization management because it has limited their clinical autonomy and has contributed to an intolerable administrative burden. Insurance carriers, managed care plans, and third-party payers have defended the use of utilization management as an imperfect—but necessary—practice that is needed to reduce consumption of unnecessary or inappropriate health care services. This review examines the operation and effects of three widely used utilization management procedures: prospective utilization review, case management, and physician gatekeeping programs. In addition, it explores the future role of utilization management in the health care system and outlines a set of principles that we believe should be used to guide the development of utilization management strategies in the future.

INTRODUCTION

Utilization management (UM) represents a broad array of techniques designed to influence the consumption of health care services, usually with the objective of promoting cost containment. During the past 20 years, UM has gained acceptance as an approach to cost containment and has become a prominent fixture of the U.S. health care system. Managed care plans, public and private payers of health care services, insurance carriers, and hospitals have used UM in one form or

another to control health care utilization and contain costs (12, 29, 42, 73). Even physician medical groups—often the target of UM—have relied on UM techniques to control the volume of services when they have been placed at financial risk through managed care risk contracts (29). Evaluations of UM have generated mixed findings, with some studies showing reductions in utilization and costs and others showing little effect. Despite its widespread use, UM has engendered debate and controversy. Physicians have been outspoken critics of UM because it has eroded their clinical autonomy. UM has also been criticized for its role in contributing to the mountain of paperwork that now burdens the health care system. Insurance carriers, third-party payers, and health plans have defended the use of UM as an imperfect, but necessary, practice that is needed to reduce consumption of unnecessary or inappropriate health care services and thereby contain health care costs.

The purpose of this review is to: (*a*) describe the key features and effects of UM; (*b*) critically examine the process of utilization review, arguably the most controversial and invasive feature of UM; and (*c*) discuss the future role for UM in the twenty-first century. The health care system is clearly in transition, moving away from restrictive managed care arrangements and toward more flexible consumer-oriented delivery models. The UM program of tomorrow is likely to be quite different from the UM program of today. This review provides an opportunity to consider the purpose of UM and how it might best meet the future needs of the health care system.

BACKGROUND

Definition of UM

No single definition has been developed to date that adequately captures the diverse nature of UM. In its 1989 report on UM, the Institute of Medicine (IOM) adopted a narrow focus on case-by-case preservice review sponsored by purchasers (25). In her study of medical groups, Kerr adopted a broad definition of UM that included the use of physician payment incentives (29). Subsequently, Milstein (41) defined UM in terms of "interventions originating outside the physician/patient relationship with an intent to promote an economical mix of health care services." Milstein's definition highlights two important features of UM: (*a*) it is a process that is externally imposed upon the physician/patient, and (*b*) it is directed at containing health care costs for payers.

This review focuses on three widely used UM practices: (*a*) traditional prospective utilization review (UR), including pre-admission and concurrent review, (*b*) case management, and (*c*) physician gatekeeping. Our review touches only peripherally on demand and disease management, which arguably are forms of UM.

Operational Characteristics

The three UM practices examined here, prospective UR, case management and physician gatekeeping, share the common general purpose of promoting health care cost containment, although they vary in their operational characteristics.[1]

UTILIZATION REVIEW UR typically focuses on hospital care but is also used to review and authorize outpatient care. Most prospective UR programs include preadmission review to certify the need for hospitalization and assign an initial length of stay, concurrent review to authorize continued hospital stay after expiration of the initial approved stay, and outpatient review to authorize selected diagnostic and surgical procedures, such as magnetic resonance imaging (MRI) or tonsillectomies.

The intent of UR is to constrain health care costs by reducing unnecessary or inappropriate medical care. These two terms generally indicate care that (*a*) provides no significant clinical benefit, or (*b*) could be rendered in a less costly setting. UR is performed on a case-by-case basis, usually by an external review agency, and is offered by health plans and insurance carriers as a benefit design feature. UR is almost always compulsory. If a patient fails to obtain the necessary authorization for an admission, an extended length of stay, or a diagnostic or surgical procedure, he or she may be liable for financial penalties. Alternatively, some form of financial or reimbursement penalty may be levied against the health care organization providing the service. A decision to deny care may not always result from UR but may rather result from coverage limitations included in a patient's health insurance policy. The UR decision is usually made independent of the claims examination process, but confusion sometimes arises in the minds of patients who wrongly assume that any denial of care results from UR.

There are few reliable data on the current use of UR among health insurance carriers, managed care plans, self-insured businesses, or public payers. During the 1980s, the use of UR grew rapidly. In an earlier review paper, Wickizer (73) traced the growth and evolution of UR through the 1980s and noted that by 1985 a substantial majority (>70%) of Blue Cross and Blue Shield plans were using some form of UR to contain costs. More recent data on the use of UR comes from a 1995 physician survey (48), which gathered data on the use of managed care techniques from a national sample of approximately 2000 practicing physicians. Physicians responding to the survey reported that 50% to 60% of their patients were subject to some form of UR (length-of-stay review, site-of-care review, or treatment appropriateness). The number of review organizations provides an indirect measure of the broad reach of UR. In its 2000 Utilization Management Guide (68), URAC, also known as the American Accreditation HealthCare Commission, listed over

[1]Some case management programs are focused on patient advocacy and care coordination. These programs may not have cost containment as their primary goal.

300 accredited UR organizations located throughout the country. The number of unaccredited organizations providing UR services is unknown but is surely large.

Although UR is extensively performed, managed care organizations and health plans have begun to question the value of traditional UR approaches. In a widely publicized decision (28), United Health Care abandoned its UR program in late 1999 in favor of programs that emphasized a more consumer-/clinically oriented approach involving demand management and disease management.

CASE MANAGEMENT Case management, the second form of UM included in this review, represents a highly diverse set of activities. Case management can be grouped into two broad categories that sometimes overlap. Administrative case management provides brokering services to ensure that patients obtain needed services at the lowest available price, assures that available benefits are brought to bear in a coordinated and comprehensive manner, and flexes eligibility so that patients may receive cost-efficient services not included in their original benefit package. On the other hand, clinical case management primarily focuses on optimizing clinical management and often focuses on a specific clinical condition such as diabetes or heart failure. Clinical case managers often work from evidence-based protocols and proactively reach out to patients, assisting them to better manage their illness. Increasingly, such clinical case management occurs as part of a more comprehensive disease management program. Both forms of case management are provided to high-risk patients who may require costly medical care, e.g., patients with spinal cord injuries, serious mental or substance abuse problems, or chronic illnesses. Smith (63) described the diverse nature of case management as follows:

> Case management is a generic term with multiple definitions depending on the profession, client group, context and organizational structure . . .. Despite the large number of definitions, common core tasks, or steps, prevail in all practice settings: client identification, assessment, care planning, implementation, monitoring and reassessment.

Geary & Smeltzer (12) note that despite considerable variation in approach, the goal of most case management programs is to decrease costs by lowering total utilization while maintaining or improving quality and other outcomes of care.

Hospital payment reform enacted by Medicare in the 1980s and managed care developments of the 1990s stimulated the use of case management services. In the 1980s, hospitals began to employ nurses as case managers to perform discharge planning and related tasks. During the 1990s, with the introduction of care maps (treatment guidelines or clinical protocols), the role of the hospital case manager expanded as care coordination became more important (49). Case managers have been used extensively in other clinical settings and treatment systems as well to help coordinate care, including HMOs (1), long-term care facilities (36), and workers' compensation (10).

Published data about the effects of administrative case management on costs and clinical outcomes are sparse, whereas studies about clinical case management are more plentiful. The availability of robust data not withstanding, both forms of case management are now widely used in a variety of settings, including inpatient, outpatient, and long-term care facilities. Often administrative case management is combined with utilization review and provided by private insurance carriers and UR organizations. More recently, there has been a growing trend to combine case management with other forms of UM, in particular demand management or disease management, to establish systems of "integrated care management" (12, 68).[2]

PHYSICIAN GATEKEEPING Physician gatekeeping, the third type of UM reviewed here, has become a central feature of managed care. In the earlier pre-managed-care era, when fee-for-service reimbursement dominated as the major form of payment, there were few restrictions placed on patients' access to specialty care and often specialty care consumed by patients was not coordinated. As noted by Bodenheimer et al. (3), in 1965 only 40% of the population had a regular physician who was a generalist, 15% had a physician who was a specialist, and 45% had no regular physician. Patients often sought care directly from a specialist, frequently resulting in costly diagnostic or therapeutic care, with some risk for iatrogenic disease. Medical care costs and health risk increased when patients visited physicians in multiple specialties. With no single physician coordinating their care, patients sometimes received duplicative diagnostic tests or medication that adversely reacted with medications they were already taking (3).

The growing problem of duplicative, costly, uncoordinated care gave rise to the concept of the primary care physician (PCP), who could both provide general medical care and coordinate specialty care when it was needed. During the 1980s and 1990s, with the rapid growth of managed care and capitated reimbursement, PCPs took on a new role as physician gatekeeper. In this role, the PCP became responsible for overseeing and authorizing specialty care for managed care patients. The field of primary care, especially family practice, had for some time stressed the need for PCPs to coordinate medical care—and specialty care in particular—but the new emphasis of physician gatekeeping under managed care was on cost containment and limiting, not coordinating, the use of specialty care.

Physician gatekeeping as a form of UM expanded greatly during the 1990s with the growth of managed care. Few reliable data on the use of physician gatekeeping exist, but what data are available suggest this form of UM is widely used.

[2]Demand management and case management differ in where they fall on the continuum of care. Demand management is offered en masse to all enrollees of an insurance plan or HMO, or all employees of a business. Case management is offered to patients who have complex clinical needs and focuses on coordination of care and benefits. Disease management focuses on patients with specific clinical conditions, e.g., asthma patients, bringing to bear diverse strategies such as clinical reminders and clinical case management to assure care conforms to evidence-based guidelines.

Survey data indicate that in 1997 almost half of all privately insured patients in major metropolitan regions throughout the United States were in "gatekeeping arrangements in which their primary care physician controlled their access to specialists" (64). The role of managed care gatekeepers became contentious because of the use of economic incentives that financially rewarded primary care physicians for thrifty use of referral and hospital services (17). As managed care expanded, with a corresponding increase in the use of physician gatekeeping, patient and physician dissatisfaction mounted. Patients became increasingly dissatisfied with managed care and its reliance on physician gatekeeping to limit access to specialists (3). Physicians felt that the role of physician gatekeeper often compromised the physician-patient relationship and created conflicting loyalties. Moreover, a national survey found that a quarter of primary care providers felt that they were being asked to provide services that were beyond their clinical skill set (64).

In the late 1990s, patient dissatisfaction with managed care took political expression in the form of the "patient rights movement," which sought to restrict through legal statute the ability of managed care plans to limit patients' access to certain types of hospital and physician care. Over 30 states passed laws either guaranteeing patients the right to secure access to selected forms of medical care without interference from managed care plans or giving them the right to have an independent medical review when their care was denied (46). Although physician gatekeeping continues to be widely used, managed care plans are retreating from their earlier heavy reliance on this form of UM (3, 52). Nonetheless, there continues to be a need for coordination of medical care, especially chronic care (70).

EFFECTS OF UM ON UTILIZATION, COSTS AND QUALITY

Utilization Review

Of the three UM practices reviewed here, utilization review (UR) has the most extensive literature. The early UR literature (prior to 1985), reviewed previously by Wickizer (73), suffered from serious research design flaws, making interpretation of the findings from these studies difficult. Among the more sophisticated early UR studies were evaluations of the Professional Standards Review Organization (PSRO) program conducted by the Health Care Financing Administration (HCFA). These evaluations found modest effects of PSROs on length of stay and on selected admissions subject to pre-admission review (21, 22). Other studies of public and private UR programs showed somewhat larger effects of UR (73), but the usefulness of these studies is limited because of methodological problems.

UR studies conducted after 1985 employed more sophisticated designs and used more rigorous multivariate techniques, and thus yielded more reliable findings. One of the initial series of UR studies published after 1985 was an evaluation of a large private UR program conducted by Wickizer and his colleagues (8, 72, 81, 82). That evaluation found that pre-admission review reduced admissions significantly

(approximately 10%) but concurrent review had only a modest effect (2% to 3% reduction) on length of stay. The combined effect of the two UR activities was to reduce hospital inpatient days per 1000 insured persons, on average, by approximately 12%. This estimated effect was dependent upon the baseline level of utilization. Insured groups with higher baseline levels of utilization had substantially greater proportionate reductions in utilization and costs (8). The reduction in inpatient utilization was offset by an increase in outpatient utilization (82); that is, outpatient services were substituted for inpatient services that were constrained under UR. The result was a net decrease in total per capita medical expenditures (including the cost of the UR program) of approximately 5%. Subsequent multivariate analyses of other UR programs operated by Blue Cross and Blue Shield plans (55) and by Aetna Insurance Company (31) generated cost savings estimates similar to those described above.

Left unanswered by these UR studies of the mid- to late-1980s was the effect of UR on access and quality. There was little detailed information regarding the actual frequency of denial among patients, nor was there information about whether denials differed by diagnostic category. Further, almost nothing was known about whether denial of care by UR had any effect on quality as measured by markers such as readmission rates. Wickizer & Lessler conducted a series of studies (33, 77–80, 83) using insurance claims data spanning the period 1989 through 1993 to explore these questions. The data analyzed represent a case series of approximately 60,000 privately insured patients (children and adults) who had been subject to pre-admission review and concurrent review. In addition, the database included approximately 9000 other patients with occupational injuries or diseases who had been subject to UR through workers' compensation.

This series of studies addressed several important gaps in knowledge regarding UR's effect on patterns of care. Contrary to common belief, pre-admission review resulted in few (<2%) denials of hospital treatment (78). Instead, UR more closely managed patients' length of stay through concurrent review after patients were hospitalized. The impact of UR on inpatient care was greatest for mental health patients (78). Whereas mental health patients, including patients with a diagnosis related to substance abuse, represented only 5% of the study population, they accounted for over 50% of the total days saved due to UR. In contrast, obstetric admissions represented almost 40% of the total number of cases reviewed yet they accounted for a trivial (3%) portion of the reduction in hospital days. The fact that obstetric admissions are approved 100% of the time and almost always have short hospital stays, even for cesarean section cases, explains the small proportionate reduction in hospital days. This finding calls into question the common UR approach of using pre-admission review to certify the need for hospitalization when, as in the case of obstetric care, the clinical need for hospitalization is obvious. Further, the volume of such reviews adds significantly to the administrative burden imposed by UR on the health care system.

Length of stay has been declining in the United States, even long after the initiation of hospital payment reform through diagnosis related groups (DRGs),

perhaps in part because of UR. Wickizer & Lessler (78) found that UR became more stringent and restrictive over time in approving cases. In a four-year period (1990 through 1993), length-of-stay authorization (total number of hospital days approved) decreased by almost 50% for mental health cases and by almost 25% for medical cases.

As part of this same series of UR studies, Wickizer & Lessler examined the effects of UR on quality, as measured by early readmission rates. Three separate analyses performed on different patient groups, mental health patients (77), pediatric patients (79), and cardiovascular patients (33), generated consistent findings showing that reduction in requested length of stay resulting from UR was associated with increased relative risk of readmission within 60 days. This effect was especially pronounced for cardiovascular patients who had a surgical procedure for which the requested length of stay was reduced by two or more days. Such patients were 2.7 times as likely to be readmitted within 60 days as patients having no reduction in requested length of stay (33). While the increase in absolute risk of readmission associated with UR was small, these findings nevertheless raise questions about the potential effect of UR on quality for some patients.

An additional recent study that contributed to understanding of UR's effects on utilization was conducted by Rosenberg et al. (53). This study examined UR's effect on patterns of care among a sample of New York City municipal employees who were randomly assigned either to a standard UR program or to a "sham" UR program for which all requested procedures and admissions were automatically approved. The "review" group had fewer procedures per 1000 than the "sham" group but otherwise there were few meaningful differences in patterns of hospital or outpatient care.

Case Management

The case management literature is more limited than the UR literature. While the published literature about administrative case management is sparse, several randomized controlled trials have evaluated the impact of clinical case management on clinical outcomes and costs. Despite their theoretical potential, little evidence exists showing a positive effect of either type of case management on health care costs. Some studies, however, have found positive effects of case management on health outcomes and patient satisfaction, although patient follow-up in these studies has been relatively short.

ADMINISTRATIVE CASE MANAGEMENT We could find only one published randomized trial that evaluated the effects of an administrative case management program, although the literature includes a number of case management studies that lack adequate controls (63). Discharge planning represents a common type of administrative case management that has been widely used. Naylor et al. (44) conducted a randomized trial to investigate the effects of discharge planning on readmissions, hospital days, and medical costs among elderly patients admitted to a major university medical center for selected medical and surgical conditions. The

post-discharge follow-up period evaluated was limited to 12 weeks. The researchers reported mixed findings. Discharge planning had little effect on surgical patients but did have a significant effect on utilization among medical patients up to six weeks following discharge. For medical patients who had discharge planning, re-hospitalization rates, total duration of re-hospitalization, and total hospital charges were less relative to medical patients in the control group.

CLINICAL CASE MANAGEMENT Ferguson & Weinberger (9) provide a useful review of randomized case management trials conducted through 1996 in primary care settings. Of the nine trials included in their review, none affected health care costs but several did improve health outcome and satisfaction measures. Ferguson & Weinberger note that the more successful case management programs targeted patients with specified disease conditions, e.g., congestive heart failure, and had care supervised by a medical subspecialist. Case management programs focusing more generally on post-hospital discharge care or on geriatric care were found to be less successful.

With respect to clinical case management, Rich and colleagues (51) conducted a randomized trial of case management applied to elderly patients treated from 1990 through 1994 for congestive heart failure in a major urban university medical center. Patients were followed for 90 days after discharge. Relative to the control group, patients in the case management group had lower rates of readmission during 90-day follow up (33% versus 46%), but there was no significant difference between the two groups in average length of stay for patients re-hospitalized. In a subsequent report, Rich et al. (50) presented findings for the same study population regarding the effects of case management on patient survival, quality of life indicators, and health care costs assessed at 90 days post hospital discharge. Case management was associated with improved patient survival and with increased quality of life, as measured by indicators such as fatigue, dyspnea, emotional function, and environmental mastery. However, no statistically significant difference in medical costs was found.

In another randomized trial, researchers investigated the effects of a nurse case management program designed to improve health outcomes for diabetic patients (17 type 1 and 121 type 2 patients) enrolled in an HMO (1). The duration of the trial was 12 months. The primary outcome, hemoglobin A_{1c} values at 12 months, decreased significantly for the case management group relative to the controls. Self-reported health status measures also improved for the case management group, but the study found no differences in other outcomes, including blood pressure, body weight, medication type or dose, or lipids.

The Health Care Financing Administration (HCFA) funded three major demonstrations of case management programs established to improve care and contain health care costs for Medicare patients (58). Each of these demonstrations randomly assigned Medicare patients to a case management group or a control group that received standard Medicare services. The conditions targeted for case management varied somewhat among the three demonstration sites. One site focused exclusively on congestive heart failure (CHF), whereas another focused on

CHF or chronic obstructive pulmonary disease (COPD). The third site targeted eight diagnostic groups, including patients with CHF, COPD, ischemic heart disease, stroke, pneumonia and sepsis, and cancer. The number of patients randomized to receive case management in the three sites varied from 209 to 556.

The three demonstration projects differed somewhat in their case management procedures. Although they included elements of administrative case management, they were primarily clinical case management interventions. One demonstration site used a highly structured case management procedure with the frequency and type of communication and interaction between the case manager and the client specified in detail. The other two sites were less structured and allowed individual case managers more flexibility. In addition, the sites differed in their use of client education. One site placed substantial emphasis on client education, the other two sites used it less frequently. The case managers at the three demonstration sites were primarily nurses but also included some social workers.

As reported by Shore et al. (58), none of the three HCFA demonstration sites improved self-care or health or reduced Medicare costs. The researchers suggested that the lack of physician involvement in case management or the lack of specific goals might explain their failure to detect any effects for the demonstrations. Two recent studies, one a randomized trial and the other a cohort study, reported in 2000 also found little evidence of meaningful effects of case management programs (5, 23).

The experience of the Medicare demonstrations may provide insight into why case management has thus far failed to live up to expectations regarding its potential to reduce health care costs. In explaining their failure to detect significant effects of case management, Shore et al. (58) emphasize the lack of cooperation from clients' physicians as a major obstacle hindering successful case management. They also cite the lack of clear goals for case management as a barrier to effective care coordination. The lesson here may be that successful case management requires the active participation and involvement of the patient's physician, and the specification of clear goals toward which case management activities can be directed.

In a recent report of an ongoing quality improvement project, Wickizer et al. (76) describe the Washington State Workers' Compensation Managed Care Pilot (MCP) project, which used case management techniques to coordinate care for injured workers. Case management was provided within each managed care clinic and was closely integrated with other occupational health services, with the specific goals of reducing worker disability and enhancing early return to work. Analysis of disability payments and lost work time suggested that case management, if well integrated into a delivery system and directed at specific goals, can achieve positive results (6, 76).

Physician Gatekeeping

The empirical literature on physician gatekeeping is sparse. One of the more sophisticated studies was a randomized trial reported by Martin et al. (39) of

a physician gatekeeper program sponsored by SAFECO Insurance Company of Seattle, Washington. This trial randomized approximately 1100 subscribers (2800 enrollees including insured dependents) to a physician gatekeeper managed care plan or a standard managed care plan. The gatekeeper plan had 6% lower total charges per enrollee compared to the plan without a gatekeeper, primarily due to lower ambulatory care charges associated with reduced use of specialists.

Medicaid established physician gatekeeper programs as part of a larger series of demonstration programs conducted during the 1980s. Evaluations of these programs generally showed little cost-containment effect of gatekeeping (4, 24, 37, 69). Hurley et al. reported that physician gatekeeping programs established through Medicaid programs in California and New Jersey led to decreased use of specialty care but greater concentrated use of primary care services (24). The effect of these particular programs on costs is unclear.

In a subsequent randomized trial of a gatekeeper program established in a large university-affiliated public hospital, Schillinger et al. (56) reported significantly decreased use of specialty care and fewer hospitalizations but slightly increased use of primary care services among patients using physician gatekeeping. This study found no significant differences in patient satisfaction, perceived access to specialists, or use of out-of-network services. The effects of gatekeeping have also been assessed within an international context. Delnoij et al. (7) conducted multivariate analysis of national health care expenditure data for countries (primarily the United States and selected European countries) belonging to the OECD. These analyses found lower expenditure growth on ambulatory care services in countries that adopted gatekeeper programs but no differences in the level or growth in hospital expenditures or total medical expenditures.

Finally, Grembowski et al. (15, 16) recently reported the results of a detailed cohort study designed to assess the effects of managed care activities, including physician gatekeeping, on utilization, satisfaction, and health outcomes among patients with chronic pain and depression. The researchers were unable to isolate the effects of physician gatekeeping from other managed care activities, but they found little effect of "care managedness" (measured empirically as an index that incorporated gatekeeping, provider specialist network limitations, preauthorization, and provider financial risk sharing) on access to specialty services or health outcomes.

The evaluations of physician gatekeeping programs conducted thus far provide limited evidence that this form of UM has a meaningful effect on health care resource consumption. However, we would note that many group or staff model HMOs use a standard physician gatekeeper delivery model that requires patients to obtain a referral from their primary care physician in order to receive specialty care. This model is used at Group Health Cooperative, a large staff model HMO located in Seattle, Washington, which was the HMO site for the RAND Health Insurance Experiment (HIE). A randomized trial, conducted as part of the RAND HIE (38), found that medical expenditures per capita for Group Health Cooperative enrollees were significantly lower than for fee-for-service patients. The reduced expenditure

rate resulted primarily from decreased admissions. It is unclear whether, or the extent to which, the observed difference in medical expenses may have been associated with the Group Health Cooperative's physician gatekeeping delivery model as opposed to other organizational or financial factors that affect HMO resource consumption.

SCIENTIFIC BASIS AND APPLICATION OF UTILIZATION REVIEW PROCEDURES

Of the three forms of utilization management reviewed here, utilization review (UR) has been the most closely scrutinized and the most heavily criticized. We therefore turn our attention to an examination of the scientific issues pertaining to UR and to other issues related to its use as a mechanism to review and authorize medical care.

The conduct of utilization review—whether pre-authorization of procedures and/or hospitalizations or concurrent review of hospital care—assumes that inappropriate or unnecessary care can be identified using defined clinical criteria. Utilization criteria may either be embodied in guidelines (e.g., length-of-stay guidelines, appropriateness guidelines), or determined by an algorithm that considers specific clinical attributes (e.g., intensity of clinical need, severity of clinical condition, and diagnosis). Both approaches usually involve an initial screening that compares a patient's clinical characteristics to a set of criteria (explicit review). If care meets established criteria, it is approved. Care that does not meet criteria may be immediately denied, though more commonly, especially in the case of pre-authorization of procedures, a physician is asked to review the request. It is noteworthy that the judgments of physician reviewers, while taking account of explicit criteria or guidelines, are often implicit and based on further discussion with the treating clinician.

Methods for determining appropriateness and necessity must be valid and reliable if they are to promote efficient clinical care and gain the trust of the professional medical community and patients. The ultimate reliability and validity of decisions rendered through utilization review depend on the nature of UR criteria and the process of applying those criteria to the specific clinical circumstances of patients.

Available research findings suggest that current UR decision-making is not always reliable and valid for evaluating the need for hospital admission and/or additional hospital days. In an analysis of three distinct utilization review instruments used to determine necessity of inpatient care for medical conditions, Strumwasser et al. (65) found two approaches to be moderately valid and reliable, and the third to have low reliability and validity. The third approach was based on Intensity-Severity-Discharge criteria (ISD) and was adapted from a well-known and widely utilized UR vendor, InterQual. Subsequent research has also questioned the validity of ISD criteria (13, 14).

The validity of proprietary length-of-stay (LOS) guidelines has also been widely challenged, as has the reliability with which such guidelines are actually applied.

Initially, LOS guidelines were based on historical median LOS data derived from hospital discharge databases. While this approach is still used by several proprietary UR organizations, the most widely used LOS guidelines are produced by Milliman and Robertson (M&R) and reflect goal LOS of stay for uncomplicated patients. These guidelines are either based on published literature, reflect observed "benchmark" LOS performance from hospitals across the country, or both. Several analyses have found a wide variance between actual length of stay data and M&R LOS guidelines (40, 54, 62). These studies raise questions about the generalizability of LOS guidelines based on the performance of selected institutions, as well as their underlying validity.

Anecdotal reports have also raised concerns about the application of LOS guidelines. Many physicians report that such guidelines are sometimes inflexibly applied by managed care organizations and UR firms, and fail to take account of important patient clinical characteristics or limitations of community-based healthcare resources, such as home care. This is particularly the case for M&R guidelines that recommend goal LOS for uncomplicated patients. Consistent with these anecdotal reports, a study of UR psychiatric cases conducted by Wickizer et al. (83) showed a pattern of LOS authorization reflective of a cookie-cutter approach. The study population comprised patients with a wide variety of psychiatric illnesses, including schizophrenia, single-episode depression, recurrent depression, alcohol dependence, drug dependence, and adjustment reaction. Nonetheless, almost all patients were approved initially for six days of inpatient treatment.

Concerns about the validity of proprietary LOS guidelines have led to calls for more evidence-based LOS guideline development, using standards similar to those applied to clinical practice guidelines. In fact, the past decade has seen an increasing number of published evidence-based and prospectively evaluated LOS guidelines for common medical conditions and surgical procedures in peer-reviewed literature (20, 67, 71). These guidelines usually are applied and evaluated among patients who are clinically defined as low risk. Unfortunately, the number of scientifically developed and validated LOS guidelines pales in comparison to the universe of clinical conditions and procedures for which patients are hospitalized. Moreover, clinical and technological innovations can outpace the time needed to undertake such rigorous evaluations, rendering evidence-based LOS guidelines obsolete by the time they are published (61a).

The validity of appropriateness criteria for health procedures and the reliability with which they are applied to individual patients has also generated controversy. The RAND/UCLA method for identifying indications for a procedure is perhaps the best known and widely emulated (61). The RAND/UCLA approach involves convening a panel of experts who review available scientific evidence and independently rank the appropriateness of performing a procedure under a specific set of clinical circumstances. The panel then convenes as a group to discuss and adjust their rankings. This method is most often applied when there is sparse scientific evidence and the indications for a procedure remains uncertain.

A recent evaluation of the reproducibility of the RAND/UCLA method to identify the overuse and underuse of medical procedures found that expert panels differ

substantially in their interpretation of available evidence. For example, expert panels using the same methodology to reach consensus on clinical recommendations varied twofold in their categorization of the appropriateness of hysterectomy and coronary-revascularization procedures (61). Thus, it appears that variation in the rates of medical and surgical procedures observed when physicians individually make decisions under conditions of clinical uncertainty can, at best, only be modestly mitigated through the promulgation of appropriateness guidelines by expert consensus panels, because such panels may themselves vary in their recommendations.

Perhaps more troublesome than the consistent promulgation of appropriateness guidelines under conditions of uncertainty is the consistency with which such guidelines, once promulgated, are applied by utilization reviewers. The consistency of UR in rendering authorization decisions is of obvious importance. If a given request for a hospital admission is judged by UR to be clinically unnecessary or medically inappropriate, one would expect the same judgment to be applied to similar cases. Kleinman et al. (32) studied the UR decision-making process for patients with otitis media whose physicians requested pre-certification for the insertion of tympanostomy tubes. Trained nurses compared the clinical characteristics of individual patients to explicit, evidence-based clinical criteria. If a patient's clinical characteristics did not meet appropriateness criteria, then a physician reviewed the case. Kleinman et al. (32) found that physician reviewers often negotiated with the requesting clinician, and that reviewer judgments were often more lenient than explicit appropriateness criteria. Consistent with Kleinman et al.'s (32) findings, in analyzing workers' compensation cases, Wickizer et al. (80) found that initial denials for admission are often reversed when subsequent requests for the same procedure are made on behalf of the same patient. These findings raise questions about the scientific basis of UR and the application of UR criteria to authorize care on an individual case-by-case basis.

Variation in the review styles of utilization review organizations further calls into question the ability of UR to reduce inappropriate practice variation through case-by-case review. A national survey of utilization review organizations found that they varied widely in their denial rates, and that decision-making was significantly influenced by nonclinical considerations, such as financial incentives (57, 84).

Another important question regarding UR concerns the "sentinel effect." Physicians subject to UR may change their clinical practice style knowing that their requests for treatment will be reviewed. Reductions in utilization associated with UR would reflect the combined effect of denials and this sentinel effect. Little direct evidence exists regarding the nature or magnitude of the UR sentinel effect. Wickizer (75) evaluated the effects of a UR program established to review and authorize the use of durable medical equipment for Medicare beneficiaries. This study's findings suggest that the impact of the sentinel effect may be substantial, at least for health care services such as durable medical equipment that are subject to high levels of unnecessary utilization.

In addition to its effects on costs and quality of healthcare, utilization review has had a profound impact on the professional satisfaction of physicians. Recent

studies document growing dissatisfaction with the practice of medicine among physicians (18). The growth of managed care with its attendant reliance on utilization management—in particular, utilization review—has significantly contributed to doctor discontent. Both the challenges to physician autonomy (30) and administrative burden inherent in traditional UR are associated with physician dissatisfaction (43). For example, Murray et al. (43) found that 48% of primary care physicians reported spending "an inordinate amount of time seeking plan approval for patient's care." These same physicians reported spending, on average, 2.9 hours per week seeking authorization from plans (43). The potential impact of physician satisfaction on healthcare delivery has not been thoroughly evaluated. However, there is evidence that growing physician dissatisfaction may adversely affect quality of care (18).

Probably the least well understood outcome of utilization review is its effect on overall societal medical costs. As discussed above, UR appears to reduce modestly overall costs of care when analyzed from the perspective of a private payer. However, patients frequently are discharged in need of more intensive and prolonged home or nursing care (34). At some point, the substitution costs associated with caring for sicker, more unstable patients may exceed the cost savings achieved by reducing inpatient utilization (47). Thus it becomes necessary to consider the cost savings generated by utilization management from a social perspective as well as private payer perspective.

FUTURE ROLE FOR UM IN THE HEALTH CARE SYSTEM

For well over a decade, insurance carriers, health plans, employers, and managed care organizations have relied on utilization management to reduce costs and rationalize clinical care. By the mid-1990s, UM was the most widely used cost-containment approach directed at controlling health care utilization. However, UM's rapid and widespread dissemination engendered anger and mistrust among the medical community and patients, causing a backlash that has led to bipartisan support for patient rights legislation at the very moment that managed care organizations are themselves backing away from traditional UM practices.

UM has been disparaged because it was implemented in an uncritical and unregulated manner, was focused on overutilization and cost-containment rather than on quality of care, relied on remote monitoring by sometimes poorly trained personnel, and contributed to the administrative burdens of clinical practice. Yet, health care costs have again begun to climb upward, wide geographical variations in clinical care persist, and there is clear evidence of large gaps in the quality of U.S. healthcare (26, 27).

The pressure to address cost and quality in our healthcare system is, once again, building. With traditional UM on the wane, how will our healthcare system rationalize care and assure its quality? The strengths and weaknesses of traditional UM, along with other evidence-based strategies for managing care and changing physician behavior, provide important insights that can inform the

design of new, potentially more effective and acceptable approaches to managing utilization.

Current approaches to utilization management are in large part a response to the nature of our pluralistic and fragmented health care system. At present, UM activities are performed on a case-by-case basis. Moreover, physicians, both in their role as gatekeepers and in response to utilization review inquiries, respond to the individualized requirements of multiple plans. Health plans, for their part, lack robust population-based data on utilization and health outcomes for individual physicians or group practices. Also, because any given plan represents a relatively small proportion of patients for a single physician or group practice, health plans are unable to engage physicians in a systematic and comprehensive approach to utilization management.

Historically, utilization management has not been integrated with quality improvement and outcomes management. Promoting more efficient care will require the integration of UM and quality improvement functions within health plans and delivery systems (2). Moreover, there is a need to find ways to bring together providers, payers, plans, and consumers to foster more collaborative approaches to developing initiatives aimed at enhancing the efficiency and effectiveness of health care delivery. Models for such collaboration exist. For example, in Washington State an ongoing quality improvement initiative was developed through the collaborative efforts of multiple stakeholders to improve the quality and outcomes of occupational health care (76); in Minnesota, health plans have agreed to work collaboratively with the provider community in developing and disseminating a common set of clinical guidelines; and in New England, multiple hospitals worked collaboratively to improve the efficiency and quality of care for patients undergoing coronary artery bypass surgery (45).

In considering future efforts to promote efficient health care through UM, we believe several principles should be followed. These include:

1. UM should be directed at promoting quality of health care, not just containing health care costs. Traditional UM approaches have targeted primarily the overuse of care. But this narrow focus does not address other aspects of care that lead to poor quality. As defined by the IOM (35), quality is "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." Schuster et al. (59) emphasize that poor quality can mean too much care, too little care, or the wrong care. UM should provide procedures that can identify, and if possible correct, poor quality for both individual patients and defined populations. Such UM procedures would target not only overuse but also underuse and misuse of care. Further, UM programs should monitor utilization patterns to ensure that efforts to reduce overuse do not lead to adverse health outcomes.
2. UM should be based upon valid and reliable clinical data and/or scientific evidence regarding medical necessity and appropriateness of care. Too often

UM review procedures are based upon inadequate scientific or clinical data. This has created problems for having UM accepted by the medical community and for establishing consistency in review and authorization decisions. To the extent possible, UM should focus attention on those areas of care where the evidence regarding appropriateness and clinical need is most robust. For the areas where evidence is lacking, UM could—and should—play a more active, collaborative role with researchers to advance the state of knowledge. Data gathered by UM programs, if combined with utilization and diagnostic data routinely gathered by health insurance plans, represent a rich source of information that can be used for population-based studies of quality and health outcomes.

3. UM programs and procedures should be designed to minimize administrative burdens on health care providers, health care delivery organizations, and patients. The administrative burden of the U.S. health care system has become intolerable for providers, health care delivery organizations and patients. While much of this burden results from inefficient reimbursement methods used by health insurance plans, UM has contributed significantly to it. As we have previously argued (78, 80), there is little continuing justification for across-the-board review of all patients seeking inpatient hospital care or selected outpatient procedures. Rather, we believe UM should, if conducted on a case-by-case basis, be performed on a targeted basis. Targets for prospective UM review could be defined according to physician utilization profiles, on the basis of patient characteristics, or on the basis of diagnostic criteria, or some combination of these. To the degree that the sentinel effect (75) acts to constrain overuse of care, it is inefficient to perform UM reviews on all cases. Alternatively, UM can be organized to review utilization for some defined population, as is done by disease management programs. The focus here is not on authorizing individual cases for treatment but rather on monitoring a population of patients, e.g., diabetics, to ensure that patients receive needed preventive care and to coordinate acute care.
4. Application of UM procedures should be equitable with regard to ethnicity, income, age, and gender. Relatively little attention to date has been paid to the issue of the equity of UM procedures despite its importance for establishing credibility and acceptance among providers and patients. If providers or patients perceive UM procedures as inequitable, it becomes more difficult to obtain and sustain trust in the review process. The lack of trust can have significant adverse consequences for the operation of UM and creates an atmosphere that invites litigation when disputes over authorization arise.
5. Methods used by UM programs to manage care should be transparent and should uphold the fiduciary responsibility of payers, health plans, and providers toward the patient. UM programs have not been able to secure the trust of patients or providers in part because the review methods and criteria

they use to manage care are not disclosed. In the words of Shapiro & Wenger (60), "The methods of making (utilization management) decisions should be explicit and based on evidence, conflicts of interest should be revealed, and the values of the patients served by the system . . . should be addressed."

Ultimately, developing more effective and acceptable strategies for UM will not resolve the fundamental problem our health care system faces. Despite our wealth, we cannot provide all of the health care people want and feel they deserve. The question posed by Victor Fuchs (11) over 25 years ago—"How much care and at what cost?"—remains largely unanswered because so far we have been unwilling to recognize that health and health care, like everything else, involves economic tradeoffs. Improving the efficiency of health care delivery through utilization management, as important as this is, will not solve the dilemma we face. Indeed, this dilemma is likely to become even more difficult in the future as more advanced medical technology and costly pharmaceuticals become available. UM can play an important role in rationalizing care and enhancing efficiency but it cannot, and should not, be asked to do what the public and politicians so far have been unable to do.

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