

**TO THE EDITOR:**

The most recent analysis of the Managed Care Outcomes Project by Horn et al<sup>1</sup> will certainly again generate interest and controversy. Without revisiting concerns raised previously about the study design and analysis,<sup>2</sup> I am interested in the authors' explanations for why limitations of drugs in certain classes might be associated with higher resource utilization.

Specifically, Horn and colleagues note a strong association with restriction of selection of loop diuretics and more office visits in the nonelderly. They hypothesize that restriction of choice in this drug class could have a large impact in the patient's overall care. As a practicing physician, I find this explanation suspect, and wonder why the authors did not test this theory by actually examining patterns of diuretic use by specific drugs in this group. I would guess that furosemide was used for the great majority of patients, and thus the variable that is different between groups, ie, formulary restrictiveness, does not reflect what the patients were actually prescribed. Therefore, the connection cannot be made that restrictiveness of the formulary causes the increase in visits, unless it is demonstrated that there were significant differences in utilization of different types of loop diuretics.

Similarly, the authors note that limitations on the use of peripheral anti-adrenergic drugs were associated with significantly more office visits. They note the narrow therapeutic index in this class, which could result in adverse outcomes if choices were limited. The less well tolerated drugs in this class tend to be older, cheaper drugs (eg, generic prazosin versus terazosin), although disease-specific drug costs were higher for patients at sites with more restrictive formularies. Again, what was actually prescribed in this class must be used as a covariate to determine if the authors' conclusions are valid.

Finally, the authors suggest that limitation of selection among the H<sub>2</sub> antagonists might have led to greater use of older, less expensive agents with greater potential for drug-drug interactions. Yet there was no significant difference in the disease-specific drug costs in the elderly, which would seem to contradict the assertion.

It has been several years since Dr. Horn presented her original paper, which purported to show that restrictive formularies were associated with greater health resource utilization when compared to a site with an unrestricted formulary.<sup>3</sup> I would be most interested to know if there have been changes in the formulary policy in the study sites. Specifically, I would like to know if the site with the most restrictive formulary has gone to an unrestricted formulary. Indeed, if the results of the original study are to be believed, it would seem to follow that significant changes in the formulary process would have been implemented.

This would offer a wonderful opportunity to study the impact of going to an unrestricted formulary.

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1. Horn SD, Sharkey PD, Phillips-Harris C. Formulary limitations and the elderly: Results from the Managed Care Outcomes Project. *Am J Managed Care* 1998;4:1105-1113.
2. Ross-Degnan D, Soumerai SB. HMO formularies and care costs. [Letter]. *Lancet* 1996;347:1264.
3. Horn SD, Sharkey PD, Tracey D, et al. Intended and unintended consequences of HMO cost-containment strategies: Results from the Managed Care Outcomes Project. *Am J Managed Care* 1996;2:253-265.

**AUTHOR'S REPLY:**

We thank Dr. Good for his thoughtful questions. With regard to the questions about loop diuretics being associated with more office visits in the nonelderly, on page 1112 of our paper we hypothesize that, "our data may represent a subpopulation of patients who may be more frail, at risk, and costly as a group, beyond that measured by using the Comprehensive Severity Index. Thus, small changes or restrictions in their drug regimen might have a large impact on their overall care and disease management." Furosemide was on all 6 sites' formularies and was dispensed most often (85% to 100% per site) for patients using loop diuretics. The data do show that other loop diuretics were dispensed at sites with more loop diuretics on formulary. A small number of patients can indeed affect outcomes if they have higher utilization, but the paper says, "We cannot show a cause-and-effect relationship between formulary limitation and higher healthcare utilization. Our data justify only cautious inferences about causation."

Between 2 and 6 anti-adrenergic peripheral drugs were on each site's formulary; prazosin was the only drug on all 6 formularies. Use of prazosin ranged from 9% to 38% per site of prescriptions dispensed for anti-adrenergic peripheral drugs, doxazosin ranged from 0 to 50%, terazosin ranged from 12% to 90%, and reserpine from 0 to 11%.

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Almost all the anti-adrenergic peripheral drugs dispensed were those on the respective site's formulary.

Each of the 6 study sites had at least 2 H<sub>2</sub> antagonists on formulary. Cimetidine was on all 6; other H<sub>2</sub> antagonists were different among the sites. Use of cimetidine ranged from 17% to 70% of H<sub>2</sub> antagonists dispensed by site, famotidine ranged from 3% to 49%, ranitidine from 3% to 68%, and nizatidine from 0 to 23%. The proportions of each drug used per site varied widely; the usage pattern at the site with no formulary limitations for H<sub>2</sub> antagonists was different from that at the other sites. Again, no matter what the formulary was, the dispensed drugs almost completely followed the formulary. The higher overall drug costs in the elderly that were associated with greater formulary limitation of H<sub>2</sub> antagonists could be due to greater need for drugs to counteract drug-drug interactions.

The administrations in all the study HMOs have changed since the Managed Care Outcomes Project (MCOP) was conducted in 1992-93; I have been told that some sites loosened their formularies. At least 1 site began using disease management approaches as guidelines for drug use, and it removed the requirements for prior authorization. There was no site in the original MCOP that was highest in formulation limitation for all 5 study diseases; the most restrictive site varied by disease.

In summary, our paper is not an analysis of specific clinical drug effects and side effects. Instead, it is a report on the association of restrictions in drug classes with health service utilization, and the difference in those associations in elderly vs nonelderly patients. Other studies and numerous anecdotes support the findings we reported.

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of AJMC.*