

devise its own criteria to use in that review.⁸ PSROs are advised by State Professional Standards Review Councils (in states with three or more PSROs) and Advisory Groups composed of nonphysician health-care practitioners and representatives of health facilities. In addition, the Secretary of HHS is advised by a National Professional Standards Review Council consisting of physicians of recognized standing in the appraisal of medical practice. The National Council also provides technical assistance and information to PSROs and develops regional standards to be used by the PSROs.

All PSRO activities are federally financed even though they are largely locally planned and administered. PSROs are financed by both general revenues and the Hospital Insurance Trust Fund, reflecting their responsibility to review both Medicaid patients (whose care is funded by direct appropriation) and Medicare patients (whose care is financed through the Trust Fund).

Within guidelines established by the law, PSROs have some flexibility in determining how to review short-term hospital inpatient services. All PSROs, however, have adopted a plan suggested by HHS. This plan calls for three principal types of review activity:

- o Concurrent review,
- o Medical-care evaluations, and
- o Profile analysis.⁹

These activities are described in the remaining portion of this chapter.

8. In practice, most PSRO standards are based not on purely local criteria but on the American Medical Association "criteria set" and the Professional Activity Study regional length-of-stay norms. See Health Services Administration, Office of Planning, Evaluation, and Legislation (OPEL), PSRO: An Initial Evaluation of the Professional Standards Review Organization (February 1978) Vol. I, p. 4.

9. OPEL, PSRO, Vol I. p. 49ff.

Concurrent Review

The activity that has been most fully implemented, and the one that is the primary focus of PSRO activities at present, is concurrent review. Concurrent review has two components: review at admission and periodic re-reviews (continued-stay reviews). Admission review, which generally takes place within 24 hours of a patient's admission, entails certifying that the admission is justified and setting a target date for the first continued-stay review.¹⁰ Continued-stay reviews are conducted to determine the necessity of continued inpatient care. At both stages, concurrent review focuses primarily on whether the hospital is the appropriate setting for care. Assurance of quality is not an explicit aim of concurrent review, but quality may be affected by changes in utilization recommended by the PSRO reviewers.

PSROs carry out concurrent review in a variety of ways. Generally, initial screening is conducted by nonphysician "review coordinators." In many instances these are nurses, but they may also be social workers or other types of personnel. Since only physicians are empowered to reject an admission or a continuation of stay, questionable cases are referred to a physician advisor. Denials--that is, determinations that admission or continued stays are inappropriate--are communicated to patients and their attending physicians. Patients, providers (hospitals), and practitioners (physicians) have the right to appeal at the local, state, and national levels.

The direct effect of a PSRO denial is that, after a short grace period, reimbursement by Medicaid or Medicare for continued hospital care is prohibited.¹¹ PSROs can also recommend to HHS that stronger sanctions be imposed on providers and practitioners. Under recently promulgated regulations, PSROs can recommend that providers or practitioners be excluded from the

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10. In a few exceptional cases, pre-admission review is substituted for the normal post-admission review.
 11. At present, the statute (P.L. 95-142) mandates a single day's grace for Medicare patients and gives the PSRO the option of allowing up to two additional days. Medicaid patients, on the other hand, are not allowed any grace days in some states.

Medicare and Medicaid programs or that fines of up to \$5,000 be levied to recoup reimbursement for inappropriate care.¹²

The persons actually carrying out concurrent review may be either hospital employees or members of the PSRO's own staff. The law requires that a PSRO delegate responsibility for review to hospitals capable of performing it. In June 1979, 78 percent of all hospitals under review were performing review themselves under contract from local PSROs.¹³

At this time, it is estimated that less than half of Medicare and Medicaid patients admitted to hospitals under PSRO review actually undergo concurrent review. This stands in contrast to the first years of the program--including 1978, when the data analyzed here were collected--when all such patients were reviewed. As noted earlier, the PSRO budget has not kept pace with the program's expansion since 1978, and the program has been under increasing financial pressure. As a result, full concurrent review of all cases became financially infeasible for most PSROs. One response was to institute "focused review," a system in which only some cases are actually reviewed. The ideal focusing system would select for review those types of cases where overutilization has been most severe and where the impact of review would be expected to be greatest.

As focusing has progressed, it has become increasingly unclear what review activities are actually being conducted. There are no firm figures, for example, on the percentage of patients in active PSRO areas whose cases are actually reviewed. Figures ranging from 20 to 50 percent have been offered by different PSRO and HCFA officials. There are no data on the criteria used to focus; for example, PSROs could select cases to review on the basis of diagnosis, age, or the physician or hospital involved

12. These regulations (42 CFR Parts 455 and 474), promulgated on February 20, 1980, implemented for the first time the sanction authority conferred by the PSRO statute (specifically, Section 1160). Previously, PSROs had made use of somewhat more limited authority to recommend exclusion under section 1862(d) of the Medicare title.

13. HCFA, PSRO 1979 Evaluation, p. 156.

in treatment. Some PSROs have abandoned concurrent review entirely in some hospitals, replacing it with retrospective monitoring of utilization.

Medical-Care Evaluations

The second type of activity conducted by PSROs is medical-care evaluations, which are retrospective studies of medical-care practices in a particular area. They are designed to uncover poor quality and ineffective administration. Results of medical-care evaluation studies may be used to make administrative changes to correct deficiencies, set standards for concurrent review, and focus concurrent review activities.

Profile Analysis

The least developed activity is profile analysis. In this activity, statistical analyses of large numbers of PSRO-reviewed episodes are used to discern patterns of care. The object is to identify areas of health care in which utilization practices may be inappropriate in order to focus concurrent review activities and to suggest topics for medical-care evaluation studies.

CHAPTER II. THE EFFECT OF PSROs ON UTILIZATION AND COSTS

The analysis in this report suggests that a fully implemented program of unfocused PSRO review would reduce Medicare days of hospital care by 1.5 percent.¹ The impact of the current PSRO system, which is almost completely implemented (about 95 percent of all PSRO areas have active PSROs) but which is so focused that a majority of cases are not reviewed, is probably less than 1.5 percent. As yet, however, there are no data indicating how much less. Information about the program's effect on Medicaid utilization is also still lacking.

Although the program has had some success in curbing Medicare utilization, it has not been successful in lowering costs. The gross savings to society as a whole resulting from PSRO-generated changes in Medicare use are about 60 percent less than the total cost of relevant PSRO activities. A somewhat more favorable estimate is obtained if only government savings are considered, rather than total societal savings. Similarly, considering only the "incremental" cost of replacing pre-PSRO review with PSRO review, rather than the total cost of the latter, produces a more favorable estimate. Even the most positive estimates, however, show gross savings that are only slightly in excess of relevant program costs. The most favorable estimate reported below--a comparison of savings to the government with incremental program costs--indicates a net budgetary savings equal to 20 percent of relevant PSRO program costs. This savings amounted to about \$18 million in fiscal year 1980--less than one-tenth of one percent of Medicare Part A (hospital insurance) outlays.

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1. The comparable estimate in the earlier CBO study was a 2.0 percent decline in Medicare utilization. The somewhat less optimistic estimates in the present report reflect refinements in the analytical methods used rather than a deterioration in the program's performance. When the newer methods were applied to the 1977 data (used in the earlier report), the estimated program effect on utilization was not substantially different from the 1.5 percent figure yielded by the 1978 data.

MEASURING THE COSTS AND EFFECTS OF PSRO REVIEW

The costs of PSROs and the savings they generate can be tabulated in many different ways, and the existing assessments of the program confront the reader with a thicket of confusing terminology. This section describes the issues involved in accounting for these costs and savings and presents a standard terminology that is used throughout this report.

Total Versus Incremental Costs

The initiation of PSRO review in a hospital replaces one form of utilization review with another. Hospitals participating in the Medicare and Medicaid programs have been required to conduct utilization reviews since the 1960s, but those review activities are discontinued when PSRO review is instituted. In this analysis, "total cost" refers to all the outlays required to operate the utilization-control activities of the PSRO program (but not the cost of the entire program), while "incremental cost" refers only to the increase in outlays required to replace pre-existing utilization review with PSRO review.

Total Versus Incremental Benefits

Precisely the same distinction is applied to the benefits of the PSRO program that are analyzed here, that is, changes in Medicare utilization and the concomitant savings. Since PSRO review has always been a replacement for a pre-existing system of review, however, it has never been possible to assess the impact of instituting PSRO review in an area with no pre-existing review. Rather, all evaluations of the program have been limited to assessing the incremental impact of PSRO review on utilization, above and beyond whatever effects the pre-existing review system had.

Since total benefits of the program have never been assessed directly, the terms "benefits" and "savings" are always used to mean incremental benefits and incremental savings unless explicitly noted otherwise.²

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2. Savings resulting from PSRO review are adjusted throughout this analysis (as well as in the HCFA and earlier CBO evaluations) by subtracting the costs of compensatory increases in ambulatory and long-term care. Patients whose
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Resource Savings, Reimbursement Savings, and Transferred Costs

"Resource savings" refers to the change in the total societal expenditure of resources for health care stemming from PSRO-induced changes in utilization. It includes expenditures by both government and private parties. "Reimbursement savings" refers to changes in government outlays (usually federal) resulting from such changes.

The difference between resource savings and reimbursement savings arises because, in the short term, roughly 60 percent of the costs of a day of hospitalization are fixed and 40 percent are variable. That is, if utilization decreases by a given amount (say 10 percent), costs will go down only 40 percent as much (4 percent). The remaining 60 percent of the costs of unused days remain and must be absorbed by someone.³ If the decline in utilization is restricted to Medicare patients, the Medicare reimbursement formula reapportions the 60 percent of costs that are fixed among both Medicare and non-Medicare patients, with the latter group bearing most of the burden. In other words, some of the costs associated with days of care formerly consumed by Medicare patients are transferred to private patients and will generally appear as higher charges to them. (Conversely, if utilization declines among private patients, some fixed costs are transferred to Medicare patients.)

These transferred costs are the difference between reimbursement savings and resource savings. While this transfer does not decrease the total expenditure of resources, it does reduce federal Medicare reimbursement payments.

The June 1979 CBO evaluation referred to resource savings simply as "savings." In contrast, the Health Care Finance

2. (Continued)

hospitalizations are eliminated or shortened by PSROs are assumed to obtain in another setting a portion of the services they would have obtained in the hospital. The cost of doing so is subtracted from the value of days saved to obtain gross savings.

3. Over the long term, fixed costs become variable. That is, as staffing levels change, debts are retired, and so on, costs that are fixed in the short term will be eliminated.

Administration (HCFA) evaluations have generally used the term "savings" to refer to reimbursement savings.

Net Versus Gross Savings

Both resource and reimbursement savings can be either gross or net. Gross savings are simply changes in resources or in reimbursements expended. Net savings are gross savings minus program costs.

Confusion sometimes arises when translating a savings-to-cost (or benefit/cost) ratio into gross and net savings. All such figures, however, are ratios of gross savings to program costs. For example, a savings-to-cost ratio of 1.2-to-1 means that gross savings amount to \$1.20 for every \$1.00 of costs, which corresponds to net savings of \$0.20.

Calculating a Ratio of Savings-to-Cost

Savings-to-cost ratios can be calculated with any combination of reimbursement or resource savings and total or incremental costs. All four possible combinations have been used in various assessments of the program, and there has been considerable discussion about which is the most appropriate. Since different combinations of savings and costs can be relevant, depending on the policy question being addressed, this chapter presents alternative savings-to-cost estimates based on all combinations of resource and reimbursement savings and total and incremental costs.⁴ The merits and disadvantages of the various approaches are also discussed.

THE EFFECT OF PSROs ON MEDICARE UTILIZATION

The impact of PSROs on Medicare utilization in 1978 (the year in which the data used in this report were collected) was assessed

4. The 1979 CBO report emphasized total costs and resource savings. In contrast, the 1978 and 1979 HCFA evaluations of the program (HCFA, Professional Standards Review Organization 1978 Program Evaluation, and HCFA, 1979 PSRO Program Evaluation) focused on total costs and reimbursement savings. Others in HCFA have suggested that incremental costs are the appropriate measure.

by methods similar to those described in detail in the June 1979 report.⁵ "Inactive" PSRO areas, in which PSRO review had not yet been started, again served as a comparison group. Of the 93 comparison areas in the June 1979 report, 81 remained inactive as of July 1, 1978, and were used as comparison areas in the present report.⁶ Days of hospital care per 1,000 Medicare enrollees in 1978 in both active PSRO and comparison areas were adjusted for the effects of 1974 (pre-PSRO) utilization rates and eleven other variables (such as the supply of hospital beds and the number of physicians per 1,000 population; see Appendix B for details). The difference between these adjusted 1978 utilization rates in active and comparison areas provided the measure of PSRO impact.

Although this analysis does suggest that PSRO review reduced Medicare utilization slightly, the evidence is somewhat tenuous. This year's analysis, like last year's, is subject to a major qualification (described in detail in the earlier CBO report on pages 17 to 21). The separation of PSRO areas into active and inactive groups was not a random process but was based on the initiatives of local physician organizations. Accordingly, the active PSROs may have differed from the comparison areas in ways not adequately handled in the analysis.

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5. This analysis reflects three technical changes made since the June 1979 report:
 - o Minor changes were made in the specification of the regression model;
 - o Effects were analyzed separately within each of four Census regions and then pooled across regions; and
 - o Interaction terms (except for PSRO by region, where appropriate) were excluded, since they were nonsignificant and had little explanatory power.
 6. The data were also analyzed using as comparison areas only those PSROs that remained inactive through all of calendar year 1978. The results were not appreciably different from those reported here.

In addition to these major qualifications, two further caveats must be stressed. First, in the more recent data, the PSRO impact fails to meet conventional standards of statistical significance and only barely reaches the range generally called "marginal." In concrete terms, even if PSROs had no real effect, one would observe an apparent "effect" as large as, or larger than, that found in this year's analysis in roughly one out of every ten analyses just because of chance variation in the data. Second, the data show patterns that are difficult to explain and throw the basic findings into some doubt. The days of hospitalization saved do not increase as PSROs extend their review activities to cover a larger proportion of hospitals in their areas. Moreover, there are striking but largely unexplained regional variations in the effects of PSRO review.

Details of the analysis of the 1978 data (including the qualifications described above) and some comparisons with 1977 program performance are described below.

The Effect of Additional Experience on PSRO Effectiveness

Over the period of time for which data are available, PSROs on average did not become appreciably more effective as they gained experience. (There are as yet no data with which to assess changes in the program's performance since 1978). The June 1979 report noted that as of 1977, "There [was] no evidence that PSROs grow more effective with time (within the range of zero to three years of experience).⁷ The more recent data bear out this conclusion. They fail to show any appreciable improvement in the program's performance following the additional year of program activity.⁸ This lack of improvement cannot be attributed to the addition of 12 new PSROs between 1977 and 1978. Even with the new PSROs included, the average duration of PSRO activity in the active areas increased by 61 percent, from 15.5 months in 1977 to 24.9 months in 1978. Moreover, excluding the new PSROs from the analysis does not materially affect the conclusion that the program's impact has not changed.

7. CBO, The Effect of PSROs, p. 31.

8. The change in the program's impact was assessed by reanalyzing the 1977 data using the same methods used with the 1978 data.

The lack of improvement in PSRO performance is particularly puzzling because, as PSROs have gained experience, they have extended their activities to cover a larger proportion of the hospitals in their regions. Unless PSRO review is ineffective in the hospitals where review is started later, or unless the impact of review in the hospitals where review was first instituted deteriorates as PSROs expand their activities, extending review to additional hospitals should increase substantially the number of days of hospitalization saved in each PSRO area.

Regional Differences in PSRO Impact

The 1979 CBO report noted that the 1977 data showed striking regional differences in the program's impact. The 1978 data show similar patterns, even after adjusting for the effect of hospital rate-setting commissions in some areas. The utilization changes associated with PSRO review ranged from a large reduction in the Northeast to a smaller but still appreciable increase in the South. The figures are shown in Table 2.

TABLE 2. PSRO IMPACT BY REGION, 1978

Region	Percent Change in Hospital Days ^a	Statistically Significant ^b
Northeast	-4.8	Yes
North Central	-2.1	Yes
West	-1.4	No
South	+1.9 ^c	No

- a. Per 1,000 Medicare enrollees.
- b. p less than .05.
- c. The 1980 HCFA evaluation reported a 3.7 percent increase in the South. The HCFA figure (for that region only) is not adjusted for the effects of hospital rate-setting commissions.

These regional differences are difficult to interpret. As noted in the earlier CBO report, geographic region is important not in itself, but rather as a proxy for variables that are not included in the model. Because the PSRO impact varies so markedly from region to region, it is important to know what those omitted variables are. In addition to the variables already in the model (see Appendix B), what characteristics of the North Central region, or of PSROs in that region, account for a program effect less than half of that in the Northeast? The negative impact of the program in the South (which is larger than the average beneficial impact in the nation as a whole) is even more difficult to explain.

If these regional differences in program impact do not reflect some real but unmeasured differences between regions or their PSROs, they must be due to chance variations in the data or to selection bias.⁹ As explained in the next section, the estimate of the impact of a nationally implemented program will differ, depending on which of these explanations is correct.

Estimating the Impact of a Nationally Implemented PSRO Program

As noted in Chapter I, implementation of PSRO review of hospital utilization is nearing completion. Almost all PSRO areas have active PSROs at present. In order to make this evaluation of the 1978 data germane to the decisions now before the Congress, it is necessary to make the results as applicable as possible to the present, nearly fully implemented program.

Extrapolating to a Fully Implemented Program in 1978. In principle it is straightforward to estimate what the impact of a fully implemented program would have been in 1978. The analytical procedure used by both CBO and HCFA is designed to do precisely that. It yields an estimated effect of an "average" PSRO, after adjusting for differences between the active and inactive areas.

9. That is, the areas where physicians' organizations first established PSROs may have differed from region to region. For example, perhaps some of the first Southern PSROs were set up in areas where utilization was rising--quite apart from any effects of the PSROs themselves--while some of the first PSROs in the North were established in areas where utilization was declining (relative to comparison areas). For more discussion of selection bias, see CBO, The Effects of PSROs, pp. 17-21.

The percent change in utilization caused by an average PSRO--adjusted in that fashion--is equivalent to an estimate of the percent change brought about by a fully implemented program in 1978.¹⁰

An ambiguity arises, however, because of the pattern of regional differences discussed in the preceding section. As shown in Table 3, the four regions differed in 1978 not only in the effectiveness of their PSRO programs, but also in the degree of program implementation (that is, the percentage of PSRO areas in each region that had active PSROs). In the Northeast, where the average PSRO was far more effective than in any other region, very few PSRO areas remained inactive, whereas in the South, where the average PSRO seemed to increase utilization, the program remained

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10. One important qualification is needed: it is possible that the program would have a different impact when it started in areas that were inactive in 1978 than it had had in those that were already active at that time. There is, however, no persuasive evidence that such a difference would occur.

To the extent that differences between PSROs and their contexts were measured and included in the analysis, the analysis provided a test of whether one should expect different program effects in different types of PSROs or areas. (Technically, this was tested by a set of treatment-by-covariate interactions.) In general, the analysis yielded little evidence of predictable differences in program impact. It is possible, however, that some characteristics of PSROs or their settings that were not included in the analysis might have indicated such a differential program impact. Nonetheless, in the absence of information about such a characteristic, the estimate of the program's impact provided by this analysis remains the best available estimate of the effect of a fully implemented PSRO program.

The omitted variable would have to have no appreciable effect on the estimated level of utilization in the absence of a PSRO, but a sizable effect on the estimate of the program's effect in different PSRO areas. In technical terms, this corresponds to a near-zero main effect but a sizable treatment-by-omitted-variable interaction. If the main effect were not near zero, the estimated program effect would be biased; that is, the omission of the variable in question would threaten internal as well as external validity.

TABLE 3. REGIONAL DIFFERENCES IN PROGRAM IMPACT AND DEGREE OF PROGRAM IMPLEMENTATION, 1978

Region	Percent Change in Hospital Days ^a	Percent Implementation ^b
Northeast	-4.8%	83.3
North Central	-2.1	59.9
West	-1.4	75.9
South	+1.9	44.4

a. Per 1,000 Medicare enrollees. This figure is equivalent to the impact of the average PSRO in each region and is unaffected by the degree of implementation as measured here.

b. Percent of Medicare enrollees residing in active PSRO areas, July 1, 1978.

less than half implemented. Implementation was also less complete in the North Central and Western regions. Thus the PSROs that have become active since these data were collected have been drawn disproportionately from areas where the effect of the program has been relatively weak or even negative.

What should be assumed about the effectiveness of these new PSROs? If the regional discrepancies in observed program impact are caused by some real underlying differences between the regions or their PSROs, the best estimate for any new PSRO is the observed average effect in that region. If, for example, there is some real difference between the South and the Northeast that accounts for the discrepant program impacts in the two regions, then the best estimate of the expected impact of a new PSRO in the Northeast is the 4.8 percent decrease already observed in that region, while a new PSRO in the South would be expected to produce a 1.9 percent increase in utilization. If, on the other hand, the regional disparities in program impact are caused by selection bias and chance factors, the best estimate of the expected impact

of a new PSRO--regardless of the region it is in--is the average observed effect in the nation as a whole.¹¹

Because of the sizable magnitude and statistical significance of the observed regional disparities in program impact, CBO assumed that they reflect real underlying regional differences, and the estimated 1.5 percent decrease in Medicare utilization therefore assumes that those regional discrepancies in program impact have persisted. Given the lack of any convincing explanation of what the relevant underlying regional differences might be, however, a strong argument can be made for assuming that the disparities reflect only selection bias or chance factors. If that were the case, the best estimate of the impact of a fully implemented program would be the observed national average effect, based on a single national regression analysis. Using this alternative assumption and method, the overall estimated impact of the program would be smaller--roughly a 1.2 percent decrease in utilization. (All of the savings-to-cost ratios reported below would also be reduced by about 17 percent.)¹²

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11. An example will help to make this statistical point clearer. Suppose that two individuals--one aged 20 and the other aged 40--apply for identical term life insurance policies. The insurance company responds that the older person must pay more, since their experience has been that 40-year-olds are more likely to die over the course of the contract than are 20-year-olds. Few would contest their claim, since it is apparent that their experience reflects real age differences in mortality rates. But suppose that two individuals who are both 40 years old apply, and the company wants one to pay a higher premium based on the color of his house. Their experience has been that people in blue houses have higher mortality rates than people in yellow houses. Most consumers would argue that the company's experience with house colors was chance, that no real connection exists between house color and mortality, and that both should pay the same rate. The question is whether the observed regional differences in PSRO impact are analogous to age or to house color.
 12. Unlike the figures given above, the estimate of impact provided in the most recent HCFA evaluation (a 1.7 percent decrease in utilization) was designed to measure the effect of the program at the degree of implementation that had been reached in 1978. It would not be appropriate to use the 1.7
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Generalizing from 1978 to 1980. The technique described above estimates the program's impact in 1978 and adjusts that estimate to account for increased program implementation between 1978 and 1980. Because of a lack of data, however, it is not feasible to adjust the estimates to take into account changes in the program since 1978 other than increased implementation.

Foremost among these other changes has been the focusing of review. Since focusing had not begun in 1978, these data cannot provide any indication of its effect. Focusing has probably decreased the effectiveness of review, but the extent of the change is unknown.¹³ In particular, it is not known whether focusing reduces effectiveness more or less than it reduces costs.

12. (Continued)

figure as an estimate of the impact of a fully implemented program, regardless of the assumptions made about the nature of the regional disparities in impact.

13. Focused review is likely to be as effective as unfocused review only if PSROs are 100 percent effective in selecting the right cases to review—that is, excluding from review only cases in which review would be entirely superfluous. It would be difficult to approach this optimum even with perfect information, and it is clear that many PSROs were compelled to decide how to focus without the advantage of adequate information. (A recent statement by Dr. Mark Chassin, Acting Deputy Director of the Office of Professional Standards Review Organizations, noted this. "The process of focusing should involve first the review of some set of information . . . that identifies current problem areas Unfortunately, most PSROs did not have the luxury of focusing in this way. Rather, they were forced by budgeting necessity to make arbitrary decisions in designing their focusing systems We have a considerable distance to travel before PSROs . . . make the fullest possible use of our data. At this point, let me say that observing how far we have to go should not obscure how far we have come." [Statement before the National Professional Standards Review Council, March 10, 1980.]

Moreover, a highly focused system might lose its deterrent effect, since the odds that any one case would be reviewed
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The Impact of PSROs on Number of Admissions and Average Length of Stay

PSROs can affect hospital use in two ways: by preventing admissions or by shortening lengths of stay. The 1978 data suggest that roughly 90 percent of their effect stems from the latter.¹⁴ This finding is important in estimating the savings generated by the program. Since consumption of ancillary services is generally highest at the beginning of a hospital stay, days saved at the ends of stays will generally be less costly than days saved through the elimination of admissions. Moreover, to the extent that PSROs save days by shortening stays, they should have relatively little impact on Medicare Part B reimbursements, since patients at the end of their stays tend to use fewer Part B services (such as surgery).¹⁵

The Impact of PSROs on Medicaid Utilization

This evaluation parallels the earlier CBO and HCFA studies in that the benefits and costs described are those related to the review of Medicare utilization only. These costs comprise about 68 percent of the program's expenditures for utilization reduction. This limitation reflects the absence of any reliable data

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13. (Continued)
would be low, and many providers and practitioners would know that they have already been "focused out" and would not be reviewed.
 14. To address this issue, the data were reanalyzed to assess the program's impact on average length of stay. PSRO review was found to be associated with a small (roughly 1 percent) reduction in length of stay. This reduction, multiplied by the admissions rate, gives the change in days of care attributable to reduction in lengths of stay. This change, divided by the total change in days of care attributable to PSRO review, provides an estimate of the proportion of PSRO impact that comes about through reductions in lengths of stay.
 15. Part B--or Supplementary Medical Insurance--pays for physicians' services in and out of hospitals, as well as a variety of outpatient and out-of-hospital medical services.

on the effects of PSRO review on the rate of hospital use by Medicaid patients.

In the absence of such data, it is probably not safe to assume that PSROs have equivalent effects on Medicaid utilization, since the characteristics of the two patient populations are so different.¹⁶ The Medicare population consists entirely of elderly or disabled individuals, many of whom have long-term illnesses or chronic infirmities. Among many such patients, it is often unclear whether hospitalization is required or lower-intensity care (for example, in a skilled nursing facility or at home) might suffice. Furthermore, in the case of infirm Medicare patients, there is often pressure to extend hospitalization if their families have no alternative means of providing continued post-hospital care. In contrast, with the exception of those individuals who receive both Medicare and Medicaid,¹⁷ the Medicaid population consists primarily of children and young women. They are less frequently hospitalized, less likely to have chronic illnesses, and, if hospitalized, have far shorter average lengths of stay than Medicare patients. Moreover, a sizable proportion of hospital admissions in those age groups are for conditions--childbirth is a good example--for which the appropriateness of hospitalization is rarely in doubt. Since Medicaid hospitalizations are less likely to entail extended stays of arguable medical necessity, it is likely that there is less room for PSRO impact on Medicaid admissions.¹⁸

Do PSRO Activities Affect Utilization by Private Patients?

PSROs could affect private utilization in two different ways even if their review activities were restricted entirely to Medicare and Medicaid patients. PSROs might increase private utilization by means of the "Roemer effect," which is the tendency for

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16. For the same general reason, it is risky to extrapolate PSRO performance to review of nonfederal patients.
 17. The hospital utilization of individuals receiving both Medicare and Medicaid is included in the Medicare data analyzed in this report.
 18. Relevant to this point is the finding in this year's analysis that, among Medicare patients, roughly 90 percent of PSROs' impact in hospital use was through shortened length of stay rather than reduced admission rates.

empty hospital beds to generate demand for their use.¹⁹ That is, beds emptied by PSROs would tend to be filled by additional days of care for private patients. Conversely, PSROs might decrease private utilization through so-called "spillover effects." A spillover would occur if the educational aspects of the PSRO program lead physicians to be more cost-conscious in treating private patients.

The present analysis makes no adjustment for either spillovers or the Roemer effect. In contrast, the June 1979 CBO report lowered the program's savings-to-cost ratio to account for the Roemer effect. Recent research by HCFA, however, while not conclusive, suggests that, on balance, neither Roemer nor spillover effects of any substance have been caused by the PSRO program. If such effects are present, they apparently cancel each other out.

THE EFFECTS OF PSROs ON HEALTH-CARE COSTS

In order to translate the utilization effects described above into monetary savings, it is necessary to decide on the appropriate measure of program cost (total or incremental), find the monetary value of the days of hospitalization that have been saved, and finally compare the savings to the costs.

This section discusses several aspects of the analysis of savings and costs. The arguments in favor of using both total and incremental costs are discussed, and an estimate of incremental cost is presented. Using the benefit-cost ratio in the most recent HCFA evaluation of the program as a starting point, a range of savings-to-cost ratios--using all combinations of total and incremental costs and resource and reimbursement savings--are calculated. Finally, long-term savings are contrasted with short-term savings.

The Appropriateness of Incremental and Total Cost Measures

Whether total or incremental cost is the appropriate measure depends on the options being considered. If the Congress is considering abolishing the PSRO program without removing the

19. The Roemer effect is explained in detail in CBO, The Effect of PSROs, pp. 36-37.

utilization review requirements in the Medicare and Medicaid statutes, incremental cost would be germane, because pre-PSRO utilization review would again be required. If the Congress is considering eliminating the utilization review requirements as well, total cost would be relevant. If the Congress is considering only changes in the level of PSRO funding, either could be appropriate, depending on whether the number of hospitals under PSRO review would change.

An additional consideration is that the cost and benefit measures used in any instance should ideally be consistent with each other. That is, the program's total effect on utilization should be compared to the program's total cost, while its incremental effect would ideally be compared to its incremental cost.

Unfortunately, a lack of data makes it difficult to draw these ideal comparisons with much confidence. As noted earlier, the available information on the program's effects assesses only its incremental impact, over and above pre-PSRO review. The available data on PSRO program costs, on the other hand, reflect the total cost of operating the program. To derive the missing information--total effects and incremental cost--one would need data on the cost and effects of pre-PSRO review. As Table 4 indicates, however, such data are weak at best.

TABLE 4. QUALITY OF DATA ON PRE-PSRO AND PSRO COSTS AND BENEFITS

	Costs	Benefits (effects on utilization)
Pre-PSRO	poor	no data
PSRO Total	excellent	no data
Incremental PSRO (= total PSRO minus pre-PSRO)	poor	good

Based on the weak data concerning pre-PSRO review costs, both HCFA and CBO have estimated the incremental cost of PSROs. The CBO estimate is described below.

Given the absence of systematic data on the effectiveness of pre-PSRO review, neither HCFA nor CBO has attempted to estimate the PSRO program's total effect. All estimates of the program's effect on utilization, therefore, reflect only the program's incremental impact. It is widely believed--although in the absence of systematic data--that pre-PSRO review was largely ineffective. If so, the estimates of the PSRO program's incremental effect will approximate its total benefit. If, however, pre-PSRO review was more effective than believed, the estimates given in this report (and in the HCFA evaluations) could substantially understate the program's total impact. (Affected would be only those savings-to-cost ratios reflecting total cost; those reflecting incremental cost also reflect incremental effects and would be accurate.)

Estimating the Incremental Cost of the PSRO Program

CBO estimates that, as of 1978, PSRO review was roughly twice as expensive as pre-PSRO utilization review.²⁰ That is, the incremental cost of PSRO review is about half of the program's total cost. The incremental cost is higher, however, when only the cost to the federal government is considered, because the federal government bears the entire cost of PSRO review of both Medicare and Medicaid patients but only part of the cost of pre-PSRO review of such patients. The incremental cost to the federal government is accordingly probably in the vicinity of 70 percent of total program cost. As explained below, the data on which these estimates are based are weak but are nonetheless the best available.

Data on PSRO Incremental Cost. The available data on the cost of pre-PSRO review--which are essential for estimating PSRO

20. This estimate is based on the cost of pre-PSRO utilization review (UR) subject to the November 29, 1979 regulations (so-called "new UR;" 45 CFR Part 250). "Old UR"--before those regulations--was appreciably less expensive. All pre-PSRO costs described below also refer to "new UR."

incremental costs--are weak.²¹ The lack of adequate estimates of pre-PSRO review costs stems directly from the way in which such costs have been reimbursed. (Pre-PSRO utilization review is still conducted in hospitals in which PSRO review has not started, and it is still reimbursed in the manner described here.) Allowable costs for pre-PSRO utilization review are not distinguished from other hospital costs in determining Medicare reimbursements. Similarly, utilization review costs incurred in reviewing Medicare cases are not differentiated from other utilization review costs.²² Hospitals have no reason to tabulate utilization review costs separately from other costs, and consequently, Medicare has no data on its reimbursements for utilization review.

Because of this lack of information, several volumes of the 1977 Office of Planning, Evaluation, and Legislation (OPEL) report on PSROs were devoted to estimating pre-PSRO utilization review costs.²³ Extensive interviews were conducted with the staffs of a number of hospitals in order to identify what review activities were being conducted and to specify the costs associated with them. Some of the hospitals were in active PSRO areas and were conducting PSRO review, while others were in inactive PSRO areas and were conducting pre-PSRO utilization review. The resulting estimates cannot be considered reliable, however, principally because the number of hospitals providing information on pre-PSRO review costs was too small. Only 23 hospitals in two inactive PSRO areas were examined to obtain an estimate of pre-PSRO review costs. Thus, basing estimates of the national incremental cost of PSRO review on the OPEL figures is risky and potentially misleading. They are the best available data, however, and all current estimates of PSRO incremental costs are based on them.

Estimating PSRO Incremental Costs from the OPEL Data. The OPEL figures suggest that PSRO review is far more expensive than

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21. See, for example, Supplemental Statement by Dr. Clifton Gaus, Review of PSRO Medical Cost Control, Hearings before the Subcommittee on Oversight of the Committee on Ways and Means, 96:1 (1979), Serial 96-36, p. 158.
 22. Medicaid Reimbursement Manual, Section 2126, p. 21-15.4.
 23. Office of Planning, Evaluation, and Legislation, Health Services Administration, PSRO: An Evaluation of the Professional Standards Review Organization (1977), vols. 8-10.

pre-PSRO review. Using data from all sampled hospitals, the report estimated that PSRO review is about twice as expensive as pre-PSRO review.²⁴ Using a more carefully matched set of two active and two inactive PSRO areas, PSRO review was found to be about three times as expensive.²⁵ Since the OPEL study overestimated PSRO operating costs (which inflated the estimate of incremental cost), the best estimate is that the incremental cost of PSRO review is roughly half of total program cost.

As noted earlier, however, the incremental cost of PSRO review is greater than the above estimate if only costs to the federal government are considered. This discrepancy stems from the fact that, while the federal government pays 100 percent of the cost of PSRO review of Medicare patients, it often pays less than the full cost of pre-PSRO Medicare review because of the way the Medicare reimbursement system works. The balance of the cost of pre-PSRO Medicare review is borne by private patients.²⁶ As a

24. OPEL, PSRO, vol. 1, p. 136.

25. OPEL, PSRO, vol. 8, p. 116. This comparison should ideally be adjusted in several ways: increased costs associated with greater medical audit activity should be deleted; most of the cost of Medicaid state agency review should be deleted; and the costs of the PSRO-related portion of the Health Standards and Quality Bureau (HSQB) of HHS should be added. Precise figures for these corrections are not available, but the corrected comparison would still show PSRO review to be roughly three times the cost of pre-PSRO utilization review.

26. Utilization review costs are lumped in with other hospital costs under general categories such as "general and overhead" or "administrative costs." Under Medicare reimbursement regulations (see Medicare Reimbursement Manual, Section 2126), these costs are apportioned to Medicare and other payers in proportion to their use of hospital days and services but without regard for which, if any, nonfederal patients are reviewed. Moreover, if only Medicare patients are reviewed, payments to physicians for services on utilization review committees are not reimbursable at all. The federal government therefore pays the full costs of utilization review covering Medicare patients only if all patients are covered and if non-Medicare review costs per admission are as great as Medicare review costs.

result, when PSRO review replaces pre-PSRO review, the government often not only pays the increase in review costs, but also assumes the portion of the cost of Medicare reviews that was absorbed by private patients under pre-PSRO utilization review. (A somewhat similar argument applies to Medicaid review; see footnote 28).

It is probably reasonable to estimate that the incremental cost to the government of the PSRO program is in the range of 65 to 75 percent of total cost. A firmer estimate is not possible because of the lack of information on the average percentage of the cost of pre-PSRO review of Medicare patients borne by the federal government. Given the reimbursement system, however, the proportion of such costs paid by the government could have varied from about 30 to 100 percent from hospital to hospital.²⁷ If one assumes that, on average, the government's share of pre-PSRO review costs was in the range of 50 to 70 percent, the incremental cost to the government of PSRO Medicare review would fall in the range of 65 to 75 percent.²⁸

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27. If only Medicare patients were reviewed in a hospital that has a typical mix of patients, Medicare would pay about 34 percent of the nonphysician costs of utilization review (UR) and none of the physician costs.

The extent of UR covering nonfederal patients is not precisely known, but evidence indicates that some nonfederal patients are not reviewed and that many are reviewed less intensively than are federal patients. See Paul Gertman, Alan Monheit, Jennifer Anderson, J. Breckinridge Eagle, and Dana Kern Levenson, "Utilization Review in the United States: Results from a 1976-1977 National Survey of Hospitals," supplement to Medical Care, 17 (8) (August 1979).

28. This range is obtained by assuming that the federal share of its UR costs is in the range of 50 to 70 percent and relating that assumption to the OPEL estimate of total incremental costs.

High estimate: pre-PSRO costs are one-half of PSRO costs; federal share of utilization review equals 50 percent.

$$\begin{aligned} \text{Government incremental cost} &= 1 - (.50)(.50) \\ &= 75\% \end{aligned}$$

(Continued)