Effect of Off-label Use of Oncology Drugs on Pharmaceutical Costs: The Rituximab Experience

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GOAL

To provide comprehensive and current information concerning the off-label use of oncology drugs and its effects on pharmaceutical costs.

AUDIENCE

This activity is designed for pharmacy & therapeutics committee members; group practice directors; physicians specializing in oncology; hospital administrators; and institutional, home-health and/or infusion pharmacists.

LEARNING OBJECTIVES

Upon completion of this educational activity, the participant should be able to:

- Interpret the definition and meaning of "off-label" use of a drug.
- List the pertinent factors that promote, inhibit, or have a mixed influence on off-label use of a drug.
- Discuss the influence on oncology drug expenditures of off-label use of oncology drugs, with specific emphasis on rituximab costs.

Background: While the off-label use of oncology interventions is widespread, the factors influencing off-label use and the resultant influence on oncology drug expenditures are not well understood.

Study Design: To assess the indications for rituximab use, a retrospective review was undertaken at a single academic center between September 1998 and June 2001.

Methods: Patient diagnoses were linked to pharmacy records, and each administration of rituximab was classified as either on-label or off-label as defined by FDA-approved indications. The resultant utilization patterns were the foundation for a conceptual model designed to identify factors that influence off-label use of oncology-related therapeutics and forecast the effect of off-label use on aggregate oncology drug expenditures.

Results: One hundred one patients received a total of 428 rituximab administrations during the study period. Most (320, 75%) of the administrations were for off-label indications. Although the extent of off-label and on-label use grew at a similar rate initially, off-label utilization increased nearly exponentially over time as on-label uses lessened. A conceptual model that describes factors that promote, inhibit, or have a mixed influence on off-label use may help predict future patterns of off-label utilization and allow better forecasting of oncology drug expenditures.

Conclusions: The off-label use of rituximab is substantial. Projections of oncology-related patterns of care and drug expenditures must account for the potential for off-label use.

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CONTINUING EDUCATION CREDIT

This course has been approved for a total of two (2) contact hours of continuing education credit (0.2 CEUs) by the University of Tennessee College of Pharmacy. The University of Tennessee College of Pharmacy is approved by the American Council on Pharmaceutical Education as a provider of continuing pharmaceutical education. ACPE Program Number: 064-999-03-235-H01. This course expires on March 31, 2004.

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Since 1997, the growth in prescription drug expenditures has outpaced that of every other healthcare sector.[1] The Employee Benefit Research Institute estimated that drug costs accounted for 55% of the growth in health insurance premiums since 1990.[2] As a result, pharmaceuticals are often designated as the "culprit" behind recent healthcare cost growth. The increased intensity and use of existing and new drugs have been identified as the key driving forces behind escalating drug expenditures.[3] Other factors, such as population demographics, economy-wide inflation, sector-specific price increases, and expansion of pharmaceutical

benefits, also play a role.[4] Interestingly, little research has been conducted to address how the indications for pharmaceutical prescribing, ie, US Food and Drug Administration (FDA)-approved indications or "off-label" use, affect recent cost trends or how such use may serve as a predictor of overall growth in drug expenditures.

When a drug is used off-label, it is administered by a different route, in a different dosage, or for a different indication than described in the FDA-approved labeling. The off-label use of FDA-approved drugs is unregulated, but not illegal. Off-label use is particularly prevalent in several medical specialties. Key among these is oncology, in which most physician billing for drugs occurs. A 1997 study reported that 60% of oncologists had prescribed a chemotherapeutic agent off-label.[5] A General Accounting Office survey of 1470 oncologists revealed that one third of more than 5000 drug administrations were for off-label indications; almost all the drugs used by the respondents were prescribed off-label at least once; and 56% of patients received an off-label drug during their treatment regimen.[6] The impact of off-label use is likely to be further enhanced as better and more costly oncology therapeutics become available.

To quantify the extent of the off-label use of innovative oncology drugs, indications for use of rituximab in a single academic institution were assessed. The resultant utilization patterns provided the foundation for a conceptual model designed to identify and explore factors that influence off-label use. Such a model could potentially assist decision makers forecast the effect of off-label use on aggregate oncology drug expenditures and guide health policy.

RITUXIMAB

Rituximab is a genetically engineered chimeric human/murine monoclonal antibody designed to bind to the transmembrane antigen CD20.[7] CD20 is located on more than 90% of pre-B and mature B-lymphocytes. The FDA approved rituximab in November 1997 for the treatment of relapsed or refractory, low-grade or follicular, CD20-positive, B-cell non-Hodgkin's lymphoma (NHL). This approval was granted, in part, because of clinical studies that demonstrated an overall response rate in 48% of patients who received the drug as an intravenous infusion once a week for 4 weeks.[7]

In April 2001, additional FDA approval was granted for rituximab given as 8 weekly doses for individuals with relapsed or refractory disease, as treatment in bulky disease, and for re-treatment for patients who had previously received rituximab therapy.[8]

METHODS

To quantify trends in the indications for rituximab use, an Institutional Review Board-approved, retrospective review of all administrations of rituximab between September 1998 and June 2001 was undertaken in a single academic institution that encompasses a National Cancer Institute-designated comprehensive cancer center. The time period reflects the date of the first administration to the last date that data were available for analysis. All diagnoses were confirmed by chart review and then linked to pharmacy records. Classification of an administration as either on-label or off-label followed the definition of initial FDA approval in 1997 and then expanded approval in April 2001.

RESULTS

Over the study period, 101 patients received a total of 428 administrations of rituximab. Of this number, 320 (75%) administrations were prescribed for off-label indications. Almost all (94%) of the off-label use resulted from rituximab administration for patients with malignancies other than a low-grade or follicular NHL. No administrations of rituximab were given as part of a clinical trial.

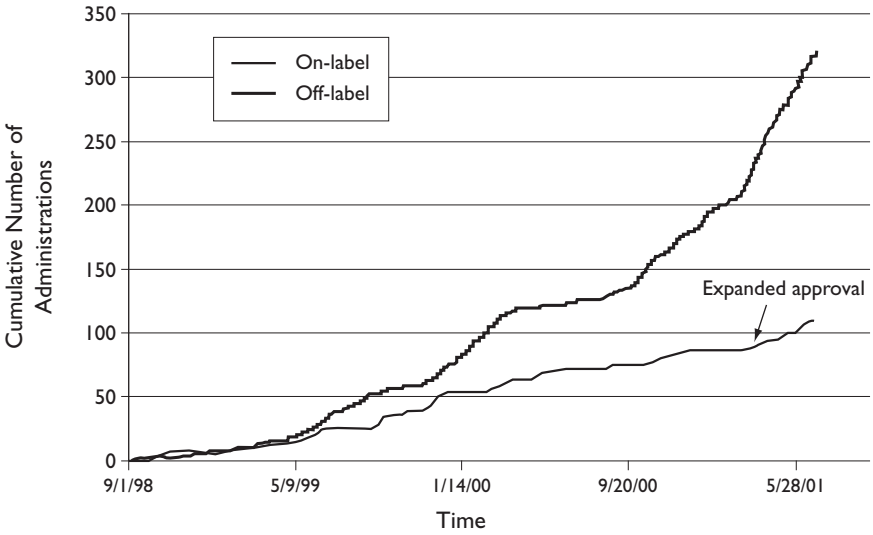
Figure 1 illustrates the cumulative administrations for both on-label and off-label use. A progressive near-exponential increase in the use of rituximab for off-label indications is readily seen. On-label use initially experienced a similar growth rate, but its use quickly slowed over time. A binary logistic regression with time expressed in months yielded an odds ratio of 1.06 (95% confidence interval 1.03-1.08, $P < .001$), revealing a statistically increased propensity to prescribe rituximab off-label compared with approved indications over time.

During the study period, more than $1.1 million was spent on rituximab for off-label use, as compared with $355 000 for FDA-approved indications. These numbers do not include costs in addition to those of this medical center's drug acquisition, such as pharmacy preparation, administration, managing adverse events, and indirect costs such as those incurred by the patients and their families.

DISCUSSION

The off-label use of oncology-related pharmaceuticals is a well-documented and widespread phenomenon. In 1 institution, rituximab was administered primarily for indications not approved by the FDA, at an expense of $745 000 more than the cost for approved indications. Whereas formal economic analysis is required to establish whether this pattern of rituximab use was "worth it," our focus is to identify and explore the multiple interacting factors that influence off-label drug use in oncology (**Figure 2**). Two points bear particular emphasis. First, influencing factors can be categorized into those that promote, inhibit, or have a mixed effect on off-label use. Such factors have varying weights in different settings. Second, the interaction of these factors and their subsequent cumulative effect on off-label drug use depends in large part on how information is diffused into society.

Figure 1. Cumulative Use of Off-label and On-label Use of Rituximab from September 1998 Through June 2001



Promoting Factors

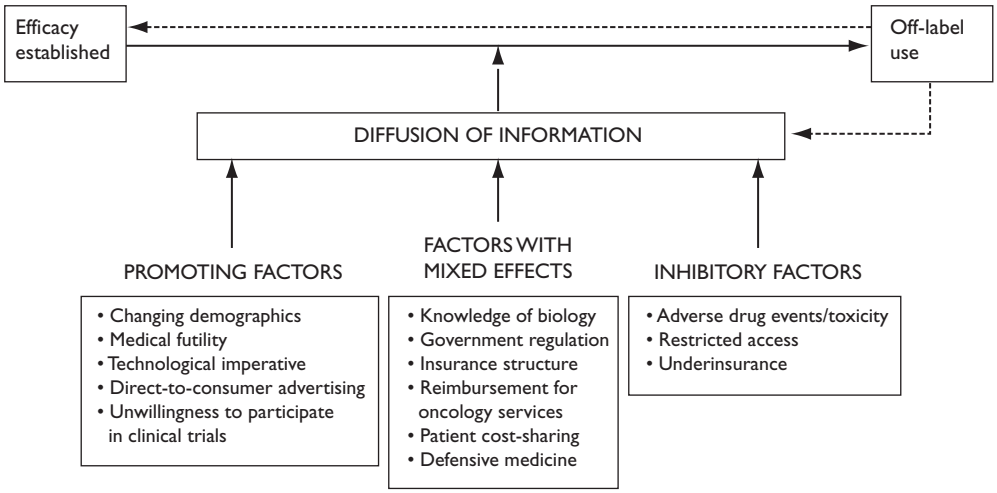
Changing Demographics. Currently, more than 80% of all cancers are diagnosed in individuals older than 55 years,[9] a cohort for which cancer still remains the second overall leading cause of death.[10] By 2025 the over-55 age group will expand by 40 million, a relative increase of more than 40%.[11] As early detection cancer programs achieve wider acceptance, and more effective and less toxic anticancer therapies become available to this population, a diagnosis of cancer will increasingly mark the beginning of a chronic disease. Indeed, the little data that are available suggest that off-label use of chemotherapy is already higher for patients with multiple comorbidities, those who have advanced disease, and those for whom treatment intended to be palliative.[6]

Medical Futility. Much has been written about the concentration of healthcare utilization and resource use at the end of life.[12] Nearly one quarter of Medicare expenditures are incurred during the last 12 months of life.[13] Whether overuse of chemotherapy contributes to such expenses is a controversial issue. In Massachusetts in 1996, 33% of Medicare cancer patients received chemotherapy in the 6 months prior to dying from their disease. The use rate was similar regardless of whether a patient had a cancer traditionally considered to be chemosensitive or chemorefractory.[14] Although drawing conclusions from these data regarding appropriate utilization is difficult, off-label use of chemotherapy is likely to occur when a cancer is considered to be incurable after exhausting other available treatment options.

Technological Imperative. In a survey comparison with 13 other countries, the United States was the most interested in new medical discoveries and the most resistant to cost constraints on that technology.[15] For many years Americans have believed in the positive value of consuming high levels of quality medical products and services.[16] The backlash on managed care for limiting access to specialists and experimental interventions is indicative of that prevailing opinion.

Between 1992 and 1998 the incidence of cancer at all sites combined continued to decline. Cancer deaths decreased by an average of 1.1% per year during the same period.[17] Although behavior modification, broader secondary prevention strategies, and improved diagnostic screening methods for early-stage disease are important aspects of these trends, primary medical treatment and new oncology thera-

Figure 2. Conceptual Model of the Off-label Use of Oncology Drugs



peutics will continue to have a major role. Innovative therapies, often with less treatment-related toxicity, enable further intensive treatment, and usually have a higher efficacy than the possible alternatives. Thus, the availability of such technology can expand the number of individuals who are medically eligible for treatment and who want treatment.[18] Better supportive care augments this trend, especially with the introduction of hematopoietic growth factors, potent antiemetic agents, and broad-spectrum antibiotics and antifungals. Thus, the availability of novel combination regimens with either better efficacy or reduced risk of adverse events is likely to lead to high off-label drug utilization.

Direct-to-consumer Advertising. Direct-to-consumer advertising grew at an average annual growth rate of 33% between 1996 and 2000.[19] Nearly $1.6 billion was spent in 2000 on television advertising for prescription drugs, an increase of 88% between 1994 and 2000.[19] This and other on-label advertising has been linked to the recent surge in drug expenditures.[20] Although empiric data are unavailable, it is reasonable to suggest that such advertising may lead to a relative expansion in the utilization of interventions for off-label indications, due to a likely "spillover" effect from approved indications.

Unwillingness to Participate in Clinical Trials. A recent Institute of Medicine report found that only 15% of adult cancer patients were aware they could participate in a clinical trial. Of the 15% who were aware, only 25% actually chose to participate.[21] These numbers underscore why patient accrual is often inadequate to achieve the statistical power necessary for randomized controlled trials. Consequently, results from oncology trials are often not generalizable to populations outside carefully selected and tightly managed study groups. Furthermore, slow patient accrual and the focus on median survival contribute to delays that can make the results obsolete by the time they are reported.[22] As a result, uncertainty about the "best" therapy option is frequently encountered in oncology decision making. Given the lack of data and high level of uncertainty, the pervasiveness of off-label use of oncology-related drugs should surprise few clinicians, and oncologists the least.

Inhibitory Factors

Adverse Drug Events. Estimates are that more than 100 000 Americans die each year from adverse drug events (ADEs) related to on-label use of various therapeutics.[23] The risk of serious ADEs likely will increase with the broader use of drugs off-label. Despite often being safer than their predecessors, oncology-related drugs still carry more risks of toxicity than several other drug classes. Indeed, cancer patients as a whole have the highest hospital admission rates from ADEs. Such toxicities can result in social and economic costs in the form of lost productivity, decreased quality of life, or increased caregiving from family or friends.[24,25] These risks, and the perceived threat of litigation that augments them, limit an even wider spread of the off-label use of oncology-related drugs.

Restricted Access to Therapy. A significant barrier to effective therapy is the lack of ready access to prescription drugs for some Americans. This problem affects not only the nearly 40 million Americans

without any insurance,[26] but also those with health insurance who cannot afford or choose not to have prescription drug coverage.

Underinsurance. Drug use is also affected by underinsurance. For example, Medicare Part B covers the costs of chemotherapy when administered in a physician's office. However, the plan does not cover the costs of oral chemotherapy or other outpatient adjunctive drugs administered outside a physician's office. Without supplemental coverage or unless policy is changed, beneficiaries will continue to face difficult financial decisions in the future. Indeed, more than 25% of the oncology drugs currently being developed are oral formulations.[27] In an initiative to extend Medicare Part B coverage to all oral anticancer agents, Representative Deborah Pryce (R-OH) and Senator Olympia Snowe (R-ME) cosponsored related bills in 2001 (H.R.1624 and S.913; the Access to Cancer Therapies Act) that are still in legislation.

In the end, insurance coverage, even universal coverage, will not in and of itself ensure access to healthcare. Affordability is only one component of accessing healthcare. Other factors include the availability and accessibility of the resources, the acceptability of the provider and patient to each other, and how accommodating the structure of the organization is to the needs and preferences of patients.[28]

Factors With Mixed Effects

Knowledge of Biology. Improved knowledge of biology may promote off-label use through the discovery that other diseases contain key cells with similar therapeutic targets. For example, the use of rituximab to treat diffuse large cell lymphoma and Waldenstrom's macroglobulinemia rests on the knowledge of CD20 and its role in the pathogenesis of these 2 cancers. Equally possible is the discovery that other diseases do not contain similar therapeutic targets, a finding that might slow off-label use. In either case, knowledge about a drug's mechanism may change, expand, or originate from other areas of medicine. One such example is the successful use of rituximab for treating idiopathic thrombocytopenic purpura, a disease in which direct targeting of CD20 is not relevant.[29]

Government Regulation. Government regulation of the pharmaceutical industry is manifest in 3 laws, each resulting in a greater shift from private to public oversight. Federal regulation began with requirements for accurate and honest labeling of proprietary medicines under The Pure Food and Drugs Act of 1906; moved to the protection of patient safety in The Food, Drug, and Cosmetic Act of 1938; and focused on the assurance of new drug efficacy with the Kefauver-Harris Bill of 1962. The more recent regulatory requirements added costs in the form of developing and managing clinical trials and other drug approval procedures. Importantly, they also subtracted time from the 17- to 20-year patent life that was the reward to a manufacturer for their drug development efforts. Government responded with pro-industry tax incentives,[30] a partial restoration of the patent term, subsidies for orphan drug development, and quid pro quo mechanisms for expedited drug approval. Patent terms remain a powerful and popular legal bargaining tool in modifying pharmaceutical company behavior and creating incentives for wanted long-term objectives.[31]

Viewed broadly, regulation can promote or inhibit the off-label use of oncology-related therapeutics. Patent protection and relatively long FDA-approval processes may limit off-label use by setting the example for a high standard of safety and efficacy. However, legislation such as the FDA Modernization Act of 1997 allows pharmaceutical companies to disseminate articles from peer-reviewed journals about various off-label uses of their products. The FDA Modernization Act of 1997 also gives greater flexibility to the FDA to grant approval based on surrogate end points or a single clinical trial. Some authors are concerned that such provisions may promote off-label use.[32]

Insurance Structure. Weisbrod was one of the first to recognize that retrospective pricing in insurance mechanisms encourages research and development of high-quality technology, regardless of cost.[33] Subsequently he proposed that insurance reimbursement based on prospective pricing create incentives for drug companies to develop cost-reducing technologies, as long as quality does not suffer significantly. Despite a relative lack of available empiric data to test this line of thinking, the recent renewed industry interest in cost-effectiveness studies is suggestive that such incentives are real.[34]

Recently some fear that the introduction of the Outpatient Prospective Payment System under Medicare[35] will shift some cancer care back into the inpatient setting. However, the effect on off-label drug use is difficult to predict. In the short term, broadening the reach of prospective payment structures may add further pressure to restrict some off-label uses. In the long term, concerns about underutilization or inadequate reimbursement may limit the scope of such structures, and any effect on off-label drug use.

Reimbursement for Oncology Services. The current system of reimbursement for cancer services potentially distorts the providers' role as the patients' "perfect agent." Currently, chemotherapy and related oncology drugs are reimbursed at no more than 95% of the actual wholesale price (AWP), a determination made by drug manufacturers. Moreover, before a drug is reimbursed at all, the indication for its use must be accepted by the appropriate third-party payer. Such indications are listed in one of several compendia that providers often use as a guide before prescribing a medication.

Buying power leveraged through volume purchasing often leads to discounted prices to providers. The General Accounting Office (GAO) estimates that Medicare outlays for oncology drugs in the year 2000 were $532 million higher than the drugs' actual acquisition cost.[36]

Proponents of the AWP system argue that the margin is needed to offset the underpayment of drug administration services. Opponents cite the financial incentives for choosing the most profitable combination of agents or frequencies of administration. In theory, third-party restriction for payment of some off-label uses may curb the most egregious of such practices. In reality, though, such restrictions are often spurious and limited by a lack of consensus about the standard of care. Data demonstrate that such uncertainty is a key covariate in predicting the off-label use of chemotherapy.[6]

The Office of the Inspector General and the GAO recently recommended that drugs be reimbursed closer to the acquired price instead of the AWP.[37] Many cancer organizations, patient interest groups, and individual providers have given their provisional support, but only if concomitant increases are made in reimbursement for the costs associated with outpatient oncology-drug administration. If the measure is implemented, provider (and patient) incentives for off-label use will also change.

Patient Cost-sharing. Many Americans continue to be buffered from the full costs of prescription drugs. The proportion of prescription drug expenditures paid out-of-pocket decreased from nearly two thirds in 1990 to almost one third in 2000.[19] Present deductibles and tiered co-payments do not significantly pressure most insured consumers to decrease their demand for prescription drugs, whether on-label or not.

Recently, an increasing proportion of the costs of prescription drugs is being transferred to patients, raising concerns over the inability of certain individuals to pay for essential treatments.[38] As more oncology-related therapeutics are oral or subcutaneous formulations and are paid for under prescription drug plans (rather than being bundled with physician services), the effect of greater patient contributions may be significant. Taken together, these trends may sway patients away from what may be considered an optimal therapeutic regimen.

Defensive Medicine. The practice of defensive medicine may promote off-label drug use if oncologists fear legal action for not using a licensed drug for an indication not approved by the FDA, but for which there is published evidence of efficacy. However, defensive medicine may inhibit off-label use if oncologists respond to the same scenario by only prescribing a drug according to its FDA-approved labeling.[39]

Predicting Off-label Use of Oncology-related Therapeutics

The preceding discussion underscores the complexity behind the multiple influences of the off-label use of oncology-related therapeutics. To understand how such factors interact to influence such use, we must better understand how the information is diffused across and into society.

There are 3 main considerations. First is the identification of key inherent attributes of the technology that are most likely to affect the speed and extent of its diffusion.[40] For example, is the technology easy to use and can it be understood easily by both providers and patients?

The second consideration is how well the technology fits with its intended audience. This factor requires an understanding of provider characteristics and the strategies that are likely to promote a change in behavior for a specific clinician type.[41] Understanding, predicting, and maximizing this kind of fit also means understanding the organizational structures that limit or enhance decision making for the clinician who is to use the new drug technology or use it in a new way.[42]

The final consideration is the sophistication of social marketing and the media influence on changing demand for new technology. The last decade has seen heavy investment by manufacturers in new communication channels for promoting and disseminating information. Providers are no longer seen as the sole target in affecting the adoption of new technology. Hospital formulary managers, employers, pharmacy benefit managers, and patients themselves now have become important foci for the direct dissemination of information.

The dynamic process of information diffusion leads to behavior changes that affect off-label drug

use. The process is not unidirectional and is reflected in Figure 2 by the feedback loops. Off-label use can result in clinical trials that establish efficacy for a new indication, dosing regimen, or frequency. Likewise, off-label use itself can influence how information is disseminated.

Rituximab, Revisited

The substantial off-label use of rituximab can be explained easily with the conceptual model. Rituximab was the first monoclonal antibody approved by the FDA for the treatment of a malignancy. The drug targets an antigen present on the surface of several NHLs and lacks many of the side effects commonly associated with chemotherapy. It was well positioned to be used on its own and in combination with existing therapies for NHL. The drug was particularly suited for the elderly and for patients in whom comorbidities precluded treatment with potentially toxic chemotherapy. The administration of rituximab fit well into already established outpatient drug delivery protocols; reimbursement for the drug was on par with the 95% of the AWP that chemotherapeutics received. Because the drug must be given in the physician's office or in the hospital, Medicare Part B and private insurers cover most of the costs. Patient cost sharing is thus minimal. The quick publication of several trials showing positive results with rituximab in off-label uses reaffirmed its efficacy, legitimized the expansion of its use, and eventually led to new on-label FDA approval.

Implications of Off-label Use for Health Policy and Cost-control Strategies

We do not intend to suggest that the expenditures incurred for the off-label use of oncology-related therapeutics are too high, unnecessary, or even undesirable. Regardless of how much the growth rate in drug spending is fueled by off-label use, there is no guarantee that these increases in pharmaceutical resources translate into higher overall health expenditures. Even if these expenditures lead to a net cost increase, these added expenditures are not necessarily an unwanted result. Determining whether the additional clinical benefits achieved are worth the extra costs incurred is the fundamental underpinnings behind the use of economic evaluation in healthcare resource allocation.

Although the rituximab experience at 1 institution is unlikely to mimic the practice of oncology on a national scale, we conclude that off-label use of oncology-related therapeutics is substantial and likely to expand in the near future. Moreover, careful attention should be paid to off-label use by those who predict subsequent patterns of oncology care and related drug expenditures. Future exploration of these factors in other settings and with other drugs will certainly be critical in this regard.

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CONTINUING PHARMACY EDUCATION

This course has been approved for a total of two (2) contact hours of continuing education credit (0.2 CEUs) by the University of Tennessee College of Pharmacy. The University of Tennessee College of Pharmacy is approved by the American Council on Pharmaceutical Education as a provider of continuing pharmaceutical education. ACPE Program Number: 064-999-03-235-H01. This course expires May 31, 2004.

Instructions

After reading the article "Effect of Off-label Use of Oncology Drugs on Pharmaceutical Costs: The Rituximab Experience," select the best answer to each of the following questions.

1. Driving forces behind increasing drug expenditures include all of the following EXCEPT:
a) population demographics.
b) economy wide inflation.
c) decreasing patient copayments.
d) increases in drug prices.

2. True or False: If a drug is used at a Food and Drug Administration (FDA)-approved dose for an FDA-approved indication, but administered by a different route of use (eg, oral instead of intravenous) it is considered off-label?
a) True
b) False

3. Off-label use of a drug:
a) is illegal.
b) is unregulated.
c) is limited to certain medical specialties.
d) results in toxicities more often than not.

4. True or false: Off-label use is uncommon in oncology practice, with < 25% of patients receiving chemotherapy agents for off-label indications.
a) True
b) False

5. Rituximab was approved by the FDA in November 1997 for the treatment of patients with:
a) metastatic multiple melanoma.
b) B-cell non-Hodgkin's lymphoma.
c) hodgkin's lymphoma.
d) renal cell carcinoma.

6. Factors that promote off-label use include all of the following except:
a) direct-to-consumer advertising.
b) unwillingness to participate in clinical trials.
c) restricted access to therapy.
d) medical futility.

7. Between 1992 and 1998, the incidence of cancer at all sites combined increased by an average of 1.1% per year.
a) True
b) False

(CPE questions continued on following page)

Effect of Off-label Use of Oncology Drugs on Pharmaceutical Costs: The Rituximab Experience
ACPE Program Number: 064-999-03-235-H01

(PLEASE PRINT CLEARLY)

Name _____

Home Address _____

City _____

State/ZIP _____

Daytime Phone # _____

States in which CE Credit is Desired _____

Social Security # _____

Please circle your answers:

1. **a b c d**	6. **a b c d**
2. **a b**	7. **a b**
3. **a b c d**	8. **a b c d**
4. **a b**	9. **a b**
5. **a b c d**	10. **a b c d**

Please complete the Program Evaluation on following page, and send with $15 fee, payable to University of Tennessee, to:

Glen E. Farr, PharmD
University of Tennessee College of Pharmacy
600 Henley Street, Suite 213
Knoxville, TN 37902

8. It is estimated that how many Americans die each year from adverse drug events?
a) 10 000
b) 50 000
c) 100 000
d) 500 000

9. True or false: Off-label oncology agents are more likely to be prescribed to young healthy cancer patients who demand the most aggressive therapy.
a) True
b) False

10. According to a 2000 Institute of Medicine Research Roundtable, a minority of cancer patients (15%) were aware that they could participate in a clinical trial. Of those who were aware, what percent chose to participate?
a) 5%
b) 25%
c) 50%
d) 95%

CPE PROGRAM EVALUATION (064-999-03-235-H01)

The University of Tennessee College of Pharmacy would like to have your opinion. Please fill out the questionnaire below, tear off along the dotted line, and mail along with your CPE test form. We thank you for your evaluation, which is most helpful.

Please circle your answers:

My pharmacy practice setting is:	Independent	Chain	Hospital	Consultant
The objectives of the lesson were achieved:	Yes	No		
The quality of presentation of the material was:	Excellent	Good	Fair	Poor
The information presented will be useful to me in my practice:	Strongly agree	Mildly agree	Mildly disagree	Strongly disagree

How long did it take you to read the material and respond to the Continuing Education questions: (Please specify the number of hours.)

_____

Please send this evaluation, along with your answer sheet and $15 check payable to University of Tennessee, to:

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