

Evaluating the Evidence on the Cost-Effectiveness of Preventive Services for the Elderly: Selected Issues

In the past decade, OTA has studied the effectiveness and costs of seven preventive services for the elderly.¹ The general approaches followed in these studies are consistent with the principles of economic evaluation of medical procedures laid out in recent primers on the subject (23,73,99) and will not be described here. (See app. B for a summary of these studies.) Common to all cost-effectiveness analyses are unresolved methodological issues such as how to come up with an index of effectiveness that incorporates all important dimensions of health outcomes, what discount rate to use for costs and effects expected to occur in the future, how to place a value on unpaid services provided by volunteers or family members, and which nonhealth care costs to include in the cost estimates. Applying the general principles of economic evaluation to preventive services for the elderly raises an additional set of questions that, depending on how they are resolved, may have a major influence on the final estimates of effectiveness or cost.

Issue: Under what conditions is it appropriate to generalize about the effectiveness of a service on the elderly from evidence of its effectiveness in nonelderly populations?

This issue arises frequently because so little effectiveness research is conducted on elderly populations. For example, neither mammography nor cervical cancer screening have ever been rigorously tested for effectiveness in the general population of elderly women (64a,89). To date no studies of the impact of cholesterol reduction on heart disease or death have reported on elderly patients as a separate group (32). To generalize from information on the nonelderly, assumptions are required about the natural course of the disease in the elderly relative to the nonelderly and the relative response of the elderly to preventive interventions or to therapy initiated in response to screening. Some hold the view that such extrapolations are always unacceptable, that without evidence directly pertaining to the elderly, no valid conclusions about the elderly are possible. This position seems extreme and perhaps unfair to elderly people if services are withheld because studies have never been conducted in their

age group (47). But, extrapolating evidence opens up the possibility for errors of judgment and is one reason the conclusions of different expert groups can vary widely.

Issue: How should the effects of services provided together in a package be attributed to specific procedures?

Quite often, studies of preventive services examine programs that deliver a number of procedures or interventions in a combined visit or set of visits. Unless an evaluation study has a very large number of subjects and has detailed information on the exact set of services received by each subject, it is impossible to distinguish the effects of individual components. The ongoing HCFA Preventive Services Demonstration projects, for example, which offer defined service packages to experimental groups, will not be able to determine which specific tests or services are responsible for the observed outcomes. This weakness of the evaluation studies is important because the composition of the package can have a major impact on the cost of an intervention and therefore on its estimated cost-effectiveness.

Issue: How should the costs of a visit be apportioned among the individual procedures and interventions provided in the visit?

In estimating the cost-effectiveness of a specific preventive intervention, the issue invariably arises whether some or all of the costs of the visit in which the specific services is delivered should be considered costs of the service itself. Some preventive procedures are by themselves very inexpensive. In 1986, Medicare paid less than \$7 for a total cholesterol determination, for example. The Medicare reimbursement for a Pap smear was about \$10 including a small fee for preparation. Nevertheless, the physician may charge a visit fee, and Medicare paid an average \$21 in 1986 for a "brief" visit (67). The estimated screening costs for either of these procedures would more than triple if the full cost of a brief visit were included in the estimate. Not to attribute any visit costs to the procedure implies that the visit was made for another purpose altogether

¹They are: pneumococcal pneumonia vaccination (86,88); influenza vaccination (87); mammography (89); glaucoma screening (70); cholesterol screening (32); cervical cancer screening (64a); and colorectal cancer screening (in preparation for early 1990 release).

and the delivery of the preventive service is incidental. To fully attribute the costs of the visit to the preventive intervention implies that the purpose of the visit was entirely to receive the preventive service. OTA's study of cholesterol screening costs assumed that such tests would be conducted as an incidental part of a visit for other purposes (32); conversely, the cervical cancer screening analysis assumed that a proportion of the visit costs were attributable to the procedure (64a).

Issue: What allowances in cost estimates, if any, should be made for inefficiencies inherent in the medical care system?

Preventive services are layered on an existing delivery system that may not be organized to offer such services in the least costly way possible. For example, what are the costs of providing screening mammograms to elderly women? The answer to that question presupposes a specific level of capacity utilization of mammography facilities. Reasonable geographical access to facilities, particularly in rural areas, may require some excess capacity. The estimated cost per examination will be much lower if full capacity operation is assumed than it would be if, say, only 50-percent capacity is assumed. Or, if substantial excess mammography capacity already

exists in the health care system for diagnostic uses, the extra costs of performing screening examinations might be even less than the estimated average costs of a dedicated screening facility operating at full capacity.

Issue: How should uncertainties be treated?

There is no single correct answer to the questions posed above; the most appropriate approach depends on the particular preventive service being evaluated and the context for the evaluation. In cases where the most appropriate approach is not obvious, analysts can show how changing assumptions will affect the findings (commonly referred to as sensitivity analysis), but when changing the assumptions leads to major changes in findings, sensitivity analysis may be tantamount to refusing to conclude anything about the magnitude of effectiveness and cost. Although this can be very frustrating to the users of such analyses, it is a necessary component of a sound analysis. The analysis is informing decisionmakers that better data are needed to make better decisions. At the very least, any analysis of preventive services for the elderly should explicitly identify the choices that are made in the areas enumerated above, so that the resulting findings can be held up to careful scrutiny by interested users of the analysis.