

Differences Between CBO and HHS Estimates of PSRO Incremental Cost. Since the summer of 1979, HHS has provided the Congress with a number of estimates indicating that PSRO review is, if anything, less expensive than pre-PSRO review.²⁹ The CBO and HHS estimates are based on the same OPEL data but use different methods to produce the estimates. CBO compared OPEL's estimates of pre-PSRO and PSRO review costs, while HHS extrapolated OPEL's estimate of pre-PSRO costs to the present and then compared it to the actual PSRO budget.

The principal problem with the HHS method is that it draws an inappropriate comparison: the cost of an unfocused pre-PSRO system is contrasted to the cost of a highly focused PSRO system in which fewer than half of all Medicare and Medicaid admissions are reviewed. There is no corresponding information, however, on the relative effectiveness of unfocused pre-PSRO review and focused PSRO review. All available evaluations contrast the effectiveness of unfocused PSRO and pre-PSRO systems, and the appropriate incremental cost figure would draw the same comparison. That is,

28. (Continued)

Low estimate: pre-PSRO costs are one-half of PSRO costs; federal share of utilization review equals 70 percent.

$$\begin{aligned}\text{Government incremental costs} &= 1 - (.50)(.70) \\ &= 65\%\end{aligned}$$

By coincidence, the federal incremental costs of PSRO review of Medicaid patients is in the same range. In the case of Medicaid patients, it is the states that share in pre-PSRO review costs. The federal portion can be either 75 or 50 percent, depending on whether the states classify their review costs as "skilled professional medical personnel" or as other administrative costs. (It is not known what proportion use the skilled professional medical personnel classification.) The federal incremental costs work out to 75 and 62.5 percent of total PSRO cost, respectively--almost exactly the same as the Medicare estimates above.

29. Memorandum to Daniel Koretz from Dr. Helen Smits, Director of the Health Standards and Quality Bureau (HSQB), August 23, 1979; also supplementary materials on the fiscal year 1981 appropriations estimates presented to the House Committee on Appropriations by Leonard Schaeffer, Administrator of the Health Care Financing Administration, May 1980.

the data show that an unfocused PSRO system reduces Medicare hospital use to a level 1.5 percent below the level expected under unfocused pre-PSRO review. The question to be answered in estimating the program's incremental cost is how much it cost to make precisely that change. The OPEL figures, without further adjustment, are the best available estimate of that cost.³⁰

An argument implicit in the HHS approach is that current, focused PSRO review is substantially cheaper than unfocused PSRO review and that this difference should be considered in evaluating the costs and benefits of the current program. There are no data, however, that indicate the costs and benefits of the focused program relative to those of the previous unfocused system. The switch from unfocused to focused review has undoubtedly lowered the program's cost per admission--indeed, lowering costs has been a primary motive in focusing. As noted earlier, however, focusing has probably also lessened the program's effect on utilization, though there are no data available to assess that change. Lacking such data, one can only speculate about whether focusing has reduced costs more or less than benefits.

Recalculation of the PSRO Savings-to-Cost Ratio

Based on the most recent data, CBO estimates that the societal resource savings generated by PSRO review are 60 percent less than the program's total cost. In other words, the savings-to-cost ratio is 0.4-to-1. In contrast, the most recent HCFA evaluation estimated a savings-to-cost ratio of 1.27-to-1, which would indicate that the savings generated exceed costs by 27

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30. The HSQB estimate has technical problems as well. It depends in part on an estimate in the rate of increase in federal (Medicare plus Medicaid) hospital admissions, and the rate used is more than 200 percent too high. (An increase of 27 percent over the four-year period was used in HSQB's calculations, while a more reasonable figure is roughly 8 percent.) It also requires the comparison of PSRO costs assessed by one accounting method with utilization review costs estimated by another. This has the effect of confounding differences in the costs of the two programs with differences in the accuracy and bias of the accounting methods used. In addition, error in the choice of an inflation factor (review costs may not increase at the same rate as the CPI or as total hospital costs, for example) would also contribute falsely to the difference in program costs.

percent.³¹ Four factors, described below, contribute to the difference between the HCFA and CBO estimates.

Resource Savings versus Medicare Reimbursement Savings. As noted earlier, whenever Medicare utilization rates go down, some additional costs are transferred to non-Medicare patients. The 1979 HCFA evaluation counted all changes in Medicare reimbursements as program savings, without subtracting that portion of the reimbursement change that was the result of costs transferred to non-Medicare patients.

Adjusting the HCFA estimate to reflect resource savings rather than reimbursement savings reduces benefits by 55 percent. This single correction is sufficient to bring the HCFA estimate of savings well below their estimate of costs (yielding a savings-to-cost ratio of 0.6-to-1).³²

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31. Both the CBO and HCFA savings-to-cost estimates omit two of the program's costs and one of its savings. These omissions tend to cancel each other out.

The cost figures used in both analyses exclude two components of the program's total cost: indirect costs to hospitals of conducting PSRO review, and the portion of the HSQB operating budget that is attributable to PSRO activities. Although representative data on hospital indirect costs are lacking, recent unpublished studies by the General Accounting Office suggest that these costs may amount to roughly 24 percent of the direct costs of review. Some of that 24 percent, however, is already paid for by the government through Medicare reimbursements of general overhead and administration. HSQB operating costs attributable to the PSRO program total roughly \$8.5 million. Since a large proportion of both of these costs is likely to be fixed, however, it would not be appropriate to include the full amounts as program costs.

The savings figures exclude possible Part B reimbursement savings. There are no applicable data about such savings, but as noted earlier in this chapter, they are probably small.

32. The transfer of costs to the private side occurs even if there are no changes in private utilization. It should not be confused with the so-called "Roemer effect," which refers
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Revised Estimate of PSROs Effects on Utilization. As noted earlier, CBO now estimates that PSRO concurrent review has reduced Medicare days of care by approximately 1.5 percent, compared to HCFA's estimate of 1.7 percent. Replacing the HCFA estimate with the CBO estimate reduces estimated savings by 12 percent.

Reduced Ancillary Per Diem as a Percent of Total Per Diem Reimbursement. CBO and HCFA used different assumptions about the volume of ancillary services saved when PSROs eliminate days of hospitalization. HCFA assumed that the days of care saved by PSROs are similar to the average Medicare inpatient day in terms of the amount of ancillary charges. This is probably too high, for two reasons. First, PSROs seem to affect utilization more by reducing length of stay than by preventing admissions. Since the first days of hospital stays (especially the first day) typically involve more use of ancillary services than do later days, the days eliminated by shortening length of stay will tend to have lower ancillary charges than the average day. Second, if PSROs are doing their job correctly, the patients whose discharges the PSROs are hastening should have less need for hospital services--especially ancillary services--than patients whose stays are allowed to continue.

There are no precise estimates of the extent to which ancillary cost savings are less than the average per inpatient day. For this analysis, HCFA's estimate of per diem ancillary reimbursements has been reduced by 30 percent.³³ This reduces estimated savings by 7.4 percent.

32. (Continued)

to changes in utilization resulting from changes in the number of available beds. The savings-to-cost estimates presented in this chapter, unlike those CBO has previously published, do not make any adjustment for the Roemer effect. A brief explanation of this change can be found earlier in this chapter.

33. The 30 percent figure is an assumption; the available data were not sufficient to provide a precise estimate. However, the savings-to-cost ratio is not very sensitive to this assumption, and the use of a figure substantially larger or smaller than 30 percent would not materially affect the analysis.

Adjusting the Per Diem Reimbursement Rate. Per diem reimbursements vary greatly from region to region and hospital to hospital. The HCFA report used the average per diem in those PSRO areas that were already active in 1978. This distorts the savings estimate if it is used to gauge whether a nationally implemented PSRO program (such as is presently in operation) is effective, for the areas that happened to be active in 1978 were atypically expensive. Replacing HCFA's per diem with a national per diem lowers estimated savings by 16 percent.

The result of these four adjustment factors is a savings-to-cost ratio of 0.4-to-1.³⁴

Alternative Savings-to-Cost Ratios

The savings-to-cost estimate given above compares resource savings to total program costs. The following sections provide alternative ratios based on the other combinations of types of costs and savings.

Federal Reimbursement Savings Compared to Total Program Cost. Although a comparison of federal reimbursement savings to program costs overstates the actual savings generated by the program for society as a whole, it can nonetheless be useful information. For example, the net budgetary impact of a change in PSRO funding can be calculated from the ratio of reimbursement savings to costs.

The ratio of reimbursement savings to cost for review of Medicare patients is 0.9-to-1; that is, reimbursement savings are roughly 10 percent less than total cost.³⁵ The ratio would fall to 0.75-to-1 if Medicaid were included, even if one assumed that PSROs are as effective with Medicaid as with Medicare patients.

34. Savings-to-cost ratio = HCFA estimate times the four correction factors.

$$\begin{aligned} S/C &= 1.269 (1-.55)(1-.12)(1-.074)(1-.16) \\ &= 0.4 \end{aligned}$$

35. More precisely, 0.87-to-1:

$$\begin{aligned} S/C &= 1.269 (1-.12)(1-.074)(1-.16) \\ &= .87 \end{aligned}$$

This decrease is due to the fact that over 40 percent of the Medicaid reimbursement savings would go to the states rather than to the federal government. If PSROs are totally ineffective with Medicaid patients, the reimbursement savings-to-cost ratio would fall to 0.6-to-1.

Ratios of Savings to Incremental Cost. All of the estimates discussed above, including HCFA's, compare some measure of savings to total cost. Keeping in mind the caveats described earlier in this chapter, one can estimate very roughly the ratio of savings to incremental cost. As noted above, the best available estimate is that the incremental cost of the PSRO program is roughly 50 percent of the program's total cost. Adjusting the CBO savings-to-cost ratio of 0.4-to-1 to correspond to incremental cost would raise it to 0.8-to-1.³⁶

Since the incremental cost to the federal government is higher than the overall incremental cost, a different adjustment is required to calculate the ratio of reimbursement savings to incremental cost. Considering Medicare only, the ratio of reimbursement savings to costs (0.9-to-1 when total cost is considered) rises to 1.2-to-1 if incremental cost is considered. If the Medicaid portion of the program were included also, the ratio would probably be substantially lower, perhaps in the range of 0.8-to-1 to 1.1-to-1.³⁷

Table 5 presents the range of cost estimates discussed in this section. They are arranged in accordance with the set of

36. $\frac{0.4}{0.5} = 0.8$

37. The Medicare calculation is $1.2 = .87/.7$, where .7 is the midpoint of the range of federal incremental costs described earlier.

The higher of the two figures that include Medicaid assumes that PSROs are as effective with Medicaid as with Medicare. The lower assumes that PSROs are ineffective with Medicaid. The calculations are:

$$1.1 = .75/.7.$$

$$0.8 = .59/.7.$$

TABLE 5. RANGE OF SAVINGS-TO-COST RATIOS

		Savings Considered	
		Resource Savings	Federal Reimbursement Savings
Costs Considered	Total	0.4-to-1	0.9-to-1 ^a
	Incremental	0.8-to-1	1.2-to-1 ^b

NOTE: Table figures include only Medicare portion of the program because of data limitations. See footnotes a. and b.

- a. If Medicaid were included and if PSROs were as effective with Medicaid as with Medicare, this would be 0.75-to-1. If Medicaid were included and if PSROs were ineffective with Medicaid, this would be 0.6-to-1.
- b. If Medicaid were included and if PSROs were as effective with Medicaid as with Medicare, this would be 1.1-to-1. If Medicaid were included and if PSROs were ineffective with Medicaid, this would be 0.8-to-1.

benefits (total savings vs. federal reimbursement savings) and the set of costs (total program cost vs. incremental cost) they take into account.

Long-Term versus Short-Term Savings

Long-term savings from PSRO review may be substantially larger than the short-term savings that have been the focus of discussion to this point. If PSRO-induced reductions in hospital days of care are maintained, it should be possible over the long term for hospitals to eliminate even the portion of costs that are fixed in the short term. For example, over the long term, hospitals can adjust by eliminating staff, beds, and the associated

overhead. As fixed costs are reduced, costs that have been transferred in the short term will be eliminated and resource savings will increase.

The maximum possible long-term savings would occur if all fixed costs associated with saved days were entirely eliminated. In that case, both resource and reimbursement savings would equal the entire cost of days saved, minus offsetting increases in other types of care.³⁸ This amount would be slightly larger than short-term reimbursement savings, since Medicare would no longer have to absorb some portion of the fixed costs. If this optimum were eventually reached, the resource savings would approximately equal the total cost of the program.³⁹

There are no data indicating how long it will take to eliminate an appreciable portion of fixed costs. Before the elimination process can begin, however, two things must happen. First, hospital administrators have to discern that PSROs have lowered their occupancy rates from what they otherwise would have been. This might not be apparent to them for some time, since the typically small occupancy changes caused by PSROs (which average about 0.5 percent) would be swamped by much larger seasonal and yearly

38. As noted earlier, savings resulting from PSRO review are adjusted throughout this paper (as well as in the HCFA and earlier CBO reports) by subtracting the costs of compensatory increases in ambulatory and long-term care. The same adjustment must be made in estimating maximum long-term savings and is reflected in the figures below.

39. If only incremental costs are considered, the maximum long-term savings would be about double program costs.

This figure is based on an estimate that reimbursement savings correspond to about 88.5 percent of total per diem costs (HCFA, 1979 PSRO Evaluation, p. 157). Total per diem costs are the maximum total long-term savings. Therefore:

$$\frac{\text{max. long-term savings}}{\text{program costs}} = \frac{\text{reimbursement savings}}{\text{program costs}} \cdot \frac{\text{total per diem}}{\text{reimbursement savings}}$$

$$.98 = \frac{.87}{1} \cdot \frac{1}{.885}$$

fluctuations in utilization.⁴⁰ Second, the administrators must decide that the change brought about by PSROs is reasonably permanent, so that it would be sensible to start making long-term adjustments. Once that decision had been made, fixed costs would gradually be eliminated, but there is no information on the speed at which the adjustments would take place.

Caution is required in relating long-term savings to program costs. The savings-to-cost ratios discussed here compare costs and savings from a single year of program operation. When long-term savings are considered, however, such a comparison would not be sufficient, since the program would have to operate for some time at the lower short-term savings rate in order to achieve eventually the higher, long-term savings rate. A complex discounting procedure would be needed to combine the short- and long-term savings.

40. A 1.5 percent change in Medicare utilization would roughly correspond to a 0.5 percent change in total utilization, since roughly one-third of all patient days in a typical hospital are attributable to Medicare patients.



CHAPTER III. POLICY ISSUES AND QUESTIONS FOR RESEARCH

Although evaluations of the PSRO program have consistently found that the program does have some impact on utilization, even the most optimistic estimates show it to be only marginally effective as a means of controlling costs. These findings raise a number of policy issues and point to a need for additional research in several areas.

POLICY ISSUES

Several policy issues arise in translating a savings-to-cost analysis into a decision about a program's value. In the case of the PSRO program, the most difficult issues concern the appropriate measures of the benefits produced by PSRO review. The first issue is whether the PSRO program is intended to lower budget outlays by increasing the efficiency of the total health-care system or to lower outlays by transferring costs to other parties. The second issue is whether PSRO utilization-reduction activities have "hidden" costs and benefits that are not taken into account in this analysis.

Changes in Efficiency Versus Transfer of Costs

Two distinct strategies appear frequently in attempts to control federal outlays for established health benefit programs. One approach is to limit outlays by promoting greater efficiency in the health-care industry, which reduces the cost of all health services. Increased efficiency in this context means using fewer resources to produce the same amount and quality of health-care services. Health planning, at least in theory, is an example of this approach. The second strategy aims at a reallocation or transfer of costs between the federal government and other payers. Regulations designed to reduce the Medicare share of hospital malpractice premiums are an example of this latter approach. Such a reallocation generally does not improve the efficiency of the health-care system, but as long as the measure does not require the expenditure of a significant amount of additional resources, efficiency will not be diminished.

Underlying the current debate about whether the PSRO program is saving or losing money is a disagreement about whether the program should be evaluated as an attempt to increase efficiency or solely as a means to reduce reimbursements by the federal government, regardless of effects on efficiency. The criteria used to evaluate the program would differ accordingly, but the range of savings-to-cost estimates provided in Chapter II allow one to assess the program's success by both criteria.

If the goal of the program is to reduce federal reimbursements by means of increased efficiency in the health-care system, it has not succeeded. The measure of success in that case would be the total change in resources consumed by the system. That change is shown by the ratio of resource savings to costs. Since that ratio is less than 1.0-to-1 for the PSRO program (regardless of whether total or incremental costs are considered), the net effect of the program has been to increase the system's consumption of resources somewhat—that is, it has made the system less efficient.

Evaluating PSROs as a reallocation program is more complex. A reallocation program is usually evaluated by comparing the size of the transfer to the amount of inefficiency produced (that is, to any increase in resources required to bring about the transfer). However, in the case of PSROs, the change in federal outlays (the reimbursement savings) stems not just from reallocation, but rather from a combination of reallocation, resource savings from reduced utilization, and program costs.

As a first step, the ratio of reimbursement savings to costs given in Chapter II provides an estimate of net federal outlay changes attributable to the program's operation. Depending on whether total or incremental costs are used, the program's net effect ranges from a 10 percent loss to a 20 percent savings.

The second step is to compare this estimate to the inefficiencies created, using the ratio of resource savings to costs. The inefficiency created is the net resource loss estimated by that ratio. Since the ratio is either 0.8-to-1 or 0.4-to-1 (depending on whether incremental or total costs are considered), the inefficiency amounts to 20 to 60 percent of program costs.¹

1. $1 - .8 = .2$, or 20 percent; $1 - .4 = .6$, or 60 percent.

Third, by combining these figures, one finds that the most favorable estimate (which considers only incremental costs) indicates that for every dollar in net federal outlay savings generated by the program, a dollar is added to the total resources consumed by the health-care system. (This reflects the finding that net reimbursement savings and the net resource loss are both equal to about 20 percent of program costs.) In contrast, successful reallocation programs typically generate transfers many times as large as the inefficiencies they produce. The provision in H.R. 934, as reported by the Senate Finance Committee, to eliminate the Medicare differential reimbursement rates for nursing services, for example, would have saved roughly \$200 million in fiscal year 1981 if implemented for the full fiscal year, while requiring no increase in resources consumed.

Uncounted Costs and Benefits of the PSRO Program. The small net reduction in outlays that may have been produced by the PSRO program could have costs other than the loss of efficiency noted above. Likewise, there may be benefits other than the savings accounted for in the savings-to-cost ratio. In particular, there may be both monetary and nonmonetary costs or benefits to patients and their families.

One reason for concern about possible uncounted costs is the fact that the data indicate that PSROs affect utilization primarily by shortening lengths of stay. Given the composition of the Medicare population, it is likely that many of the discharged patients still have lingering illnesses or infirmities that limit their functioning but are not severe enough in the view of the PSRO to require inpatient hospital care. Their discharge a day or more earlier as a result of PSRO action might be not only stressful to the patient and the family, but also costly in a financial sense. It might be necessary, for example, for a wage-earner to miss work for several days to be home with the discharged patient.

Uncounted benefits might also be substantial. While earlier discharge from the hospital may impose hardships for some patients and their families, others may benefit from the earlier transfer to a less restrictive and less isolating environment. Many patients would also benefit in various ways if PSROs are successful in eliminating unnecessary use of medical treatments such as surgery or x-rays.

Ideally, such uncounted costs and benefits of the program should be included with its known costs and benefits (that is, those analyzed above and in Chapter II) in determining the value

of the program. This cannot be done at present, however, since the relevant information has never been collected. In the absence of such data, a troubling possibility remains that the savings-to-cost analyses presented here provide an incomplete and inaccurate view of the program's value.

QUESTIONS FOR RESEARCH

A number of critical questions about the PSRO program remain unanswered, and several new pieces of research and evaluation would be useful to the Congress in deciding the future course of utilization review.

Descriptive Studies of PSRO Denials. As noted above, solid descriptive information on the impact of PSRO denials of admissions or continued stays is lacking. Research could usefully address questions such as:

- o What is the health status of the patients whose stays are shortened (or admissions denied) by PSROs? What are their diagnoses? What continued treatments do they need?
- o What options are available to such patients? In particular, do they have skilled nursing care available, if appropriate? Where do they end up after discharge?
- o What family and other supports are available to such patients? Do PSRO denials distinguish those living with others who can offer some care from those living alone?
- o Are some denials ignored in practice because of a lack of suitable alternative placements (such as nursing homes)?

Such questions can be answered only by a careful descriptive study of a representative sample of denials. Simple anecdotal evidence is inadequate and is too easily slanted: proponents of the program will find cases illustrating hidden benefits, and opponents will find "horror stories."

Descriptive Information on PSRO Activities. As noted in Chapter I, there is currently a lack of systematic information on what activities PSROs are actually conducting. There are no overall statistics, for example, on the extent of focusing or the prevalence of various criteria for focusing. As a preliminary step toward assessing what types of PSRO activities are most

effective, it is necessary to ascertain what activities are currently underway.

The Relative Effectiveness of Different Types of PSRO Management and Review. The June 1979 CBO report explained in detail why the data then available provided little reliable information on the relative effectiveness of different types of PSROs or methods of review. The more recent data offer no improvement in this regard. Only two questions of this sort were answered by this year's evaluation data: (1) PSROs do not seem to improve their performance appreciably as they grow older, and (2) there are large--and unexplained--regional differences in PSRO impact. In the light of the marginal performance of the program to date, more information of this sort is essential to help program managers improve the performance of many PSROs.

Important questions of this sort include:

- o What alternative review procedures are available, and how effective are they?
- o What is the impact of focused review relative to unfocused review? What degree of focusing is optimal? What are the best criteria to use in selecting cases for review?
- o What accounts for the striking regional disparities in PSRO impact?

PSRO Impact on Medicaid Utilization. Although review of Medicaid patients accounts for roughly a third of PSRO program costs, there are as yet no reliable data on the program's impact on Medicaid utilization. In the absence of such information, the data on Medicare impact have sometimes been used as an approximate measure of the program's total effectiveness. This could be misleading, for as noted in Chapter I, the program's effect on Medicaid is probably different--most likely substantially smaller--than its impact on Medicare. Additional research on the program's impact on Medicaid is needed to assess the effectiveness of the entire PSRO program.

APPENDIXES

APPENDIX A. EXECUTIVE SUMMARY OF THE JUNE 1979 CBO REPORT, "THE EFFECTS OF PSROs ON HEALTH CARE COSTS: CURRENT FINDINGS AND FUTURE EVALUATIONS"

The Social Security Amendments of 1972 established the Professional Standards Review Organization (PSRO) program in order to "promote the effective, efficient, and economical delivery of health care services of proper quality for which payment may be made under the Act." The PSRO program attempts to meet this goal by means of a peer review system that is funded by the U.S. Department of Health, Education, and Welfare (HEW). While the goals of the program are broad enough to include both reduction of expenditures and assurance of quality, the primary emphasis of the program has been to reduce utilization of--and thereby expenditures for--short-stay hospital care by means of "concurrent review." Typically, PSRO concurrent review consists of examining hospital admissions to certify that, from a medical standpoint, they are appropriate and reassessing each case periodically to determine whether continued inpatient care is warranted.

Review and reanalysis of the research on the effectiveness of PSROs indicate that concurrent review is reducing the number of days of hospital care of Medicare enrollees by about 2 percent. This estimate has to be viewed with caution, however. Most extant evaluation studies are too flawed to be reliable, and furthermore, they yield inconsistent evidence. Even the best research available--a generally sound study conducted by HEW's Health Care Financing Administration (HCFA), on which the 2 percent estimate is based--also suffers from some important weaknesses.

Because of the lack of relevant data, it cannot be assumed that PSROs are equally effective in reducing utilization by other federal beneficiaries (primarily Medicaid patients) whose care is subject to PSRO review. Similarly, it is not clear what effects PSRO review would have on other groups (for example, veterans and private patients) if the program's authority were extended to them.

Although PSROs seem to be effective in reducing Medicare utilization, it is doubtful that they produce a net savings. The recent HCFA analysis concluded that the monetary benefits of the Medicare portion of the PSRO program have been about 10 percent

greater than its costs. That analysis implies an extremely small net savings relative to expenditures for services that are currently being reviewed by PSROs (less than 0.1 percent of relevant Medicare reimbursements). A CBO reanalysis of the data revealed no net savings at all; CBO has concluded that the best estimate is that the savings generated by the program are about 30 percent less than program costs. Both the CBO and HCFA estimates, however, rest on controversial assumptions and are open to considerable error.

A number of factors, including budgetary constraints, current concern with the containment of health-care costs, and continuing changes in the PSRO program, suggest that further evaluation of the effectiveness and cost-effectiveness of PSROs is needed. Moreover, the inconclusiveness of much of the existing research on PSROs indicates the importance of improving the quality of evaluations of the program. To some degree, quality can be increased by improving the research methods employed. However, the reliability of even methodologically sound evaluations--for example, the recent HCFA evaluation, which is for the most part a careful and well-designed study--have been limited by the way the program itself has been implemented.

Unless changes are made soon in both implementation and evaluation, future evaluations of the program will continue to be unreliable--often to such a degree as to be useless in formulating policy. This problem extends both to new PSRO activities (for example, review of long-term care) and to refinements of existing activities (such as focusing review on certain diagnoses, providers, practitioners, or patient groups that offer the greatest potential for a PSRO effect).

The most important improvement in the evaluation of PSROs would be a more careful use of comparison groups. When the effects of a certain component of the PSRO program are to be evaluated, that component must be implemented only in some areas (the "treatment" group), while other selected areas (the "comparison" group) are left without it. If the treatment and comparison areas are initially similar in all other respects, comparing them after the program is underway reveals whether seeming "effects" of the program are actually caused by other factors. For example, recent years have shown a general trend toward a shorter average length of stay for hospitalized patients; use of comparison groups would avoid mistaking this trend, which began before the existence of PSROs, for an "effect" of the PSRO program. On the other hand, comparisons between areas with and without PSROs can be seriously

misleading if the treatment and comparison areas were not equivalent (or nearly so) before the program. For example, if the program were implemented in areas already experiencing a decline in average length of stay, and the comparison areas were those in which average length of stay was stable, the comparison would show a spurious "effect" of PSROs on length of stay.

The way in which the PSRO program has been implemented has hindered reliable evaluation by preventing the creation of an appropriate comparison group. Ideally, the treatment and comparison areas should be chosen randomly; as a second-best alternative, they could be selected to be alike in as many respects as possible. To date, however, the implementation of the PSRO program has relied on "self-selection": that is, areas have chosen on their own initiative whether or not to participate. Those that chose to participate became the treatment group, while those that chose not to participate became the comparison group. Self-selection virtually guarantees that the treatment and comparison groups will be dissimilar in many respects--often in ways that will cloud evaluation of the program.

Depending on what specific component of the program is involved, changing the manner of implementation to permit the use of good comparison areas might require legislative as well as HEW initiative. For example, several PSROs are currently pilot testing a new method of concurrent review that makes use of information on severity of illness and intensity of medical services as well as broad diagnostic categories. In contrast, the more traditional form of concurrent review is built around regional, diagnosis-specific norms for length of stay. The new method has received considerable attention as potentially cheaper and more effective than the traditional method. To test the new method reliably, one would randomly assign some PSROs to use it, while other areas would be left to use the old methods. Since the current statute gives individual PSROs the authority to choose their own criteria for review, however, HCFA would be unable to assign PSROs to the new system without legislative initiative.

Other improvements in the evaluation of the program could be made entirely on agency initiative. Multi-site evaluations should be stressed, and less emphasis should be placed on evaluations of individual PSROs. The measures of utilization employed should be comprehensive and should relate clearly to health-care costs. When feasible, utilization of health-care resources should be measured repeatedly over a considerable time span before the program is implemented; this allows one to assess pre-existing

trends and clarify initial differences between the irrelevant patterns for PSRO effects. A few of the best evaluations of PSROs have incorporated some of these improvements, but further improvement is still greatly needed.

Reliable assessments of the effects of a given PSRO program component are often feasible only at early stages of that component's implementation. As implementation continues and the number of areas with that component increases, it becomes increasingly difficult--and eventually impossible--to create a reasonable comparison group. For that reason, if current or pending changes in the PSRO program are to provide reliable evaluations that are useful in formulating future policy, improvements of the sort discussed here must be made in the near future.

APPENDIX B. THE REGRESSION MODEL

A number of regression models were used in the analysis. All were variations on the primary model described here, which is the exact model used to estimate the impact of the PSRO program on hospital utilization.

The primary model was a multiple regression model with PSRO areas as the units of observation. The dependent variable was Medicare days of care per 1,000 enrollees. The independent variables were as follows:

- o Baseline utilization rate (1974 Medicare-paid days of care per 1,000 Medicare enrollees);
- o Census region (3 dummy variables for 4 regions);
- o Proportion of total population age 65 or over (1974 to 1976 change);
- o Short-stay hospital beds per 1,000 population (1974 to 1976 change);
- o Population per square mile (1976);
- o Proportion of total hospital days accounted for by Medicare enrollees;
- o Physicians per 1,000 population (1974 to 1976 change);
- o Hospital occupancy rate (1976);
- o Proportion of families with incomes under \$5,000;
- o Number of Medicare-certified long-term care beds per 1,000 Medicare beneficiaries (1978);
- o Number of beds in teaching hospitals per 100 total short-stay beds;
- o Hospital rate-setting commission (present versus absent);

- o PSRO "longevity" (months of PSRO review; zero for inactive); and
- o PSRO by region interactions.

The regional dummies and PSRO by region interactions were of course excluded in all within-region regression runs. All other two-way interactions with PSRO longevity were excluded because of their nonsignificance as a set.

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