

## Application of Pharmacoeconomics to Formulary Decision Making in Managed Care Organizations

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**Objective:** To discuss the apparent value of incorporating pharmacoeconomic studies into pharmacy and therapeutic committee decision making; current internal and external barriers to the use of pharmacoeconomic studies; and possible solutions to the problems.

**Study Design:** Literature review.

**Results:** The formulary system assists healthcare providers in the evaluation, appraisal, and selection of drugs. Unfortunately, managed care organizations usually evaluate drugs exclusively on clinical efficacy, safety, and daily acquisition cost without considering overall cost effectiveness. Factors that have been impeding the use of pharmacoeconomic data include departmental budgetary constraints, tardy publications, limited reliability of available studies, and a lack of knowledge required to evaluate such studies.

**Conclusions:** To remain competitive, managed care organizations need to incorporate pharmacoeconomic consideration into their formulary decision-making process. Performing an institutionwide economic evaluation; conducting pharmacoeconomic studies earlier, perhaps along with clinical trials; using decision analysis; developing standardized guidelines; and increasing education can help overcome current barriers.

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Managed care organizations (MCOs) were developed to control and manage the utilization, quality, and cost of healthcare by increasing cost effectiveness, comprehensiveness, and integration of healthcare delivery. Membership in MCOs has dramatically increased since the passing of the Health Maintenance Organization (HMO) Act. By 1998, about 86% of the US privately insured population was enrolled in an MCO.<sup>1</sup>

The increased numbers of MCO enrollees has heightened competition among alternative organizations, resulting in the evolution of new principles and concepts in patient care. These changes have increasingly required MCO decision makers to find innovative approaches to evaluate broader dimen-

sions of therapy rather than simply evaluating safety and efficacy to maximize expected health outcomes with very constrained resources.

The formulary system is becoming an important tool for the selection and use of cost-effective drugs in MCOs; however, only a handful of MCOs actively use such information when selecting cost-effective therapies. In this article we discuss the apparent value of incorporating pharmacoeconomic studies into pharmacy and therapeutic (P&T) committee decision making; consider current internal and external barriers to the use of pharmacoeconomic studies; and suggest possible solutions to the problems.

### ...FORMULARIES ...

#### Pharmacy and Therapeutic Committees

Pharmacy and therapeutic committees were developed to ensure the delivery of safe and effective drug therapy while curbing the rising costs associated with new and complex pharmaceutical therapies.<sup>2</sup> Responsibilities of P&T committees also include therapeutic substitution programs, pharmacy education programs, pharmacy quality and utilization management systems, and outcomes research.<sup>2</sup> Specifically, MCO P&T committees establish policies for drug procurement, storage, and distribution and develop prescribing protocols.<sup>3</sup> Because of the significant influence of formularies, institutional and federal regulations were established to encourage and govern their use. The Joint Commission on Accreditation of Hospitals mandated the develop-

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ment of hospital formularies, and organizations such as the American Society of Health-System Pharmacists, the American Hospital Association, and the Academy of Managed Care Pharmacy have defined the role and responsibilities of P&T committees.

### Types of Formularies

The formulary is a continually revised compilation of pharmaceuticals that reflects the current clinical judgment of the medical staff of a given institution and experts in the diagnosis and treatment of disease.<sup>4,5</sup> Formularies were adopted by 92% of HMOs by 1999, a significant increase from 44% in 1990.<sup>6,7</sup>

Formularies are generally classified as open, closed, partially/selective closed, restricted, or incentivized. An open formulary does not necessarily limit the physician's prescription options but merely serves as a guide for the institution. Closed formularies are restricted in that only the drugs listed are available. Closed formularies usually require preauthorization, which influences physician prescribing and provides financial incentives/penalties to prescribers and patients.<sup>8</sup> With incentive-based formularies, patients pay higher prices and are therefore encouraged to use agents within the limits of the formulary.<sup>8</sup>

According to a recent study,<sup>9</sup> 33% of HMO formularies are open, 49% are closed, and 18% are selective/partially closed. In any case, the continuous availability of new products requires that a formulary be revised on a regular basis to ensure that the institution is using the most cost-effective products on the market for its given population at any given time.<sup>10</sup>

### Impact of Formularies

There has been controversy regarding the impact of formularies on treatment costs. Some researchers<sup>11-13</sup> claim that the use of well-controlled formularies can decrease drug expenditures and yield overall cost savings. Others<sup>14,15</sup> argue that when formularies restrict the prescribing of certain agents, unintended increases in the utilization of other healthcare resources result. This debate remains controversial because of a lack of comprehensive evaluations regarding the impact of formularies.

Limiting the number of drugs available to patients has been shown to be cost effective in numerous disease states, including gastrointestinal tract disorders and asthma; however, other studies have shown increased total healthcare costs following imple-

mentation of restricted drug lists.<sup>16,17</sup> A need to further evaluate intended and unintended consequences following the implementation of formularies for various therapeutic areas has become evident.

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### ...OBSTACLES TO INCORPORATING PHARMACOECONOMICS INTO THE FORMULARY DECISION-MAKING PROCESS ...

Managed care organizations usually evaluate drugs solely on clinical efficacy, safety, expected level of use in the covered population, and cost of treatment with the drug without considering overall cost effectiveness. Pharmacoeconomics is the study of identifying, measuring, and comparing the cost and consequences of the utilization of therapeutic alternatives. Pharmacoeconomic studies incorporate clinical, humanistic, and economic outcomes.<sup>18</sup> Comparing pharmacoeconomic data for treatment alternatives is the appropriate method for determining the most cost-effective option for the patient population in question. Comprehensive decision making to include, exclude, restrict, or delete drugs from the formulary could be achieved by using data from such analyses in addition to controlled clinical trials. Consideration of pharmacoeconomic data would result in the containment of overall costs without a deleterious effect on patient outcomes. However, pharmacoeconomic studies have been used on a limited basis in the decision-making process because of a variety of perpetual challenges.<sup>19,20</sup>

Both internal and external factors limit the extent to which pharmacoeconomics is used in the formulary decision-making process. Departmental budgetary constraints tend to oppose the concept of overall savings. In addition, pharmacoeconomic studies on drugs of interest are not published in a timely manner and therefore cannot be obtained when formulary decisions are being made. When studies pertaining to drugs of interest are found, frequently they cannot be applied to the institution because staff often lack the knowledge required to evaluate such studies. Finally, pharmacoeconomic studies tend to be flawed in methodology because of lack of expertise on the part of the investigators, or they may simply be perceived as biased because of industry sponsorship.<sup>21,22</sup> Barriers that impede the use of pharmacoeconomic data and possible solutions are discussed in detail in the following subsections and summarized in the **Table**.

**Departmental Budgetary Constraints**

Many MCOs have neither the structure nor the culture to support the broad interdisciplinary cooperation that makes utilization of pharmacoeconomic data possible.<sup>23</sup> The budgetary and administrative structure of institutions (the existence of departmental budget caps) often inhibits the interdisciplinary collaboration required to select an agent if it would increase spending in the pharmacy, even if savings could be obtained in other departments.<sup>21,24</sup> For instance, a new high-priced drug can bring savings to clinical departments by decreasing hospital medical treatment costs. The pharmacy director, however, may be reluctant to add this drug to the formulary because of the anticipated increase in the pharmacy drug budget. Thus, the perspective taken is narrow, as opposed to institutionwide, which precludes adoption of a system approach that would entail involvement of a variety of personnel.

Pharmacy benefit management companies, which specialize in developing and managing prescription drug benefits for self-insured employers, MCOs, and government-funded programs, are usually inclined to focus mainly on drug costs because they deal strictly with pharmaceutical benefits. Pharmacy benefit management companies' reliance on formularies has resulted in significant savings in the drug budget<sup>25</sup>; however, many of these companies have recognized their limitations concerning overall health treatment costs.

There has been limited recognition that an increased drug budget does not necessarily result in higher total costs of care. An individual

institution might limit its concern to immediate costs and benefits incurred rather than considering alternative therapies that can potentially result in long-term savings. Unless P&T committees and organizational management can accommodate cost offsets, use of pharmacoeconomic studies in formulary decision making will continue to be limited.

**Table.** Incorporating Pharmacoeconomic Data Into Pharmacy and Therapeutic Decision Making

Barriers Impeding Use of Pharmacoeconomic Data	Possible Solutions
<p><b>External barriers</b></p> <p>Timely data unavailable—pharmacoeconomic studies are often not available until after the agent has been considered for formulary inclusion</p> <p>Concerns of generalizability—populations, practice setting, and methods of reimbursement might be different than in pharmacoeconomic studies</p> <p>Concerns of credibility and reliability—possible bias, flawed statistical methods and data analysis</p>	<p>Perform pharmacoeconomic studies alongside clinical trials for cost-effectiveness evaluation of newly approved drugs</p> <p>Use decision analysis models to integrate data from multiple sources</p> <p>Examine the relevance of existing data as applicable to a specific institution's population</p> <p>Perform pharmacoeconomic analysis of in-house data</p> <p>Use sensitivity analysis to apply pharmacoeconomic data suitable to a specific organization</p> <p>Implement standardized guidelines to provide transparency of study results</p> <p>Identify and eliminate influences such as conflicts of interest, undetected errors, and biases</p>
<p><b>Internal barriers</b></p> <p>Departmental budgetary constraints—many managed care organizations have neither the structure nor the culture to support the use of pharmacoeconomic data</p> <p>Lack of expertise—either professional experience and/or public unfamiliarity</p>	<p>Use a broad perspective for institutionwide economic evaluation</p> <p>Improve communication channels between healthcare providers</p> <p>Develop multidisciplinary pharmacy and therapeutic committees</p> <p>Provide educational programs to familiarize providers with outcomes data, evidence-based medicine, treatment guidelines, and decision analysis</p>

### **Timely Data Unavailable**

Pharmacoeconomic studies are often not available until after the agent has been considered for formulary inclusion.<sup>26</sup> It is difficult to incorporate pharmacoeconomic data into the decision-making process when there are no studies evaluating the economic impact of the agent in question at the time the decision is being made.<sup>25,27</sup>

Although new products often have sufficient documentation of safety and efficacy, pharmaceutical manufacturers are often unprepared to demonstrate cost effectiveness when the agent is initially marketed.<sup>22,23,25</sup> A survey of hospitals revealed that only 37% of responding hospitals believed that information on cost effectiveness was usually presented at the time the agent was being considered for formulary addition.<sup>19,28</sup> This might be because, until recently, pharmacoeconomic studies have often been conducted as part of postmarketing surveillance, or phase IV studies.

### **Concerns of Generalizability**

Institutions are often of the opinion that the application of results of pharmacoeconomic data from one setting to another might not always be appropriate because of contextual effects on results, such as patient population, practice setting, and date of origin of information.<sup>29</sup> In addition, a medication's overall economic impact could be affected by acquisition and administration costs, which, in turn, are affected by manufacturer incentives, preparation, administration and monitoring fees, laboratory charges, and storage and inventory costs, all of which can differ depending on the institution setting.

A study is also considered to be less useful if compliance ensured that treatment patterns during the study differ from the usual treatment patterns at the institution. In addition, some pharmacoeconomic studies have been considered irrelevant by particular MCOs because the drug was compared with placebo or other infrequently used agents rather than with commonly used drugs of choice.

It might not be possible for members of a P&T committee to have global agreement on which costs and benefits to include, or the type of evaluation to use, because different jurisdictions have different requirements.

### **Concerns of Credibility and Reliability**

Managed care organizations are often hesitant to use the results of outcomes studies supported by manufacturers because of the possibility of biased

results. Hospital pharmacies have also stated that the objectivity of such studies is often questionable because many pharmacoeconomic studies are often funded by the manufacturer of the agent<sup>19</sup> and cannot be blinded. In addition, questions often arise regarding the reliability of statistical methods used to analyze the studies. The perceived flaws in data analysis and the potential for biased results are barriers to the use of these outcome studies.<sup>30</sup>

### **Lack of Experience with Pharmacoeconomic Consideration**

Members of P&T committees are responsible for making formulary decisions based on documenting and analyzing clinical and economic outcomes of drugs. However, incorporating pharmacoeconomic data into the formulary decision-making process is often hindered because of inadequate resources, unfamiliarity with pharmacoeconomics, or misunderstanding of the term "cost effective."<sup>2,31,32</sup>

A recent study<sup>33</sup> found that only 17% of medical and pharmacy directors of MCOs believed that they had at least an adequate understanding of pharmacoeconomics, and 5% of respondents believed that they lacked sufficient understanding. Respondents believed that their P&T committee members understood pharmacoeconomics, but only 17% believed that their committee members understood pharmacoeconomics completely. In addition, most of them were unaware of any guidelines for conducting and presenting pharmacoeconomic studies.

Physicians consider a cost-effectiveness analysis to be an accounting or cost management tool rather than a decision analytic tool. They may also perceive guidelines based on cost effectiveness to be an intrusion into the physician-patient relationship.<sup>22</sup>

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### **...POSSIBLE SOLUTIONS ...**

One way to minimize the problems associated with barriers would be to make trade-offs among barriers.<sup>25</sup>

### **Institutionwide Economic Evaluation**

The perspective of a study usually influences study design, selection of the specific comparator drugs, and selection and measurement of different types of costs and outcomes. Broadening the evaluation of the economic impact of a treatment alternative could demonstrate institutionwide cost offsets and, in turn, ensure selection of the most

cost-effective product, thus optimizing the use of healthcare resources.

A study<sup>34</sup> determining the cost of acid peptic disorders in an MCO revealed that the more costly agent, a proton pump inhibitor, was the preferred treatment, and only half of the direct costs from the perspective of the HMO was attributable to drug therapy. The remaining costs were associated with diagnostic procedures and encounters with healthcare professionals. This exemplifies how MCOs can use pharmacoeconomic data to choose between alternative therapies for formulary inclusion by comparing acquisition costs in conjunction with overall treatment costs and subsequent health outcomes. This task necessitates adopting a broader perspective than that commonly used.

Institutionwide integrated information systems and interdepartmental communication among healthcare professionals would be essential to support institutionwide economic appraisal. For example, healthcare professionals' requirement to adhere to formularies can be optimized by effective collaboration and communication between physicians and pharmacists, allowing the former to select drugs largely based on efficacy and the latter to try to maintain a departmental budget. Therefore, to disseminate decisions more effectively and have them accurately represent the institution's perspective, MCOs need to develop multidisciplinary P&T committees and improve communication channels. These efforts must be in conjunction with perpetual evaluations to optimally designate healthcare resources.<sup>35</sup>

### **Pharmacoeconomic Studies Alongside Clinical Trials**

Clinical trials are designed to assess the safety and efficacy of a drug, whereas pharmacoeconomic studies are conducted to measure the effectiveness of a drug. Recognizing this difference, clinical trials have increasingly been viewed as a natural vehicle for pharmacoeconomic studies because a pharmacoeconomic study depends on the quality of the underlying medical evidence.<sup>36</sup> Considering the widespread use of pharmacoeconomic consideration, more timely publication of cost-effectiveness information, along with documented clinical efficiency, could lead to faster formulary decision making and the subsequent proliferation of a product's usage. Although performing studies concomitantly might result in methodological shortcomings, these analyses could have a significant impact on healthcare such that MCOs would have an expanded data

source on which to base their decisions. In addition, the time lapse between drug approval and availability of medications to enrollees could be diminished.

Although clinical trials are conducted in strictly controlled environments to ensure the highest degree of internal validity, pharmacoeconomic studies conducted alongside clinical trials might have problems meeting requirements of external validity. Therefore, many claim that the pharmacoeconomic data collected from clinical trials are limited and inaccurate because of protocol-driven costs and outcomes, resulting in limited useful information for healthcare decision makers. However, scientifically valid evidence of the cost effectiveness of new medications relative to existing medical treatment can be obtained from prospective randomized effectiveness trials.<sup>37</sup>

Determining how to interpret and apply pharmacoeconomic studies in conjunction with clinical studies would be a major function of the P&T committee. Therefore, members will be expected to compare and contrast the requirements of these 2 distinct types of trials and to identify issues related to running these studies concomitantly. This includes determining the appropriateness and validity of methods, samples, costs, and measurements as applies to pharmacoeconomic and clinical research.<sup>36</sup> For example, when presented with a clinical trial that consumes significant amounts of resources such as diagnostic tests to assess the biological impact of an intervention, an economic analyst will need to extrapolate information carefully to apply relevance to current practice.

### **Performing Decision Analysis**

The use of modeling to estimate effectiveness has been recognized as a valid mode of scientific inquiry.<sup>38</sup> Decision analysis is a normative theory of decision making under conditions of uncertainty used for prescriptive purposes.<sup>39</sup> Decision models have the advantage of integrating data from multiple sources and comparing all relevant drugs beyond the time horizon of clinical trials. Therefore, this type of analysis can be used to identify the most appropriate treatment, using the likelihood of the occurrence of certain outcomes.

The application of decision analyses in formulary decision making has been limited because of the lack of comparative trials among newly introduced drugs.<sup>23</sup> Most pharmacoeconomic studies typically test new drugs against old ones or placebo; however, proven indications for new drugs are often narrower than those of the older drugs they are tested against,

so that a decision to replace the old drug with the new is rarely considered. This problem might be overcome by performing a properly executed sensitivity analysis. Sensitivity analysis is performed to test the stability of the results of decision analysis over a range of probability of estimates, value judgments, and structural assumptions or to correct errors within decision trees.<sup>40,41</sup> Therefore, a sensitivity analysis can assist P&T committees in identifying the critical assumptions of the study and can allow them to apply data suitable to their organization. Estimates of the probability of events in a decision tree could be based on the institution's clinical and epidemiological data, healthcare professionals' opinions, or published literature.

Decision analyses evaluate each option and all possible consequences, allowing individuals to determine which treatment option best suits their needs and institution. For example, when studying the cost effectiveness of lipid-lowering medications in an HMO population, cost-effectiveness ratios were compared. Performing the sensitivity analysis increased the confidence that one treatment choice was superior to others.<sup>42</sup> Well-designed decision analyses indicated that evaluation of drug acquisition alone was inadequate for measuring the total economic impact of a therapeutic agent. Instead, institution-specific costs associated with drug administration and dispensing should also be calculated when making formulary decisions to reflect the practice setting and health professional involved.<sup>23</sup>

When data are presented in a form that displays each cost component, health organizations can recalculate cost-effectiveness ratios to suit their individual purposes using sensitivity analysis. It is therefore recommended that data be presented in a transparent fashion and the rationale for the source of data be comprehensively explained.<sup>21,29</sup> When using economic modeling, use of simple and transparent analyses rather than complex design is preferred and recommended.

#### **Examination of the Relevance of Existing Data**

To incorporate pharmacoeconomic consideration, previous pharmacoeconomic studies conducted in similar patient populations may be reviewed and used to draw conclusions. This is often the first strategy used to solve a formulary addition problem, but the quality and relevance of the study must be critically assessed. A drug that is being considered for formulary addition should be compared with the most widely used drugs for a disease or condition rather than with placebo, unless the new drug is

being considered for use in conjunction with the current drug of choice. In this case, an incremental cost-effectiveness study that compares usual care (the current therapy) and usual care plus the new agent would be required.

Because price levels differ from one setting to another, various approaches have been suggested to increase the relevance of existing pharmacoeconomic data. Economic evaluations should compile data from multiple sources (eg, multiple trials, experts in the field, and large claims databases) and integrate these data into an economic model so that cost estimates and outcomes can be generated.<sup>36</sup>

If suitable research is not found, MCOs can perform pharmacoeconomic analysis using in-house primary and secondary data on enrollees' medical utilization and outcomes. In-house data provide results that are more homogenous and relevant to the organization than those provided by manufacturers, which are likely to be composed of data from multiple settings. Many large MCOs that have achieved integration are now allocating resources to be used in internal evaluations and are conducting these evaluations in conjunction with pharmaceutical firms.<sup>34,42,43</sup>

#### **Education**

Many P&T committee members are not well trained in pharmacoeconomics; therefore, increased education is needed to enhance healthcare professionals' understanding and evaluation skills required to assess and apply pharmacoeconomic data.<sup>22,44,45</sup> This is of critical importance if P&T committees are to mandate pharmacoeconomic information in formulary submission. If committee members are not well trained or familiar with dealing with such information, it makes little sense to require it as part of the submission documents.<sup>21</sup>

In addition to formulary decision making, pharmacoeconomic data have been used to develop treatment guidelines that are used increasingly in daily practice. Therefore, P&T committee members, as well as other practicing healthcare professionals, should become familiar with the use of pharmacoeconomic data as it applies to evidence-based medicine, outcomes data, treatment guidelines, and decision analysis.

Increased reliance on disease management programs and treatment guidelines can aid in focusing pharmacoeconomic studies to examine relevant products and alternatives. For example, guidelines for the treatment of depression in an HMO population resulted in higher acquisition costs of a newer drug

but were balanced by the greater labor costs associated with the less expensive drug therapy.<sup>46</sup>

Supporting usage of evidence-based medicine and treatment guidelines along with evaluating the final endpoint of decision analysis should be used to assist P&T committees in making rational formulary decisions; however, it does not provide a specific answer to the formulary question. This concept is crucial to understanding the role of pharmacoeconomics in the decision-making process. Therefore, increasing familiarity with these concepts can undoubtedly diminish the barriers that continue to preclude the use of pharmacoeconomic data.<sup>47</sup>

#### **Use of Standardized Guidelines**

Despite the increasing amount of existing pharmacoeconomic data, disparities in methods continue to interfere with decision makers' ability to appropriately apply these data.<sup>48</sup> Standardized guidelines can strengthen the validity and credibility of such studies by minimizing influencing factors such as conflicts of interest, undetected errors, and biases.

National guidelines for pharmacoeconomic studies were introduced in many countries, such as Australia, Canada, and the United Kingdom.<sup>49-51</sup> A guideline on generalized cost-effectiveness analysis was also proposed by the World Health Organization.<sup>52</sup> In the United States, although a national guideline has not been developed, the Food and Drug Administration released draft guidelines for the review of pharmacoeconomic promotion in 1995 and recently released the Modernization Act of 1997, which required that healthcare economic information be provided to formulary committees of MCOs based on competitive and reliable scientific evidence to increase the flow of health economic information.<sup>53</sup> In addition, several recommendations for pharmacoeconomic studies have been developed to provide methodological guidance and improve the conduct of analyses.<sup>38,48,54-56</sup> Voluntary guidelines were also developed to give MCO decision makers knowledge of several important outcomes issues.<sup>57,58</sup> Regence BlueShield required submission of a dossier that included detailed clinical and economic data from pharmaceutical manufacturers. The standard reporting format and credibility of results, however, remain an issue with healthcare professionals.

Standardized guidelines will increase the quality and usefulness of studies by minimizing the potential for bias, helping ensure appropriateness of methods applied in design and analyses, and provid-

ing transparency of study methods. Some studies have demonstrated that by following standardized methods, cost-effectiveness analyses can improve the quality and comparability of studies, therefore improving their utility.<sup>48</sup> Ultimately, the ability to systematically assess pharmacoeconomic data through comparing the potential costs and benefits might result in improved patient care.

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#### **... FUTURE USE OF PHARMACOECONOMICS IN FORMULARY DECISION MAKING ...**

Because growth in healthcare costs is not expected to diminish, P&T committees of various MCOs will continue to be pressured into making rationing decisions in the future. As a result, P&T committee members will inherit the challenges of attempting to attain the highest level of patient outcomes while using limited available resources. The continuous emergence of expensive new medications such as genetically engineered therapies, as well as lower-priced generics, will make a comprehensive list of permissible therapeutic agents a critical factor in achieving desired cost-effective outcomes. Healthcare organizations will continue to work toward this goal by compiling a list of cost-effective drugs, switching dosage forms (eg, switching from intravenous to oral formulations), encouraging therapeutic and generic interchanges, and minimizing duplication of available drugs in the same therapeutic class. This scenario is a classic depiction of current issues; however, in the near future many decisions to resolve these issues will rely on the use of pharmacoeconomic data.

The future of P&T committees will also involve the expanded incorporation and evaluation of clinical outcomes for various treatment alternatives; prospective continuous quality improvement for current therapeutic recommendations; and establishment of policies governing the use of drugs at all levels and in all types of care.<sup>3</sup> Membership in P&T committees, therefore, will need to include experts in the areas of clinical outcomes, behavioral outcome measurement, and pharmacoeconomics. Managed care organizations will seek P&T committee members who have the ability to interpret pharmacoeconomic data and to translate the results into information with clinical relevance. Pharmacy and therapeutic committees may require that pharmacoeconomic data be provided before a drug is considered for formulary addition. This will result in increased collaboration between the pharmaceutical industry and MCOs.<sup>21,59</sup>

The challenges that P&T committees will face in the future include increasing regulatory requirements by accrediting organizations, controlling the use of expensive new drugs and technology, evaluating disease management programs, and altering physician prescribing behavior. Continuity of care, following the integration of health information systems, will better enable in-house pharmacoeconomic evaluations to be conducted. Overall, there will be a definite need for increased availability and application of pharmacoeconomic data by P&T committees of MCOs.

...CONCLUSIONS ...

Pharmacoeconomic data will be one of the most important components for formulary decision making in the 21st century as pressure increases to minimize healthcare expenditures while optimizing patient outcomes. Formulary systems require further development to serve as effective and useful tools for the selection and utilization of cost-effective drugs in the competitive MCO environment. It is important to use a systematic approach to evaluate cost and effectiveness of therapeutic alternatives because the decision-making P&T committee is complex and requires a multidisciplinary team approach.

Because pharmacoeconomic data provide crucial information for formulary decision making, P&T committees should be active in seeking and incorporating this information into their decision-making process. It is recommended that further research be conducted to measure the impact of formulary decision making on patient outcomes and institutions' finances and that further efforts be expended to develop standardized guidelines and new measures of outcomes that P&T committees can use as a reference when they evaluate drugs for formulary inclusion. It has been proposed that a systems approach in which manufacturers and suppliers assess the costs and clinical outcomes associated with the introduction of their product on a health-care purchaser's drug formulary be implemented. It is also recommended that continuous education be provided to advance healthcare decision makers' ability to incorporate pharmacoeconomic data into formulary decision making and clinical practice.

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