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The Use of Clinical Guidelines to Improve Medical Practice: Main Issues in the United States

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The use of clinical guidelines has become a key issue in the US health care system. In contrast to European systems, where such initiatives usually are controlled by one administrative agency, in the US there is a pluralistic approach and many kinds of guidelines coexist, initiated by health professions, managed care organizations, state or federal agencies, hospitals, and insurers. This paper reviews the main trends, indicating that guidelines will play an increasingly prominent role: use of institution-based guidelines vs national, professional, or state-based guidelines; use of more decision-support systems made possible by computerization and changes in cost containment strategies. Combining quality of care objectives with the business objectives of institutions increases the likelihood of a wider adoption by physicians. Several issues, such as the legal implications or the conflict of objectives, illustrate limits in the use of such standards to judge individual cases; however, most recent developments tend to reconcile individual decisions and what is known from probabilities on representative samples. By bringing such information into the decision process between physician and patient, the use of guidelines challenges the traditional asymmetry of information between professionals and patients. In a context of increasing health care costs, clinical guidelines represent a very useful tool for debating rationing issues and standard benefit packages, in order to make the system more equitable. Evaluations of the effectiveness of clinical guidelines on performance are contradictory, but when rigorous evaluations exist, clinical guidelines are found to be effective. The amount of improvement, however, may vary considerably. © 1997 Elsevier Science Ltd.

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At a time when most governments use a variety of policy tools to contain rising health care costs, clinical practice guidelines receive increased attention. This paper presents an overview of clinical guidelines in the United States, where guidelines have been used for several decades and may provide lessons and experience for many countries [1]. Initiated by professionals, this tool focused at first on how to improve the quality of clinical decisions through a dissemination of scientific information. More recently, guidelines have been used by different actors in the health care system: hospitals, health care management organizations, federal and state public agencies, lawyers and insurers.[1] In this way, guidelines have become a key structuring factor in the health care system, since the actors have such different goals as improvement of quality of care, better allocation of resources and cost containment. However, business interests do not always meet professional interests and therefore may adversely affect the way in which clinical guidelines will be developed.

DEFINITION OF CLINICAL GUIDELINES

We start with a recognized definition of clinical guidelines, well accepted in the US health care system. The Agency for Health Care Policy Research, previously called the National Center for Health Service Research (NCHSR),[2] engaged in the process of developing guidelines and proposed the following definition [2]:

"Clinical guidelines are systematically developed statements to assist practitioners' and patients' decisions about health care to be provided for specific clinical circumstances".

This definition underlines the main aspects of a clinical guideline, especially in comparison with other information supports that can be available to the profession, such as medical reviews and various publications in the literature. A guideline aims to provide systematic statements, to provide in effect a kind of simplified roadmap for a physician concerning his practice.

As clinical decisions become more complex, often with multiple solutions, there is a growing need to review the main options and recommend a guide to help and improve clinicians' decisions. The primary goal of clinical guidelines therefore is to improve quality of care (quality of decisions, quality of information used for decisions), even if other interests have broadened their purposes to include such issues as legal defense, or payment and reimbursement. Clinical guidelines aim to enforce professionalism, as well as accountability and efficiency, when developed as an integral part of professional quality assurance activities [5,6].

[1]For a review of all the organizations involved in the development and use of practice guidelines in America, see references [3,4].

[2]The AHCPR is one of the main federal agencies which places the government in the role of promoting the development and dissemination of practice guidelines. The law requires AHCPR to develop guidelines.

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A second key aspect of guidelines, explicit in this definition, is that they are to be a support system in the decision-making process, not only for the clinician, but also for the patient [7]. Therefore, the most recent efforts at developing such systematic information systems try to include and integrate patients' values and judgments in the clinical decision-making process.

Because of the huge increase of medical informatics, the role of guidelines is increasing. Computers allow a much easier access to the extensive knowledge required in the guidelines. They can be used as reminders concerning what would be the recommendations either of a task group or a multi-disciplinary team which has developed systematic statements on a set of decisions. The increasing use of computers also favors the development of electronic records, which can serve as a useful source of information on which to base and define guidelines [8–10].

METHODS USED IN THE DEVELOPMENT OF GUIDELINES

Different methods exist to develop clinical guidelines [11]: informal consensus development, formal consensus development, evidence-based guidelines and explicit guideline development. These methods can represent different strategies for dealing with the issue of imperfect information.

Consensus development, formal and informal

Historically, guidelines have emerged from panels of experts, where agreements are reached through open discussion, without using formal analytical methods. Such informal consensus remains a common approach to developing guidelines. Major problems with this approach are that the process can be influenced easily by the expert group dynamics; recommendations may appear arbitrary if they are not documented, thus making information more difficult to disseminate, and there are strong limits to the validity of the opinions.

Since the early 1970s, more formal and structured ways to reach a consensus have been developed, under the initiative of organizations such as the National Institutes of Health (NIH), the American Medical Association (AMA) or some Health Maintenance Organizations (HMOs). Guidelines are, for instance, issued by NIH Consensus Development Conferences [12] or other federal agencies such as the Centers for Disease Control [13] and the Food and Drug Administration. The AMA has issued practice guidelines for many years through the Diagnostic and Therapeutic Technology Assessment programs (DATTA) [14]. In 1989, the AMA also formed the AMA Specialty Society Practice Parameters Partnerships with a key role in guideline development [11]. Among the HMO's initiatives, we can cite Blue Cross, Blue Shield's Medical Necessity Project in collaboration with the American College of Physicians [15].

Formal methods to reach a consensus aim to fill the absence of explicit criteria and the lack of explicit methods in informal consensus development. For instance, the NIH has structured expert panel discussions about clinical guidelines in closed sessions, which follow plenary session and open discussion, with presentation to an audience and a press conference. Some technology assessment programs developed by the AMA have used questionnaires mailed to experts, in order to avoid interactions between experts, and used simple voting instead of true consensus development. In the 1980s, the Rand Corporation also developed a formal approach to consensus development, in order to develop a list of appropriateness scores. The definition of appropriateness is based on expert opinions. The appropriateness ratings are obtained through a two-step Delphi technique. First, panel members are asked to assess the appropriateness of the procedure for each indication; and the scores are compared at a panel meeting. Next, panel members repeat the scoring process and revise their scores on the basis of the discussion at the meeting. A final list of appropriateness scores results from this consultation process. Rand collaborates both with organized medicine through the AMA and the academic community through the Academic Medical Center Consortium (AMCC) [11].

Such formalizations of clinical guidelines development can improve the selection of criteria used by the expert panel; nonetheless, the recommendations expressed in the guidelines are still based on consensus groups. Some researchers, therefore, have investigated whether consensus can be reproduced by comparing results obtained from different expert groups. Pearson *et al.* [16] have analyzed the reproducibility of consensus between different groups of physicians within the same HMO: Harvard Community Health Plan. Three internal medicine physicians panels, composed of five to seven internists, were formed within the HMO. Each panel was charged to create algorithms for two similar clinical problems. Comparisons between the results of the three groups were performed through a method developed by the researchers for comparing scores: the Clinical Algorithm Patient Abstraction (CAPA) method. Results differed substantially in terms of reproducibility of consensus, according to the type of disease discussed. For instance, for dyspepsia very similar algorithms were developed by the three groups, while in the analysis of sinusitis, differences between the three physician panels were substantial. For guidelines to have a powerful influence on the medical profession, reproducibility of consensus among expert groups is essential.

Evidence-based approach

The trend toward evidence-based medicine emerged mainly because of the considerable growth of information available to those in the medical profession concerning their clinical practice. Much of this information may be invalid or irrelevant, lacking a rigorous sampling basis

on which to draw general conclusions or recommendations for the whole profession. Evidence-based medicine is a process that aims to turn clinical problems into questions and then systematically locates contemporaneous research findings as the basis for clinical decisions [17].

By comparison with the consensus group process, this approach links recommendations to the quality of the underlying scientific evidence. This trend to develop more explicit linkages between recommendations and supporting evidence began in the 1980s in the US. The American College of Physicians established a program called the Clinical Efficacy Assessment Project (published now regularly in the *Annals of Internal Medicine*) [18]. Articles published in the *Annals* provide the physician with a detailed description of the scientific evidence on which the guidelines are based. If physicians' associations are at the forefront of such use of evidence-based medicine for developing clinical guidelines, other organizations have also adopted this method. For instance, in the field of prevention, where it is inherently more difficult to justify early interventions, the US Preventive Services Task Force (USPSTF) adopted similar rules of evidence in 1984 [19]. The USPSTF is composed entirely of physicians: family physicians, internists, pediatricians, and obstetrician–gynecologists. The task force also collaborates with medical specialty organizations, federal agencies and the Canadian Task Force on the Periodic Health Examination. The reports of the task force thus provide scientific support to both clinicians and policy-makers for clinical preventive services [20]. When the task force states that there is not enough scientific evidence, it aims to provide a scientific context for deciding whether or not a physician should offer the service. Since it is more difficult to advise healthy people, the field of prevention is especially well suited for evidence-based methods, which emphasize the critical evaluation of evidence, rather than expert opinion, in defining proper care. Consequently, it is not surprising to see, in Canada as well as in the US, how the need for evidence of effectiveness in preventive medicine has promoted the development of evidence-based methods. The development of clinical guidelines may lead to their wider adoption, for purposes like coverage policy. For instance, members of the USPSTF and other groups involved in evidence-based methods for clinical preventive services argue that the core list of effective preventive services emerging from these recommendations should be used by health plans in their benefit package [20].

The evidence-based medicine group defends the idea that clinical recommendations can be made only when there is clear scientific evidence to support the recommendations. The good thing about such a position is that it will eliminate part of the literature or the studies not sufficiently rigorous on scientific standards. The drawback is that there is still a grey area where there is a lack of strong scientific evidence, clinical research evidence remains limited (e.g. treatment efficacy for patients with low back pain [21]) or there is large scope for clinical reasoning based on factors other than science, such as experience and patient preferences. Despite the new technologies, the grey area for medicine remains quite large, especially for chronic, expensive diseases. Moreover, available technologies may not be developed fully [22,23] and the scientific evidence from these technologies needs constant adjustments. This confirms that there is large scope for uncertainty in medicine, despite the trend of such new evaluative science as evidence-based medicine. Good clinical practice always will blend uncertainty with the science of probability [24].

Explicit guideline development

A fourth category of methods to develop clinical guidelines, pioneered by Eddy in 1990 [25–28], is called explicit guideline development. This method aims to combine, whenever possible, scientific evidence and formal analytic methods. The goal is to provide more explicit methods of guidelines development such as benefits, the dangers or costs of potential interventions, and to derive explicit estimates of the probability of each outcome. Balance sheets [11] are produced to allow patients, clinicians, and policy-makers to review the potential benefits and costs of each choice. This complex process is quite new in the US, but has already been adopted by some physicians' societies, such as the American Academy of Family Physicians, and some panels of the Agency for Health Care Policy Research. Some recent methods add to the strengths of the outcome-based method by incorporating explicit information regarding outcome preferences of patients (preference-based methods).

NATIONAL VS INSTITUTION-BASED GUIDELINES

Professional and other organizations have developed national statements, usually based on judgments of experts. They address in particular practice variations, following the work of Wennberg *et al.* [29–31] and of other investigators [3]. Among the main reasons they give to explain geographical variations with which specific procedures are performed by physicians, are inadequate or excessive use of procedures. The problem with such guidelines written for a large audience is that they may be too general and cannot address large geographical variations in practice. For such reasons, national consensus-based guidelines seem infrequently applied by physicians. Moreover, national guidelines aim to provide reports of inappropriate care; however, judgments on the appropriateness of procedures may differ for each institution. Finally, clinical guidelines are only one element of the quality improvement process within an organization. Each institution defines its own standard of quality, its own performance measures, and which actions should be undertaken to improve quality.

Therefore, institutions such as hospitals or managed care organizations tend to develop their own guidelines in order to rethink clinical practices within the scope of a specific institution with its own specific population of patients, specific group of physicians, and specific access to various types of tests. What is happening outside the institution is used either in the judgement of evidence for the development of internal guidelines or as benchmarking information. When the design of a clinical guideline is institution-based, it is most often called a critical pathway. Critical pathways also are known as critical paths or care paths.

"A critical pathway is a multidisciplinary guideline that displays a time line of clinical goals that patients should obtain during hospitalization along with the optimal sequence and timing of interventions by hospital staff to attain those goals" [32].

The origin of critical pathways used in health care organizations comes from techniques developed in the 1950s in the rest of industry, for improving the quality of production processes, in particular to manage the rate-limiting steps in production processes (production optimization methods). Therefore, one key step in developing a critical path consists of finding the right sequence of events in order to analyse the steps in a process of care, in the same way that such analysis is performed in the process of production in other industries. One major difference in health care, in comparison with industry, is that quality improvement in an industrial process often implies a goal to rearrange and speed up relations with contractors. In a process of care, where there are no contractors, the objective of a critical pathway is rather to improve interactions among people inside an institution, an integrated network, or a delivery system. The first developments of critical pathways in health care started in the 1980s, when prospective payment methods were focusing greater interest on methods to improve hospital efficiency [33]. Very often, in the early stages, critical pathways were initiated by nurses in hospitals and the lack of involvement by physicians often is considered as one of the major reasons for their failure [32].

The goals of a critical pathway are usually the following:

selecting the best practice when practice styles vary; defining standards for the expected duration of a hospital stay; defining standards for the use of treatment and for tests; examining the interrelations among the different steps in the care process to find ways to coordinate or decrease the time spent on the rate-limiting steps; giving all hospital staff a common game plan from which to view and understand their various roles in the overall care process; providing a framework for collecting data on the care process so that providers can learn how often and why patients do not follow an expected course during their hospitalization; decreasing the nursing and physician documentation burden; and improving patient satisfaction with care by educating patients and their families [32].

Such goals are much wider than the goal of national practice guidelines and translate directly into particular business objectives held by many hospitals adopting such techniques (e.g. reduction of the length of stay). A critical pathway is also different from national clinical practice guidelines in the sense that it is multidisciplinary and concerns all types of staff actions in an institution. The criteria for selecting areas of care within an organization that may be dealt with by a critical pathway are diverse.

So far, such critical pathways have been designed and implemented for high-volume, high-cost diagnoses and for procedures like medical diagnoses of myocardial infarction, stroke, deep venous thrombosis, and surgical procedures such as coronary artery bypass and total hip replacement. Areas can be selected because they represent the most potential gain for quality improvement or better allocation of resources. The selection also may be driven by observations of large discrepancies among practices for the same disease or type of treatment, or in order to discuss particularly tricky clinical decisions. Clearly, in the context of increased competition and the business objectives of many institutions to reduce costs while maintaining quality of care, there is a wide prospect for the development of such management tools which aim to combine health professionals' beliefs and the business objectives of various institutions. In contrast to the development of national guidelines, critical pathways are developed by individual institutions. There is thus no agreement on the best methods for developing such pathways and there are considerable differences in the development process, the formats used, the documentation used in the process, and the benefits for the institutions, as well as for the patients. At this stage, additional research seems needed to evaluate the technology of critical pathways and their real impacts [34].

THE USE OF CLINICAL GUIDELINES BY THE COURT

Civil courts could be influenced by standards of care expressed in guideline statements, which have lead American courts to establish their authenticity and relevance [35,36]. Properly developed and agreed upon, guidelines can be used as appropriate standards of care in determining if medical malpractice has occurred [37] or to help manage malpractice risks and reduce malpractice premiums (see, for instance, the efforts of the American Society of Anesthesiologists [38]). The use of clinical guidelines by the courts can have a real impact on health professionals but is still very limited. Hyams *et al.* [39] recently surveyed 259 claims of malpractice litigation from two insurance companies and found that such guidelines were used in only 7% of the cases, although most attorneys were aware of the existence of the guidelines. On the other hand, when guidelines have been used in court, they have influenced attorneys'

decisions according to their responses to the survey (27% reported that a guideline had influenced their decision). The origin of most guidelines used in court for malpractice in that survey were professional-based (American College of Obstetricians, hospital protocols, AMA). The type of influence that a guideline creates on an attorney's decision remains unclear, since it does not reduce the use of experts; in fact, it would even increase it. Clinical guidelines seem to be taken more as a minimum in terms of industry practice and the court usually assesses that there can always be better ways to practise.

Insurers have developed different strategies using formal technology assessment, outcomes research, and clinical guidelines to limit their coverage policy and deny claims to consumers. They have questioned the practices of physicians, using clinical guidelines to deny payments of claims for services judged inconsistent with industry practices [40,41]. They have also introduced contractual techniques in order to exclude specific medical acts or services from their coverage policy. The US courts seem to remain very reluctant to consider clinical guidelines for coverage exclusion purposes by insurers and have overturned these companies' efforts [42]. The basic reason is to protect the consumer, who is considered to have the least bargaining power. "Courts consider insurance contracts as a contract of adhesion in which the subscriber cannot effectively bargain with the insurer to change the specific terms" [42]. The general position of US courts in this area has been not to question physicians' treatments, and to take less account, therefore, of standard practices from clinical guidelines. Overall, insurers have tended to be the losers in legal decisions where either an individual patient or an individual physician was questioned in relation to statements from clinical guidelines.

Even if specific states or organizations enforce guidelines in the United States, there is as yet no clear enforcement of clinical guidelines by US courts. Court decisions have not so far relied to a large extent on statements from clinical guidelines, since guidelines remain very pluralistic and no single institution is in charge of designing and regulating them. However, as legal decisions can be very influential if clinical guidelines are used increasingly as a basis for judging malpractice litigation cases, this may limit the development of guidelines by professionals, especially those of a more specific and prescriptive type. The current state of legal decisions probably is not neutral for shaping the trends of guidelines and technology assessment that can emerge in the different stages of the process of care.

FROM A CLINICAL PRACTICE GUIDELINE TOWARDS A SHARED DECISION-SUPPORT SYSTEM

National as well as institution-based guidelines aim to standardize some aspects of the process of care and are based on average value judgments of expert groups. Standards which are based on mean measure or average measure, however, do not fit with the large spectrum of individual decisions both of clinicians and patients. The previous section on main trends in court decisions using clinical guidelines illustrates some limits in the use of such standards or statements to judge individual cases of malpractice litigation.

Moreover, the trend of research into geographical variations in medical practice regards the use of practice guidelines more as a decision-support system for individual decisions. It takes into account that many "unwanted" variations in practices cannot be standardized in guidelines and will continue to require a combination of individual judgments and standards, based on best practices or clear evidence [29–31,43,44].

The second idea behind such development is to introduce individual patient preferences and their value judgments into the decision making process regarding the type of care required. Each patient reacts differently to various levels of risk. Each patient has a different willingness to accept immediate costs (most importantly, morbidity and risks of mortality) for future benefits. There is very little knowledge about measurement of the utility function of a consumer and therefore there is a need to adapt each decision to each individual patient. Such approaches, e.g. the shared decision-making model developed by Wennberg *et al.* [45], aim to combine complex interactions between the use of statistical results (as produced by averages from groups of patients or groups of physicians) and the individual physician/patient decisions. The model seeks to reconcile individual decisions and what is known from probabilities on large samples, mainly provided by the literature. From a public policy point of view, such approaches are closer to societal choices and may help to sensitize individuals to a variety of sets of outcomes. They are basically different from the traditional use of clinical practice guidelines, since they are based on the concept that an individual physician and a patient obtain information from guidelines and make an individual judgment about a set of outcomes. The best evidence and "clinical guidelines" information are used to calculate probabilities of measures of good and bad outcome. The idea then is to bring the available information on probabilities of good and bad outcomes for specific patients into the decision process between physician and patient. Thus, physicians and patients are sensitized to a type of information which they can use in their judgments, but they also take into account their own experience, quality of life preference, and risk preferences. Such decision-support systems, which aim to educate individuals facing care decisions, may be a very useful trend in health care systems, where societal choices for restructuring the systems bring the decision to each individual patient, according to the patient's own values and preferences, in terms of quality of life.

USES OF CLINICAL GUIDELINES FOR PAYMENT AND REIMBURSEMENT

Clinical guidelines are viewed not only as management tools for quality improvement, but also as tools for broader purposes such as legal defense (as discussed above) or payment and reimbursement. The growing concern over health care costs has refocused attention on variations among practices and the potential of standardization methods such as clinical guidelines to yield substantial cost savings, because they provide an infrastructure for efficient investigation of strategies to improve the process of care [46]. However, the costs of implementing clinical guidelines or critical pathways may also be high and/or may shift some costs, for instance, from secondary care to primary care.

Some attempts exist to use clinical guidelines as coverage guidelines which would depict necessary care [47]. "Necessary care" is defined as services that, in the judgment of a panel of experts, have been reasonably well demonstrated to provide significant net health benefits. Such potential use of guidelines is at the heart of the debate concerning problems of distributing health care resources in a fair and efficient manner, at least to provide equitable access to basic benefits for the whole population.

At this stage, such "necessary care" guidelines are merely model proposals, discussed in policy circles. They show, however, the crucial importance of outcome research and the development of clinical guidelines to define basic benefit plans (or adequate/minimum package plans) and operationalize the rationing of health care services, in the context of ever-rising health care costs. Some attempts already exist however, such as for the Medicare program, to ensure that reimbursement only occurs for medically necessary services. Medicare carriers (fiscal intermediaries for some Medicare services) already are developing clinical guidelines with state medical boards to support their reimbursement authorization process [48]. This use of guidelines clearly shows their focus on cost control, but also may lead to a lack of concern about why services are used inappropriately.

EVALUATION OF THE EFFECTS OF CLINICAL GUIDELINES

Before concluding on the importance of clinical guidelines in the US health care system, it is necessary to review the works on their dissemination and measures of effectiveness. The attention given to implementation of guidelines, to their dissemination and practical application, and to a scientific evaluation of their impact on professional behavior, patient outcomes, or health care costs, does not equal the attention given to the process of guidelines development [49]. Different strategies to implement guidelines are, however, discussed in the literature [49,50].

These include the use of "reminder systems" or the development of clinical guidelines in coordination with quality improvement models [51]. Since the decision to use a guideline remains an individual decision, other works examine attitudes and clinicians' behaviors [52]. The decision to use a guideline is based mainly on the perceived value of each guideline and is usually influenced by other clinicians' behaviors. Even if physicians recognize potential benefits of practice guidelines, many are concerned about possible effects on clinical autonomy, or satisfaction with clinical practices [53]. To assess the effectiveness of guidelines, some agencies have funded specific studies (e.g. the NIH study of Kosecoff *et al.* [54]). Several recommendations are made for improving the effects of guidelines, such as follow-up programs at state or local levels [54], educational tools [55], or the use of incentives for individual physicians [56].

Some evidence exists in the US to demonstrate that guidelines do not affect clinical practices or health outcomes [57, 58, 54, 56, 59,60]. However, British researchers Grimshaw and Russell [61], who performed a systematic review of 59 published evaluations of clinical guidelines, concluded that explicit guidelines do improve clinical practice, when introduced in the context of rigorous evaluations. It seems, however, that the amount of improvement in performance can vary considerably.

CONCLUSIONS

Clinical guidelines have become a key issue in the US health care system, even though in the past they were not embraced widely. In contrast to European systems, where such initiatives usually are controlled by one administrative agency — e.g. the National Agency for the Development of Medical Evaluation (ANDEM) in France — in the US, there is a pluralistic approach: many kinds of guidelines coexist, initiated by health professions, managed care organizations, state or federal agencies, hospitals and insurers. Nonetheless, the overall power of physicians seems very strong in guiding recent methodologies and debates.

As this paper points out, there are several emerging trends in the US health care system that make it likely that guidelines will play a more prominent role: use of institution-based guidelines or more decision-support systems helped by the computerization process; changes in reimbursement and cost containment strategies leading to debate on coverage guidelines and profiling of physician practices by insurers. Combining quality of care objectives with the business objectives of institutions also increases the likelihood of a wider adoption of guidelines by physicians and institutions. At the present stage of computerized interactive systems, it is becoming increasingly easy to supply advanced knowledge to individual doctors. This trend in particular aims to rationalize decision-making, using probabilities from sampled populations to help individual judgments.

Moreover, traditional economic analysis is challenged through some recent guideline developments. For instance, shared decision-making models aim to improve the quality of information available not only to the physician but also to the patient. Thus, they change the scope of the usual problem of asymmetry of information between professionals and patients. If some may argue that this is a form of patient manipulation, it also clearly provides a new opportunity to integrate more patients' preferences and value judgments in care decisions. Purposes much broader than even improvement of care or improvement of the quality of physician and patient decisions now are being addressed with clinical guidelines. Legal defense and payment and, in particular, reimbursement are being debated widely. Legal decisions probably will be a major structuring element in shaping the prescriptive statements of clinical guidelines and their growth within the medical field. In the context of increasing health care costs, clinical guidelines also represent a very useful tool for debating rationing issues and standard benefits packages, in order to make the system more equitable. Some evidence tends to show that the effects of clinical guidelines are limited. However, such findings may be due more to the lack of rigorous evaluations of guidelines. If such evaluations exist, clinical guidelines tend to be seen as effective, but the amount of improvement in performance varies considerably.

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