ABSTRACT

BACKGROUND: The U.S. Department of Defense (DoD) health care benefit (TRICARE) provides 9.2 million active-duty and retired uniformed services personnel and their families with access to a comprehensive pharmacy benefit with low out-of-pocket costs. DoD’s Uniform Formulary is available worldwide at DoD’s 3 pharmacy points of service (military pharmacies, contracted mail order, and community [network and non-network] pharmacies). Community pharmacies, military pharmacies, and mail order accounted for 64%, 23%, and 13%, respectively, of DoD’s $6.5 billion total drug expenditures during fiscal year (FY) 2007 (October 1, 2006, through September 30, 2007).

OBJECTIVE: To describe the DoD formulary management process and estimate cost savings associated with implementation of DoD’s 3-tier formulary.

SUMMARY: DoD implemented its 3-tier Uniform Formulary in 2005. This implementation required the development of a transparent formulary management process that (a) assesses medications for formulary status based on an evidence-based clinical evaluation and assessment of relative cost-effectiveness using pharmacoeconomic and budget impact modeling, (b) allows open and equitable price competition among pharmaceutical manufacturers based on formulary status, and (c) provides a public forum for beneficiaries and beneficiary organizations to comment on formulary changes. Through April 16, 2008, Uniform Formulary decisions had been implemented in 32 drug classes representing 53% of FY 2007 total drug expenditures. The 32 classes containing 343 drugs were reviewed at 12 quarterly meetings of the DoD Pharmacy and Therapeutics (P&T) Committee and the Beneficiary Advisory Panel, resulting in the classification of 85 drugs (24.8%) in tier 3, 92 drugs (26.8%) in tier 2, and 166 drugs (48.4%) in tier 1. Implementation of the 3-tier formulary was associated with estimated cost savings of $926 million in cost avoidance in FY 2007, primarily due to price reductions at military pharmacies and mail order, tier 3 copayments at community pharmacies and mail order, and change in product mix and pharmacy type (point of service). An additional $60 million in rebates were obtained in FY 2007 through the Voluntary Agreements for TRICARE Retail Pharmacy Refunds (UF VARR) program for prescriptions filled at community pharmacies; the UF VARR program first became available for community pharmacies, military pharmacies, and mail order, and change in product mix and pharmacy type (point of service). An additional $60 million in rebates were obtained in FY 2007 through the Voluntary Agreements for TRICARE Retail Pharmacy Refunds (UF VARR) program for prescriptions filled at community pharmacies; the UF VARR program first became available for prescriptions filled at community pharmacies and mail order, and was placed in tier 3 to discourage use. Proposed changes in formulary status across a large system in response to changes in clinical or cost-effectiveness within drug classes. For example, when the proton pump inhibitor (PPI) class was evaluated in 2005, esomeprazole was determined to be less cost-effective than similar agents and was placed in tier 3 to discourage use. Upon re-evaluation of the class in 2007, a competitive bid from the manufacturer of esomeprazole caused a complete reversal in formulary position: esomeprazole was not only removed from tier 3, but also made available at the tier 1 (generic) copayment, with all other PPIs except generic omeprazole on tier 3.

CONCLUSION: As in most private-sector health plans, the DoD formulary management process (a) includes rigorous decision making that is informed by clinical literature evaluations and pharmacoeconomic analyses, (b) results in drug formulary changes that require considerable effort in communication with providers and beneficiaries, and (c) produces drug cost savings derived from increased price competition among drug manufacturers. Unlike private sector health plans, the DoD uses more disclosure of the results of evaluation of the evidence, solicits provider opinions before P&T committee deliberation, and provides the opportunity for beneficiaries to have input before implementation of formulary changes.

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What is already known about this subject

• DoD’s TRICARE program is one of the largest health plans in the United States, providing care for 9.2 million active-duty and retired uniformed services personnel and their families. A total of 121 million outpatient prescriptions for 7 million beneficiaries were filled under the DoD pharmacy benefit in FY 2007.
• In the FY 2000 National Defense Authorization Act, Congress mandated implementation of an integrated pharmacy benefit program for DoD beneficiaries and allowed development of DoD’s 3-tier Uniform Formulary.
• Although implementation of the Uniform Formulary has modernized formulary management in DoD, it also has introduced additional complexity and created new challenges in managing DoD’s $6.5 billion pharmacy benefit. A key issue is coordinating changes in formulary status across a large system in response to changes in clinical or cost-effectiveness within drug classes. For example, when the proton pump inhibitor (PPI) class was evaluated in 2005, esomeprazole was determined to be less cost-effective than similar agents and was placed in tier 3 to discourage use. Upon re-evaluation of the class in 2007, a competitive bid from the manufacturer of esomeprazole caused a complete reversal in formulary position: esomeprazole was not only removed from tier 3, but also made available at the tier 1 (generic) copayment, with all other PPIs except generic omeprazole on tier 3.

What this study adds

• The article describes how a large, publicly funded pharmacy benefit program incorporates clinical evaluation and pharmacoeconomic analysis into its formulary decision-making process and uses price competition among pharmaceutical manufacturers based on formulary status, including direct price discounts at military pharmacies and the mail-order program and rebates based on prescriptions filled by DoD beneficiaries at community network pharmacies.
• DoD incorporates transparency into its formulary management process that includes publicly available minutes of the P&T Committee meetings with formulary recommendations and proceedings of DoD’s Beneficiary Advisory Panel, which provides an opportunity for beneficiaries and their representatives to comment on the committee’s recommendations before final approval. This process has not hindered placement of drugs on tier 3; of the first 343 drugs reviewed, 85 (24.8% of all brand and generic drugs and 48.0% of brand drugs) were placed in tier 3.
• Continuing challenges that face DoD include the impact of extending federally mandated government pricing to medications provided through DoD’s community pharmacy network, effective communication of formulary changes to beneficiaries and providers, and ongoing assessment of the clinical outcomes of formulary changes, both in terms of maintaining or improving outcomes while lowering costs and providing data that can be used to improve predictive modeling.

Formulary Management in the Department of Defense

Shana Trice, PharmD, BCPS; Joshua Devine, PharmD, PhD; Harsha Mistry, PharmD; Eugene Moore, PharmD, BCPS; and Andrea Linton, MS
The pharmacy benefit offered under the Military Health System comprises a large community pharmacy network and mail-order plan, in addition to pharmacies at military facilities. It serves a diverse population of 9.2 million eligible beneficiaries—active-duty and retired uniformed services personnel and their family members. The Department of Defense (DoD) formulary management process has evolved rapidly since the introduction of the 3-tier Uniform Formulary in 2005. The current process is based on evidence-based clinical evaluation and assessment of relative cost-effectiveness using pharmacoeconomic and budget impact modeling; allows for open price competition among pharmaceutical manufacturers based on formulary status; and provides a public forum for beneficiaries to comment on potential formulary changes, consistent with federal initiatives promoting quality, efficiency, and transparency in health care programs.1 The process also has clear constraints related to its status as a U.S. government program and its role in supporting active-duty military personnel. Unlike most private sector programs, coverage rules and copayment amounts are set by law and regulation; changes require congressional approval. These constraints resulted in a broadly inclusive formulary and low copayments, compared with private sector plans. However, in other respects, the DoD pharmacy benefit is not unlike those found among commercial health plans, particularly compared with other federal drug benefit programs.

Background on TRICARE
In fiscal year (FY) 2007, approximately 9.2 million Americans were eligible for health care services under the Military Health System, making TRICARE one of the largest health plans in the United States. Of these, 7 million (76%) used the DoD pharmacy benefit in FY 2007, split almost equally between active-duty members of the uniformed services and their family members (44%) and uniformed service retirees and their family members (56%). A total of 121 million outpatient prescriptions were filled under the DoD pharmacy benefit in FY 2007.

DoD beneficiaries may access health care through military-operated hospitals and clinics or through a private-sector network of health care facilities and providers. Since May 2005, DoD has provided a prescription drug benefit based on a 3-tier copayment structure for prescriptions filled at community pharmacies and the TRICARE mail-order pharmacy (Table 1). Beneficiaries may fill prescriptions at 3 pharmacy points of service (military pharmacies, contracted mail order, and approximately 60,000 community [network and non-network] pharmacies). Claims from military, mail-order, and community network pharmacies, including those for which TRICARE serves as a secondary payer, are processed on a real-time basis by the Pharmacy Data Transaction Service (PDTS), an online transaction processing system that includes at least 24 months of claims history for the conduct of concurrent and prospective drug utilization review. The PDTS Data Warehouse serves as a comprehensive, single source of pharmacy claims data.

Coverage rules and copayments in the TRICARE health plan are established by law and federal regulation.2 With rare exceptions (e.g., smoking cessation, weight reduction, and medications for cosmetic conditions), all U.S. Food and Drug Administration (FDA)-approved legend medications intended for use in an outpatient setting are currently available to DoD beneficiaries through community pharmacies and the TRICARE mail-order pharmacy. Table 1 shows that current copayments for up to a 30-day supply of medication dispensed at community pharmacies are $3 for generic medications (tier 1), $9 for preferred brand medications (tier 2), and $22 for nonpreferred brand medications (tier 3). There is no tier 4 for specialty medications (e.g., oral chemotherapy agents) or biotechnology drugs. There is no ($0) copayment for prescriptions dispensed by military pharmacies or for active-duty military personnel at any point of service. Revision of the copayment structure and implementation of a tier 4 have been recommended.3

Unlike private sector plans, federal regulations mandate that brand medications, including those newly approved by the FDA, are automatically available at the tier 2 copayment until reviewed by the DoD Pharmacy and Therapeutics (P&T) Committee. Federal regulations also mandate the existence of a mechanism allowing beneficiaries to receive tier 3 medications at the tier 2 copayment if it is determined, based on information supplied by the prescriber, that the beneficiary’s clinical needs cannot be met by medications in either tier 1 or 2. Forms and criteria to support this exception are provided through DoD’s contractor for mail-order and community pharmacies and are available on the TRICARE pharmacy web site.4

The DoD Uniform Formulary has somewhat different implications at military pharmacies, which support military health care facilities worldwide—ranging from major medical centers to

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>DoD Uniform Formulary Copayments by Point of Service*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Pharmacy</td>
<td>Military</td>
</tr>
<tr>
<td>Generic (tier 1)</td>
<td>$0</td>
</tr>
<tr>
<td>Preferred brand (tier 2)</td>
<td>$0</td>
</tr>
<tr>
<td>Nonpreferred (tier 3, “nonformulary”)</td>
<td>-</td>
</tr>
<tr>
<td>Maximum supply per copayment</td>
<td>90 days</td>
</tr>
</tbody>
</table>

*Active-duty military personnel pay no ($0) copayment at any point of service.

bCost shares vary from 20% to 50% when beneficiaries use non-network community pharmacies and/or at overseas locations, depending on TRICARE enrollment status.

DoD=Department of Defense.
outpatient clinics. Military pharmacies do not charge copayments. Although medications in all tiers are available at community pharmacies and mail order, medications on tier 3 of the Uniform Formulary are not allowed on formulary at military pharmacies and may be dispensed (a) only for prescriptions written by military prescribers (or civilian prescribers to whom the patient was referred), and (b) only if the tier 3 drug is determined to be medically necessary (i.e., “patient has experienced significant adverse effects with all of the formulation alternatives”).

Because DoD beneficiaries may fill prescriptions at any point of service, they may choose to obtain tier 3 medications at community pharmacies or mail order by paying the $22 copayment. This option may lead to some shifting of tier 3 prescriptions away from military facilities. However, military facilities are expected to fill prescriptions generated by their own prescribers (including medically necessary tier 3 prescriptions) unless the beneficiary chooses to go elsewhere, a policy commonly known as the “you write it, you fill it” rule.

In addition, 2 core formulary lists apply specifically to military pharmacies. The primary care medications listed on DoD’s Basic Core Formulary (BCF) must be stocked and readily available at all military pharmacies worldwide. The Extended Core Formulary (ECF) includes more specialized medications such as injectables for multiple sclerosis and immunomodulatory biologics for psoriasis and rheumatoid arthritis; medications on the ECF must be on military pharmacy formularies and readily available if such care is provided at a particular facility. The 2 core formularies (BCF and ECF) are intended to provide consistency across facilities and increase continuity of care among DoD’s highly mobile population; they are not complete formularies, and military facilities may (and typically do) add medications available at tier 1 and tier 2 copayments to their local formularies, based on the needs of their patient populations. The combination of Uniform Formulary tier 3 and BCF and ECF requirements effectively creates both negative and positive formulary requirements for military facilities (Table 2). An exception applies to active-duty military personnel, who may fill prescriptions at $0 copayment at any DoD pharmacy point of service. Tier 3 medications are not covered for active-duty military personnel unless determined to be medically necessary.

**Overview of the Uniform Formulary Decision Process**

The sequence of events and timeline associated with evaluation of a drug class are summarized in Figure 1. The group principally charged with implementing and maintaining the Uniform Formulary is the DoD P&T Committee. The committee’s 17 voting members include Army, Navy, and Air Force pharmacists and physicians from multiple specialties; pharmacy leaders from each of the military services; and Department of Veterans Affairs (VA) and Coast Guard representatives. It is chaired by a physician, with the director of the DoD Pharmacoeconomic Center (PEC) serving as recorder. Although initially chartered in 1998, the committee did not take its current form until implementation of the Uniform Formulary Rule in 2005.

The Uniform Formulary Rule is the basis for the committee’s evaluation process. Under the rule, agents in each therapeutic class are selected for inclusion on the Uniform Formulary (tier 1 or 2) based on the “relative clinical effectiveness and cost-effectiveness of the agents in such class.” As stated in federal regulations, the committee may recommend that agents determined “not to have a significant, clinically meaningful therapeutic advantage in terms of safety, effectiveness, or clinical outcome over other pharmaceutical agents included on the uniform formulary” be classified as nonformulary (tier 3). Regulations also provide that, if the committee’s evaluation “concludes that a pharmaceutical agent in a therapeutic class is not cost-effective relative to other pharmaceutical agents in that therapeutic class (considering costs, safety, and effectiveness), the committee may recommend it be classified as a nonformulary agent” (tier 3).

An important aspect of the implementation of the Uniform Formulary is its incremental nature. Because medications cannot be placed on tier 3 until after the committee has reviewed the class, Uniform Formulary changes occur over time. Also, note

<table>
<thead>
<tr>
<th>Formulary Requirements at Military Pharmacies</th>
<th>Military Pharmacies Must Have on Formulary (Readily Available)</th>
<th>Military Pharmacies May Have on Formulary (Not Required)</th>
<th>Military Pharmacies Must Not Have on Formulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: ARBs&lt;sup&gt;a&lt;/sup&gt;</td>
<td>• Telmisartan (±HCTZ) – BCF agent</td>
<td>• Candesartan ± HCTZ</td>
<td>• Irbesartan + HCTZ</td>
</tr>
<tr>
<td></td>
<td>• Losartan ± HCTZ</td>
<td></td>
<td>Eprosartan + HCTZ</td>
</tr>
<tr>
<td></td>
<td>• Irbesartan + HCTZ</td>
<td>• Olmesartan + HCTZ</td>
<td>Valsartan + HCTZ</td>
</tr>
<tr>
<td>Example: PPIs&lt;sup&gt;b&lt;/sup&gt;</td>
<td>• Generic omeprazole 10 mg and 20 mg only</td>
<td>• Omeprazole 40 mg (Prilosec)</td>
<td>Omeprazole-sodium bicarbonate (Zegerid)</td>
</tr>
<tr>
<td></td>
<td>– BCF agent</td>
<td></td>
<td>Rabeprazole</td>
</tr>
<tr>
<td></td>
<td>• Esomeprazole – BCF agent</td>
<td></td>
<td>Pantoprazole</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Omeprazole-sodium bicarbonate (Zegerid)</td>
<td>Lansoprazole</td>
</tr>
</tbody>
</table>

<sup>a</sup> MTF Formulary Management for ARBs.<sup>7</sup>

<sup>b</sup> MTF Formulary Management for PPIs.<sup>8</sup>
that the Uniform Formulary decision-making process does not determine which drug classes will be covered by TRICARE.

The TRICARE Pharmaceutical Operations Directorate’s clinical and cost-evaluation division is the DoD PEC, which performs clinical and cost-effectiveness evaluations, presents findings to the DoD P&T Committee, and helps implement formulary changes. The PEC comprises approximately 15 military and civilian physicians, pharmacists, and pharmacy technicians co-located with DoD Pharmacy Operations Center personnel.

Drug Class Identification and Selection for Review

Existing drug classification systems may not provide sufficient flexibility to compare competing medications. The Uniform Formulary rule allows the DoD P&T Committee to define drug classes based on chemical structure, pharmacological effect, and/or clinical use to facilitate clinical and cost-effectiveness comparisons. For example, after reviewing the ARBs in May 2007, the committee combined ARBs, angiotensin-converting enzyme inhibitors (ACEIs), combinations of ARBs or ACEIs with other antihypertensives, and direct renin inhibitors into a single class, the renin angiotensin antihypertensives. This classification method enables the committee to directly compare not only ARBs with ACEIs, but also compare renin inhibitors with antihypertensives having similar mechanisms of action. Drug classes are selected for review by the committee based on several factors, including new drug entry, advances in clinical evidence, generic availability, therapeutic interchangeability, clinical needs, class size, beneficiary impact, and market competition.

The tasks of drug class identification and selection are accomplished by the DoD P&T Committee during the strategic overview, which occurs 3-6 months before the final evaluation. The committee agrees on the drug class, generates key questions to be addressed during the evaluation, and considers clinical coverage issues (i.e., how many drugs in each class must be added to the Uniform Formulary and the military facility core formularies to meet the clinical needs of the majority of DoD beneficiaries). This guidance is then used to construct the sets of conditions that are used to obtain price quotes from pharmaceutical manufacturers.9

For example, the DoD P&T Committee determined in November 2006 that at least 1 ARB with an FDA indication for heart failure (candesartan or valsartan) and 1 ARB with an FDA indication for type 2 diabetic nephropathy (irbesartan or losartan) were needed on the Uniform Formulary, with at least 1 but no more than 2 on the BCF. No special requirements were made for hypertension because all 7 available ARBs were FDA approved for this indication; combinations of ARBs with hydrochlorothiazide (HCTZ) were included as part of the evaluation. Manufacturers had the opportunity to submit price quotes based on the status of their product under 3 Uniform Formulary scenarios (3 or fewer ARBs, 4-5 ARBs, or 6 or more ARBs) and 2 BCF scenarios (either 1 or 2 ARBs). As a result, the DoD P&T Committee recommended in May 2007 that candesartan, losartan, and telmisartan and their HCTZ combinations be designated as tier 2, and the 4 remaining ARBs and their HCTZ combinations be classified as tier 3. Telmisartan and its HCTZ combination were recommended as the sole BCF agent. After approval by the Assistant Secretary of Defense for Health Affairs, the Uniform Formulary changes went into effect in November 2007.

Following the strategic overview, several processes proceed in parallel: the clinical effectiveness evaluation is prepared, price quotes are obtained from pharmaceutical manufacturers, and analysts begin constructing cost-effectiveness and budget impact models.
Evaluation of Clinical Effectiveness
A team (consisting of at least 1 clinical pharmacist and 1 physician) performs the clinical evaluation and summarizes the findings for presentation to the DoD P&T Committee. The evaluation includes both a thorough review and synthesis of the clinical literature and an assessment of medication use in actual practice, often including a survey of military health care providers.

Formulating a Search Strategy and Identifying Available Evidence: Key questions generated by the DoD P&T Committee are first used to formulate a systematic search strategy, taking into account the amount and quality of clinical evidence available in a given drug class. Searches are performed by the clinical evaluation team, using references cited in PubMed/MEDLINE; sources also are identified by using the reference section of relevant articles and manufacturer information. Due to time and resource limitations, articles not available in English are rarely included.

The PEC attempts to use the highest level of clinical evidence available,10 with preference given to published randomized clinical trials (RCTs), followed by published uncontrolled trials or observational studies (including database studies). Unpublished data, although considered less reliable due to lack of peer review, may be included if (a) they provide additional information (especially concerning safety), (b) published data are scarce, or (c) the existence of completed but unpublished negative trials suggests potential publication bias. Indirect comparisons of treatment effect based on placebo- or active-controlled trials are typically used to compare medications because data from head-to-head RCTs are rare.

Systematic reviews from typically high-quality sources (for example, the Cochrane Database of Systematic Reviews,11 the Drug Effectiveness Review Project,12 and technology assessments from the U.S. Agency for Healthcare Research and Quality,13 the United Kingdom’s National Institute for Clinical Excellence,14 and the Canadian Agency for Drugs and Technologies in Health)15 are incorporated if available. The PEC usually does not independently assess every clinical trial included in these outside reviews but instead focuses on (a) the major trials and (b) trials outside the specific focus of the review or published after the data collection period ended. Meta-analytic results are presented along with a discussion of methodology and trials included; meta-analytic methods are a valuable tool for data synthesis but have known limitations. Although precision of meta-analytic results often encourages certainty, statistical techniques cannot improve poor-quality data in the primary RCTs or compensate for persistent bias or uncontrolled confounding. In addition, combining trials using different measures introduces error, and meta-analysis is weakest when trials are heterogeneous and offer conflicting conclusions.16 The PEC typically uses the same methodology that was used in the outside review to grade the quality of more recent clinical trial results. Explanations of the method used for grading the quality of the evidence and how it was applied are included in all clinical evaluations.

Shortly after the strategic overview, pharmaceutical manufacturers are asked to submit copies of their product dossiers in the Academy of Managed Care Pharmacy (AMCP) Format for Formulary Submissions. The AMCP Format both streamlines the process of obtaining clinical information from manufacturers and provides guidelines and a venue for manufacturers to provide economic evaluations and pharmacoeconomic models to support the value of their products. Based on the formulary submission template developed by Regence BlueShield in 1998,17 the AMCP Format was adapted and released for widespread use in 200118 and subsequently refined in Version 2.1 to address feedback from users.19 The dossiers are used by the PEC to (a) evaluate the strength of published and unpublished evidence supporting various indications, (b) construct comparative tables, and (c) identify clinical literature sources. Most manufacturers of brand medications provide dossiers, although quality and comprehensiveness vary among the dossier submissions.

Manufacturers also are typically invited to provide 1-hour clinical presentations to the evaluation team and other PEC staff, based on key questions identified by the DoD P&T Committee and the PEC. Most manufacturers provide both dossiers and face-to-face presentations. Between 2 and 4 drug classes are reviewed each quarter, with several brand-name drugs in each class. Thus, pharmaceutical manufacturers typically make 50-60 such presentations per year.

Surveying Providers: As a part of each clinical evaluation, the PEC surveys as often as necessary a convenience sample of military physicians, pharmacists, and other health care providers to obtain information not readily available from clinical trials; generally, 2-4 such surveys are performed each calendar quarter. Questions are developed by the clinical evaluation team and reviewed by other PEC staff; surveys are performed by e-mail, phone, or using a web survey tool. Depending on the nature of the medications within a class, surveys may be targeted primarily to specialists or primary care providers; a widely targeted survey typically garners responses from several hundred responders. Survey invitations are disseminated through pharmacy and medical specialty leaders in each of the military services. One shortcoming of the present system is that little or no input is obtained from civilian providers caring for TRICARE beneficiaries. Survey responses are summarized and presented to the DoD P&T Committee during its evaluation.

Private-sector health plans with adequate resources may wish to consider conducting provider surveys in conjunction with class evaluations. DoD provider surveys yield useful information, such as (a) clinical reasoning behind the way medications are typically prescribed and how providers interpret the clinical literature, (b) provider perceptions concerning safety and tolerability (including the effect of characteristics such as taste and tablet size on adherence, particularly in children), and (c) pragmatic concerns among providers such as suitability of product packaging for use in automated dispensing systems and limitations on shelf space.
especially for controlled substances. The surveys also alert military facility P&T committees to upcoming drug class evaluations and allow providers the opportunity to express their opinions before recommendations are made by the DoD P&T Committee.

**Evaluating the Evidence:** For purposes of the evaluation, the term “clinical effectiveness” is broadly defined as the overall clinical usefulness of medications within a class. Each medication is assessed based on its relative efficacy, safety, and tolerability, compared with other medications in the class. The PEC typically attempts to consider all major uses, including common off-label uses. For example, the PEC’s evaluation of antidepressants focused primarily on depression, but also addressed the treatment of other psychiatric disorders (e.g., generalized anxiety disorder and post-traumatic stress disorder), as well as nonpsychiatric conditions such as neuropathic pain.

Efficacy is defined as the likelihood that a medication will actually work (achieve its desired effect), with the focus being on how well a medication may be expected to work in the DoD population, compared with others in the same class. Comparisons may be based on data from both controlled clinical trials (which are typically performed in a prescreened patient population, emphasize medication adherence, and thus provide the most reliable estimate of potential effect when a medication is both prescribed and taken as directed) and studies in less controlled settings that may give a better estimate of results achievable in actual practice (a distinction usually denoted as “efficacy” versus “effectiveness”). The evaluation often includes multiple measures, including both “hard” endpoints (such as reductions in mortality), as well as more commonly assessed biomarkers such as blood pressure reduction or beneficial effects on lipid levels, which are considered to be linked to effects on mortality or morbidity. Whenever possible, trial results are reported in terms of reductions in absolute risk (e.g., difference in mortality rates) and number needed to treat (NNNT; number of patients who would have to be treated, for a certain period, to obtain one beneficial outcome), which give a more realistic assessment of the actual benefit provided by treatment, compared with estimates of relative risk (e.g., percent reduction in mortality rates).

For purposes of the clinical effectiveness evaluation, safety is generally defined as the likelihood that the drug will not cause harm. Potential safety differences may include the frequency and severity of adverse events, drug interaction potential, or safety in special patient populations. In most cases, the focus is on relatively rare but potentially serious events, such as liver or kidney dysfunction. The number needed to harm (NNH; number of patients who would have to be treated, for a certain period, to result in 1 adverse event) may be used to compare multiple sources of harm, the propensity of 2 or more medications to cause harm, or to estimate the overall risk versus benefit of a medication by comparing NNH with NNT. The PEC obtains estimates of risk from various sources, including the clinical literature, manufacturers, and the FDA. In the future, the DoD Patient Safety Center, which has a nonvoting representative on the DoD P&T Committee, will provide reports of adverse events and medication errors across 174 military facilities.

The term “tolerability” is used when differences exist between medications that affect the likelihood that the patient will actually take the medication. Potential tolerability differences may include common, bothersome adverse events (such as nausea or headache) or differences in dosing, administration, or ease of use that may affect adherence or persistence. Because adverse effect rates and patient-reported preferences may vary widely depending on methodology and definition, tolerability differences between drugs are often difficult to assess outside of a direct comparative trial. For purposes of the clinical evaluation, the PEC may attempt to assess tolerability based on placebo-adjusted discontinuation rates due to adverse effects during randomized trials or postmarketing studies of persistence or adherence. However, it may be difficult to draw meaningful conclusions, due to differences in patient population across trials (e.g., age, comorbid illness).

The clinical effectiveness evaluation also takes into account the fact that DoD’s patient population spans all age groups, from military dependents to retirees, who retain the DoD pharmacy benefit regardless of age. The evaluation typically includes an extensive look at utilization. Depending on drug class, this assessment process may include estimates of use rates by age group, gender, or disease state treated (e.g., immunomodulatory biologics for rheumatoid arthritis, psoriasis, or Crohn’s disease). DoD-specific adherence studies may also be performed. For example, an analysis presented as part of the committee’s June 2008 evaluation of osteoporosis medications compared medication persistence rates on weekly versus monthly regimens for 23,044 DoD beneficiaries filling initial prescriptions for oral bisphosphonates at community pharmacies or mail order from August 2006 through January 2007; results of the analysis supported a slightly higher odds of being persistent with therapy among monthly users, compared with weekly users, after adjusting for age, gender, point of service, region, and number of concomitant maintenance medications.

**Formulating a Clinical Effectiveness Conclusion**

As part of its evaluation, the clinical team provides the DoD P&T Committee with its conclusions about the relative efficacy, safety, and tolerability of drugs within a class, along with answers to other key questions. In general, these conclusions address (a) whether or not there is evidence of difference between 2 or more medications, based on available evidence, (b) the strength of the evidence (i.e., the degree of uncertainty), (c) the magnitude of any such difference, and (d) the potential impact on various patient populations. Drugs within a class are ranked according to various attributes whenever possible. The clinical evaluation team does not as a rule attempt to assess the relative importance of differences (i.e., whether differences in efficacy, safety, or tolerability are more important), although they do provide the
committee with supporting evidence (e.g., NNT versus NNH).

The DoD P&T Committee is responsible for discussing the conclusions of the clinical team and coming to an overall clinical effectiveness conclusion. In general, the expectation is that medications should be efficacious, safe, and tolerable; however, the committee is generally most sensitive to differences in safety (i.e., less tolerant of risk and more willing to make distinctions between drugs based on less certain evidence), because a drug that is substantially less efficacious or tolerable than its competitors is unlikely to be widely used, but the full impact of a potentially serious adverse event may not become clear until a large number of patients have been exposed.

### Drug Manufacturer Price Discounts and Rebates

Both statutory drug pricing and additional discounts and rebates offered by manufacturers based on formulary status differ substantially among DoD's pharmacy points of service. Military pharmacies are DoD's least costly point of service; the Congressional Budget Office estimated that, in 2003, DoD paid an average of 41% of average wholesale price (i.e., a 59% discount) for brand drugs dispensed by military pharmacies, the lowest price paid by all federal programs. By law, at military facilities and the mail-order program, prices for brand-name pharmaceuticals must be at least 24% below the average manufacturer price for nonfederal purchasers, based on Title 38 of the U.S. Code, as amended by Public Law 102-585, Veterans Health Care Act of 1992. This calculation establishes the federal ceiling price; prices on the Federal Supply Schedule, which is administered by the VA, must be at or below the federal ceiling price, with some manufacturers offering additional discounts.

The process available to manufacturers to offer additional, competitive discounts based on Uniform Formulary or BCF/ECF status at military pharmacies and mail order is the Uniform Formulary Blanket Purchase Agreement (UF BPA). Under the UF BPA process, the lower prices offered by manufacturers are directly available to military facilities and the mail-order pharmacy through pharmaceutical wholesalers without requiring special ordering procedures. The additional discounts go into effect generally within 2 weeks of approval of formulary recommendations by the Assistant Secretary of Defense for Health Affairs. The UF BPA agreements are administered by TRICARE Management Activity contracting personnel in Aurora, Colorado.

Historically, TRICARE has incurred much higher costs for drugs dispensed at community pharmacies than at military pharmacies or mail order, since prices for drugs dispensed by community pharmacy are not governed by statute. Although the price differential between community pharmacies and DoD's other 2 points of service is expected to narrow as recently enacted legislation is implemented (see below), the community pharmacy network continues to be DoD's most costly point of service. In FY 2007, about 64% of DoD drug expenditures—but only 37% of all DoD 30-day equivalent prescription fills—were incurred at the community pharmacy point of service (Table 3).

Additional discounts for drugs dispensed by TRICARE community network pharmacies have become available in the last 2 years through the Uniform Formulary Voluntary Agreement for TRICARE Retail Pharmacy Refunds (UF VARR) process. This process first became available for classes reviewed at the August 2006 meeting of the DoD P&T Committee and includes quarterly rebates paid to the DoD by drug manufacturers based on utilization in the community pharmacy network, starting with the effective date of Uniform Formulary status changes (i.e., at the end of the implementation period when tier 3 copayments go into effect). Tracking of rebates and administration of the program are performed by the TRICARE Pharmaceutical Operations Directorate.

For both the UF BPA and UF VARR programs, utilization data, instructions for submitting prices, and condition sets are posted on the TRICARE web site for the use of manufacturers shortly after the committee's strategic overview of the class (typically 3-6 months before the final review). Manufacturers are not required to submit price quotes under either program but commonly do so to remain competitive.

As shown in Table 3, the UF BPA process resulted in an estimated $926 million in cost avoidance in FY 2007 based on (a) reductions in unit prices at military pharmacies and mail order, (b) tier 3 copayments at community pharmacies and mail order, (c) migration of patients from lower- to tier-3 copayments (i.e., from community pharmacies to military pharmacies or mail order), and (d) change in drug mix from lower- to higher-cost drugs (e.g., from tier 3 agents to a tier 1 or 2 alternative). The UF VARR program generated $60 million in rebates based on brand name drug utilization by DoD beneficiaries at community network pharmacies in FY 2007, the first year of the program, and an estimated $200 million in UF VARR revenues are expected by DoD in FY 2008 as more classes are reviewed. The total of $986 million in cost avoidance and rebates represents an approximately 13% reduction, compared with what the DoD would otherwise have paid in FY 2007, estimated at approximately $7.5 billion rather than the actual drug expenditure of $6.5 billion.

### Evaluation of Cost-Effectiveness

The cost-effectiveness evaluation is typically performed by 1 or more PEC clinical pharmacists with training in pharmacoeconomics. Two distinct steps to this process are (a) pharmacoeconomic analysis, which evaluates the outcomes and costs of interventions designed to improve health, and (b) budget impact analysis, which estimates the likely impact on annual healthcare use and costs over the first, second, and subsequent years. Sensitivity analyses may be used at either step to deal with uncertainty regarding model parameters. Probabilistic sensitivity analysis (PSA) is used in conjunction with budget impact analysis to evaluate the uncertainty around point estimates of all...
key assumptions in the model (e.g., the likelihood of a patient switching to a formulary medication). The results of the PSA are expressed as a range of likely outcomes (lower 2.5% to upper 97.5%) in total expenditures. Although not a true confidence interval in a statistical sense, the upper and lower limits provide decision-makers some insight into the uncertainty associated with the calculated budget impact of various formulary scenarios. One-way sensitivity analysis, which evaluates the uncertainty around a single-point estimate, may be used to illustrate the importance of assumptions around individual parameters that might have a particularly substantial effect on anticipated cost, such as the future availability of generic medications.

Cost-effectiveness evaluators typically begin constructing their models well before price quotes are available from manufacturers, based on the findings of the clinical effectiveness evaluation and review of the pharmacoeconomic literature. Manufacturers are asked to include relevant pharmacoeconomic studies and models as part of their AMCP dossier submissions. In general, fewer manufacturers submit pharmacoeconomic information than submit clinical information; the PEC has found substantial variability among pharmacoeconomic analyses prepared by manufacturers, particularly with regard to transparency of models and willingness to provide “unlocked” copies for analysis. Manufacturers are also allowed to present pharmacoeconomic models or studies to the team, typically during 1-hour face-to-face meetings (which often follow clinical presentations). These meetings may provide useful information about methodology and study assumptions; however, the team constructs its models independently.

Cost evaluators may use any of the 4 basic types of pharmacoeconomic analysis—cost minimization, cost-effectiveness, cost utility, or cost-benefit analysis—to compare medications within a class.

Cost-Minimization Analysis: This analysis is used when effectiveness measures for competing medications are assumed to be equal. The lowest-cost medication is considered to be the most cost-effective. For example, clinical evaluations of the proton pump inhibitor (PPI) class, both in 2005 and in 2007, found no significant differences with respect to safety and efficacy among PPIs. An analysis of the weighted average cost per day of PPI treatment (weighted to normalize the cost for each drug based on the percent market share at each point of service across the entire drug class) was therefore sufficient to rank the PPIs from the most cost-effective to the least cost-effective; normalizing based on market share is necessary to avoid disadvantaging medications that are used in higher proportion at higher-cost points of service. In 2005, esomeprazole was determined to be less cost-effective than similar agents and was placed in tier 3 to discourage use. However, because of a competitive bid from the manufacturer of esomeprazole, in 2007 the military treatment facility cost (and weighted system cost) for the PPIs, from lowest to highest weighted system cost, were $0.50 ($0.70) for generic omeprazole 10 mg and 20 mg, $0.39 ($1.15) per day for esomeprazole, $2.84 ($3.20) for rabeprazole, $2.70 ($3.64) for lansoprazole, $3.44 ($3.84) for pantoprazole, $3.16 ($4.40) for omeprazole-sodium

<table>
<thead>
<tr>
<th>Point of Service</th>
<th>Rxs (Millions)</th>
<th>30-day Equivalent Rxs</th>
<th>Drug Expenditures (Millions)</th>
<th>Estimated Cost Avoidance Due to UF Changes (Millions)</th>
<th>UF VARR Rebates (Millions)</th>
<th>Estimated Total Cost Without UF Process (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military Pharmacies</td>
<td>49</td>
<td>80 (48%)</td>
<td>$1,470 (23%)</td>
<td>$754 (81%)</td>
<td>-</td>
<td>$2,224</td>
</tr>
<tr>
<td>Community Pharmacies</td>
<td>63</td>
<td>63 (37%)</td>
<td>$4,177 (64%)</td>
<td>$90 (10%)</td>
<td>$60</td>
<td>$4,327</td>
</tr>
<tr>
<td>Mail Order</td>
<td>9</td>
<td>25 (15%)</td>
<td>$857 (13%)</td>
<td>$82 (9%)</td>
<td>-</td>
<td>$939</td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td>168 (100%)</td>
<td>$6,504 (100%)</td>
<td>$926 (100%)</td>
<td>$60</td>
<td>$7,490</td>
</tr>
</tbody>
</table>

*aThe federal fiscal year is from October 1 through September 30.
*bNormalizes workload between points of service based on 30-day supplies of medications (90 days supply = three 30-day equivalents); calculated as total days supply/(30 × total number of Rxs).
*cFor classes with at least 6 months of cost avoidance data in FY 2007.
*dUF cost avoidance was calculated on a month-by-month basis as the difference between the theoretical cost that would have occurred if a UF decision had not been made and the actual cost. The analysis used the days of therapy in a given month, adjusted by baseline market share, cost, and copayments, to estimate what the cost to the DoD would have been in the absence of a UF decision (the theoretical cost). Drug prices used to calculate the theoretical cost were based on Federal Supply Schedule prices at military pharmacies and mail order and current ingredient costs at community pharmacies. The actual cost includes price reductions at military pharmacies and mail order based on accepted bid prices in effect after implementation of UF changes, as well as cost reductions resulting from movement away from tier 3 drugs and toward lower-cost points of service. This methodology takes into account the aggregate effect of price changes, overall drug class growth, and cost and copayment differences due to migration between drugs or points of service, but does not allow isolation of these factors.
*eUF VARR consists of a quarterly rebate paid to the DoD by drug manufacturers based on utilization in the community pharmacy network. Implemented in August 2006, estimated at $200 million or more in FY 2008, as more classes are reviewed.
*fUpdated, the U.S. Government Accountability Office estimated $900 million in an October 2007 report (GAO-08-172R). DoD = Department of Defense; FY = fiscal year; Rx = prescription drug claim; UF = Uniform Formulary; VARR = Voluntary Agreement for TRICARE Retail Pharmacy Refunds.
bicarbonate, and $3.71 ($4.92) for omeprazole (Prilosec) 40 mg.\textsuperscript{8}
These findings caused a complete reversal in formulary position: esomeprazole was not only removed from tier 3, but also made available at the tier 1 (generic) copayment; all other PPIs except generic omeprazole were placed in tier 3.

**Cost-Effectiveness Analysis:** When effectiveness measures for competing medications are assumed to be different, a situation that applies to many drug classes, cost-effectiveness analysis will be employed. Often, differences may be seen on several efficacy or safety measures, and a series of models may be used to compare competing products. For example, models used to assess the cost-effectiveness of the low-density lipoprotein cholesterol (LDL-C)-lowering medications in the Antilipidemic-1 drug class (medications able to provide at least a 45\% mean reduction in LDL-C: atorvastatin, 40 mg or more per day; rosuvastatin, 10 mg or more per day; simvastatin, 80 mg per day; or simvastatin, 20 mg in combination with ezetimibe) included the annual cost per 1\% reduction in LDL-C, as well as the annual cost for each patient treated to LDL-C goal. The expectation is that a similar ranking across multiple models using different measures would provide greater confidence in the model results.

**Cost-Utility Analysis:** This type of cost-effectiveness analysis measures treatment outcomes in quality-adjusted life years or some other outcome measure based on patient preferences among possible health states. This approach is useful because it can facilitate comparisons among different health care interventions.\textsuperscript{30}

Cost-utility analysis was used to analyze attention deficit hyperactivity disorder medications. Clinical efficacy, based on percentage of responders, was found to be similar among the different medications. However, several studies reported higher patient and parent preferences for stimulants that require fewer daily administrations (of particular importance in this therapeutic class to avoid the need for dosing during the school day).\textsuperscript{33,34}

The type of medication (stimulant versus nonstimulant) also has been shown to affect quality of life. In this instance, cost-utility analysis successfully combined the important outcomes into a single composite measure and allowed the committee to assess the relative value of the medications.

**Cost-Benefit Analysis:** This technique allows for differing effectiveness across competing medications, but requires both the cost of treatment and the measure of benefit to be expressed in monetary units. This requirement poses some practical and ethical complications and has not been used for any class reviewed to date.

**Budget Impact Analysis:** Cost-effectiveness analyses alone are not sufficient to assess the pharmacoeconomic impact of formulary decisions, because other factors that may change as a result of the decision must be considered. Budget impact analysis is used as part of the Uniform Formulary process to compare the financial impact of different formulary scenarios. The budget impact analysis accounts for such factors as copayment changes, potential migration of patients between pharmacy points of service, anticipated changes in market share for medications within a class, cost associated with medical necessity determinations, and additional health care service costs associated with medication switches. It is conducted as the final step in the cost-effectiveness evaluation.

Migration to preferred medications occurs over months rather than minutes after a formulary change is implemented. For this reason, Markov models that incorporate medication discontinuation rates, switching rates, and the rate of new patient starts at each point of service are used to estimate the impact of various formulary scenarios over a 2- to 3-year time horizon.

**Formulating a Cost-Effectiveness Conclusion**
Upon completion of the pharmacoeconomic and budget impact analyses, the PEC presents a cost-effectiveness conclusion to the DoD P&T Committee. This conclusion considers the relative value of products within a therapeutic class, the estimated expenditures associated with various formulary scenarios, and the impact of uncertainty on the study results. The final cost-effectiveness conclusion incorporates the committee’s judgment with respect to the results of pharmacoeconomic and budget impact analyses, trade-offs associated with uncertainty about future developments, and the impact of various formulary scenarios on beneficiaries.

**DoD P&T Committee Meeting**
Findings from the cost-effectiveness evaluation are presented only after the committee has discussed and agreed upon a clinical-effectiveness conclusion. The committee then votes to recommend medications to be included on the Uniform Formulary (tier 1 or 2) or classified as nonformulary (tier 3). When making tier 3 recommendations, the committee also establishes an implementation period (no longer than 180 days) and outlines medical necessity criteria. The committee then decides which Uniform Formulary medication(s) should be added to the BCF/ECF.

When placing medications on tier 3 of the Uniform Formulary, the committee must consider the effect on beneficiaries using community network pharmacies and mail order (available at a higher copayment) versus military facilities (not available unless medically necessary, and then only if written by a military provider or a civilian provider to which the patient was referred). The committee must also establish medical necessity criteria for each tier 3 drug, to be used both by military facilities (which are required to use medical necessity criteria established by the DoD P&T Committee for tier 3 medications) and the community pharmacy network and mail-order contractor (since patients may receive tier 3 medications at the tier 2 copayment at community pharmacies and mail order, if determined to be medically necessary).

Medical necessity criteria are based on use of the tier 3 agent in lieu of all similar tier 1 and 2 medications. Medical necessity criteria are based on the 5 general conditions outlined in the Uniform
Formulary Rule (as listed below), which may or may not apply in a specific drug class depending on the nature of the drug class and the characteristics of the tier 3 medication:

1. The use of formulary pharmaceutical agents is contraindi-
cated.
2. The patient experiences significant adverse effects from formulary pharmaceutical agents in the therapeutic class, or is likely to experience significant adverse effects from formulary pharmaceutical agents in the therapeutic class.
3. Formulary pharmaceutical agents result in therapeutic failure, or the formulary pharmaceutical agent is likely to result in therapeutic failure.
4. The patient previously responded to a nonformulary phar-
aceutical agent, and changing to a formulary pharma-
cutical agent would incur an unacceptable clinical risk.
5. There is no alternative pharmaceutical agent on the formu-
ary.

The committee also identifies specific circumstances under which the tier 3 medication would be considered medically necessary. For example, medical necessity criteria for tier 3 PPIs (lansoprazole, pantoprazole, omeprazole/sodium bicarbon-
ate, and rabeprazole), effective October 24, 2007, include either documented “significant adverse effects with all of the formulary alternatives: omeprazole (Prilosec; generics) and esomeprazole (Nexium)” or “use of all of the following formulary alternatives has resulted in therapeutic failure: omeprazole (Prilosec; generics) and esomeprazole (Nexium).”

The medical necessity criteria for the PPIs also allow use of lansoprazole in patients younger than 12 years, based on clinical literature supporting pediatric use and the availability of liquid and orally disintegrating tablet formulations.

The committee is also responsible for establishing prior autho-
rization requirements and quantity limits. TRICARE does not cover drugs that require prior authorization (e.g., growth hor-
mone) unless patients meet specific criteria (e.g., growth hormone deficiency). Quantity limits are based on units per 30- or 90-day supply and apply unless a greater amount is determined to be medically necessary (e.g., higher than usual amounts of a topical product when used to treat a condition affecting an unusually large percentage of body surface area). The same general requirements apply to military pharmacies; however, while PDTS scans all pharmacy claims including military pharmacy prescription fills when identifying prior use and quantities dispensed, the interface between PDTS and the pharmacy management system currently used at military pharmacies does not support PDTS reject messages. Quantity limits and prior authorizations are therefore administered locally by each military facility.

Minutes of each meeting include a summary of committee rec-
ommendations along with supporting information from the cli-
cinal and cost-effectiveness evaluations. The meeting minutes also contain descriptions of the pharmacoeconomic models used and the relative cost-effectiveness rankings based on those models but do not include specific cost comparisons, because price quotes submitted by manufacturers are proprietary and confidential.

The DoD P&T Committee typically reviews 2-4 drug classes during each quarterly meeting, spending 2-4 hours on each drug class, depending on complexity. The committee also reviews new FDA-approved drugs and follow-up reports on previous formu-
ary decisions.

Weighing Costs Versus Effectiveness
It is often difficult to incorporate all clinical differences between medications into pharmacoeconomic models; for example, if data are available only for some agents within a class, if the risk and/or costs associated with serious adverse effects are unclear, or if time and resource limitations preclude detailed analysis across all FDA-approved indications. In this case, the DoD P&T Committee must weigh the potential value of such differences alongside results from the cost-effectiveness analysis. For example, during its review of the targeted immunomodulatory biologics (i.e., adalimumab, alefacept, anakinra, efalizumab, and etanercept), the PEC performed cost-effectiveness analyses comparing these agents for the treatment of rheumatoid arthritis and plaque psoriasis, which together comprise about 88% of all use by DoD beneficiaries (based on medical claims data). However, the committee also considered the clinical usefulness of the 2 agents with multiple indications (adalimumab and etanercept) in other disease states (e.g., ankylosing spondylitis, Crohn’s disease, psoriatic arthritis, juvenile rheumatoid arthritis, and ulcerative colitis). Two of the medications in this class (etanercept and anakinra) were designated as tier 3, whereas the other 3 medications were retained in tier 2.

In addition, the committee must make value judgments based on relative cost-effectiveness. Although the most and least cost-effective agents are readily identified, the committee also must make formulary recommendations for agents that fall between the two extremes. Incremental cost-effectiveness ratios are calculated as the ratio of the difference in costs to the difference in efficacy between each drug in a class and the next less cost-effective. It is also helpful conceptually to show where each drug falls within 1 of the 4 quadrants of the cost-effectiveness plane (less costly/more effective, less costly/less effective, more costly/more effective, and more costly/less effective).

The committee’s final recommendation is also affected by results of the budget impact analysis, which evaluates the overall impact (affordability) of various formulary scenarios, typically over 1-, 2-, and 3-year time horizons. As discussed earlier, probabilistic sensitivity analysis is used in conjunction with budget impact analysis to provide the committee with a range (2.5%-97.5%) of projected total expenditures associated with each formulary scenario, which enables committee members to evaluate both best-case and worst-case scenarios and the degree of uncertainty associated with each scenario.
The Beneficiary Advisory Panel Meeting

DoD’s Beneficiary Advisory Panel (BAP) is intended to enhance transparency and provide an opportunity for beneficiaries and their representatives to comment on the committee’s recommendations before final approval. BAP members (no more than 15 individuals appointed on an annual basis by the Secretary of Defense to represent the interests of TRICARE beneficiaries) meet in a public forum under provisions of the Federal Advisory Committee Act, about 6 weeks after each DoD P&T Committee.

BAP membership includes representatives from nongovernment organizations and associations that represent the views and interests of a large number of eligible covered beneficiaries, contractors responsible for the community pharmacy network and mail-order program, and TRICARE network providers. 

Beneficiary organizations currently represented on the BAP are the Fleet Reserve Association, the Military Coalition, the Military Families Association, the Military Officers Association of America, the Military Alliance, and the National Military and Veterans Alliance.

Meetings are announced in the Federal Register, with all supporting materials posted on the BAP page on the TRICARE website. Information discussed at the BAP meeting does not include specific drug pricing or financial information and focuses on Uniform Formulary decisions and prior authorizations. The BAP does not review BCF/ECF decisions or quantity limits. PEC staff members provide a brief presentation explaining the clinical and cost-effectiveness evaluations of each class and are available to answer questions; in addition, 1 of the physician members of the committee is present to address questions about the committee’s rationale for its recommendations in each class.

A major focus of the BAP from its inception has been on the process of implementation of Uniform Formulary decisions, especially the process of communication with beneficiaries. Feedback from the BAP was instrumental in the DoD’s decision to start sending targeted letters to affected beneficiaries during the up-to-180-day implementation period before drugs are placed on tier 3. The BAP frequently comments on proposed implementation periods, which have been lengthened on several occasions to allow more time for communication with beneficiaries. For example, after a February 2006 review of medications for overactive bladder, the DoD P&T Committee recommended a 60-day implementation period for classifying tolterodine immediate release, oxybutynin patch, and trosipram as tier 3 medications; the BAP recommended 120 days; and the Assistant Secretary of Defense for Health Affairs approved an implementation period of 90 days. As in many cases, the length of the implementation period in this class was determined to achieve a balance between allowing necessary time for beneficiary notification versus cost considerations, because rebates due to DoD under the UF VARR program for prescriptions filled at community pharmacies do not become effective until tier 3 copayments go into effect.

### TABLE 4

<table>
<thead>
<tr>
<th>Rank</th>
<th>Class</th>
<th>FY 2007 Drug Spend (Millions)</th>
<th>% of FY 2007 Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proton pump inhibitors</td>
<td>$530</td>
<td>8.1%</td>
</tr>
<tr>
<td>2</td>
<td>Antilipidemboes</td>
<td>$490</td>
<td>7.5%</td>
</tr>
<tr>
<td>3</td>
<td>Antidepressants</td>
<td>$297</td>
<td>4.6%</td>
</tr>
<tr>
<td>4</td>
<td>Narcotic analgesics</td>
<td>$172</td>
<td>2.6%</td>
</tr>
<tr>
<td>5</td>
<td>Newer antihistamines</td>
<td>$171</td>
<td>2.6%</td>
</tr>
<tr>
<td>6</td>
<td>Angiotensin receptor blockers</td>
<td>$166</td>
<td>2.5%</td>
</tr>
<tr>
<td>7</td>
<td>Thiazolidinediones</td>
<td>$134</td>
<td>2.1%</td>
</tr>
<tr>
<td>8</td>
<td>Adrenergic beta-blocking agents</td>
<td>$133</td>
<td>2.0%</td>
</tr>
<tr>
<td>9</td>
<td>Newer sedative hypnotics</td>
<td>$125</td>
<td>1.9%</td>
</tr>
<tr>
<td>10</td>
<td>Leukotriene modifiers</td>
<td>$124</td>
<td>1.9%</td>
</tr>
<tr>
<td>11</td>
<td>Attention-deficit/hyperactivity disorder and narcolepsy agents</td>
<td>$108</td>
<td>1.7%</td>
</tr>
<tr>
<td>12</td>
<td>Alzheimers agents</td>
<td>$97</td>
<td>1.5%</td>
</tr>
<tr>
<td>13</td>
<td>Calcium channel blockers</td>
<td>$97</td>
<td>1.5%</td>
</tr>
<tr>
<td>14</td>
<td>AntilipidemcI</td>
<td>$77</td>
<td>1.2%</td>
</tr>
<tr>
<td>15</td>
<td>Contraceptives</td>
<td>$67</td>
<td>1.0%</td>
</tr>
<tr>
<td>16</td>
<td>Overactive bladder agents</td>
<td>$67</td>
<td>1.0%</td>
</tr>
<tr>
<td>17</td>
<td>Nasal corticosteroids</td>
<td>$63</td>
<td>1.0%</td>
</tr>
<tr>
<td>18</td>
<td>Multiple sclerosis agents</td>
<td>$59</td>
<td>0.9%</td>
</tr>
<tr>
<td>19</td>
<td>Angiotensin-converting enzyme inhibitors</td>
<td>$57</td>
<td>0.9%</td>
</tr>
<tr>
<td>20</td>
<td>GABA analogs</td>
<td>$56</td>
<td>0.9%</td>
</tr>
<tr>
<td>21</td>
<td>Ophthalmic glaucoma agents</td>
<td>$55</td>
<td>0.8%</td>
</tr>
<tr>
<td>22</td>
<td>Alpha blockers lor BPH</td>
<td>$49</td>
<td>0.7%</td>
</tr>
<tr>
<td>23</td>
<td>Miscellaneous antihypertensives</td>
<td>$47</td>
<td>0.7%</td>
</tr>
<tr>
<td>24</td>
<td>Antiemetics</td>
<td>$41</td>
<td>0.6%</td>
</tr>
<tr>
<td>25</td>
<td>Phosphodiesterase-5 inhibitors</td>
<td>$38</td>
<td>0.6%</td>
</tr>
<tr>
<td>26</td>
<td>3-alpha reductase inhibitors</td>
<td>$38</td>
<td>0.6%</td>
</tr>
<tr>
<td>27</td>
<td>Macrolides/ketolides</td>
<td>$29</td>
<td>0.4%</td>
</tr>
<tr>
<td>28</td>
<td>Growth-stimulating agents</td>
<td>$23</td>
<td>0.4%</td>
</tr>
<tr>
<td>29</td>
<td>Histamine-2 antagonists and gastrointestinal protectants</td>
<td>$42</td>
<td>0.2%</td>
</tr>
<tr>
<td>30</td>
<td>Topical antifungals</td>
<td>$9</td>
<td>0.1%</td>
</tr>
<tr>
<td>31</td>
<td>Older sedative hypnotics</td>
<td>$3</td>
<td>0.0%</td>
</tr>
<tr>
<td>32</td>
<td>Monoamine oxidase inhibitor antidepressants</td>
<td>$0.7</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

a The federal fiscal year is from October 1 through September 30.
b Antilipidemcs I = statins, niacin, and ezetimibe.
c Antidepressants I = selective serotonin reuptake inhibitors, duloxetine, venlafaxine, nefazodone, trazodone, bupropion, and mirtazapine.
d Antilipidemcs II = fibrates, bile acid sequestrants, and omega-3 fatty acids.

GABA = gamma-aminobutyric acid.
Approval of DoD P&T Committee Recommendations

After the BAP meeting, DoD P&T Committee minutes and BAP comments are forwarded to the Assistant Secretary of Defense for Health Affairs (who is also the director of the TRICARE Management Activity) for review and approval. The signing date for the meeting minutes begins the Uniform Formulary implementation period for each class. DoD P&T Committee minutes, BAP comments, and final approval decisions are published on the TRICARE web site.

Classes Reviewed

Through April 16, 2008, DoD P&T Committee recommendations have been approved and implemented in 32 drug classes reviewed at 12 quarterly meetings, representing 53% of DoD’s total drug spend (based on total FY 2007 expenditures). The class-by-class review process resulted in the classification of 343 drugs, of which 85 drugs (24.8%) were placed in tier 3, 92 (26.8%) in tier 2, and 166 (48.4%) in tier 1. The classes are summarized in Table 4.

Continuing Challenges

DoD faces ongoing challenges as the formulary decision-making process continues to evolve, some of which are not found in the private sector. For example, the FY 2008 National Defense Authorization Act (NDAA) extended federally mandated government pricing to medications provided through DoD’s community network. A proposed rule to implement these provisions of the 2008 NDAA was published in the Federal Register in July 2008 for public comment. In brief, the proposed rule would require manufacturers to provide the DoD with a refund based on the difference between the average prices offered to nonfederal purchasers and the currently mandated Federal Ceiling Price, the maximum price paid by military facilities and the mail-order program for brand drugs, although military facilities often receive lower prices under the Federal Supply Schedule program. Although it is clear that implementation of federal pricing will reduce the DoD’s overall expenditures at its most costly point of service, it is not yet clear what the impact will be at the other DoD pharmacy points of service.

Another challenge facing DoD—as with private-sector health plans—is effective communication of formulary changes to beneficiaries and providers. Many beneficiaries receive their care from providers outside of military facilities, who are likely to be unfamiliar with the formulary status and out-of-pocket costs for the medications that they prescribe. DoD has taken steps to improve communication with beneficiaries regarding formulary changes, beginning in October 2007, patient-specific notification letters are mailed to beneficiaries currently receiving medications that will be placed on tier 3. The extent to which these letters are read and acted upon is not known. DoD also is taking steps to provide the Uniform Formulary and the BCF/ECF in National Council for Prescription Drug Programs Formulary and Benefit Standard format, both to facilitate access by civilian prescribers and to support future e-prescribing initiatives. DoD formulary information, including the Uniform Formulary and the BCF/ECF, is currently available online in a searchable format for use by beneficiaries and providers. In addition, many military facilities provide online formulary listings for their local formularies.

With the Uniform Formulary in its third year, DoD also faces the challenge of assessing the clinical outcomes of formulary changes made under the Uniform Formulary. Such analysis serves to (a) ensure that changes actually maintain or improve clinical outcomes while lowering DoD pharmacy costs, and (b) provide data that can be used to improve the accuracy of pharmacoeconomic and budget impact models. The goal is to routinely incorporate such improved measures into the formulary management process. As an example of the latter, the PEC made an effort to validate projections from budget impact models using actual health plan data following a formulary decision in the Antilipidemic I class (statins, niacin, and ezetimibe). The analysis compared outcomes such as the percentage of patients who switched from nonpreferred to preferred products following copayment changes with predicted model outputs to test a variety of assumptions commonly used in budget impact models. As a result of the analysis, several changes to common model parameters were made, including assumptions about generic pricing, market share conversion, and growth projections concerning the number of unique users in a class.

Conclusion

The need for a transparent and cohesive process has guided the development of a formulary management system in the DoD that accomplishes a number of goals. Like private health plans, the DoD formulary management system is based on critical evaluation of the evidence for safety, efficacy, and tolerability of medications within defined drug classes, including pharmacoeconomic analysis. Unlike private health plans, the DoD requires more transparent and equitable price competition among pharmaceutical manufacturers based on formulary status. Also unlike private health plans, the BAP serves as a public forum for beneficiaries and beneficiary organizations to comment on formulary changes, and the DoD formulary process includes the conduct of surveys to obtain opinions of providers for consideration by the P&T committee.

The DoD formulary management process and 3-tier formulary were estimated to avoid drug costs of $926 million in FY 2007, plus an additional $60 million in rebates obtained through the Uniform Formulary VARR process for prescriptions filled at community pharmacies. As of April 2008, Uniform Formulary decisions had been implemented in 32 drug classes, representing more than 53% of total drug expenditures, including 85 brand drugs placed in tier 3, 24.8% of the total of 343 brand and generic drugs, or 48.0% of the 177 brand drugs reviewed.
DISCUSSIONS

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