

STAFF WORKING PAPER

THE IMPACT OF PSROs ON HEALTH CARE COSTS:

1980 Update of the CBO Evaluation

Review Draft: July 29, 1980

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PREFACE

At the request of the Subcommittee on Oversight of the House Committee on Ways and Means, the Congressional Budget Office prepared this staff draft analysis updating the June 1979 CBO evaluation of the Professional Standards Review Organizations. This analysis parallels the earlier evaluation in focusing on the PSRO **program's** effects on hospital utilization and costs.

The analysis was prepared by Daniel Koretz of **CBO's** Human Resources and Community Development Division under the supervision of David S. **Mundel** and Nancy **M.** Gordon. Paul B. Ginsburg of CBO provided valuable suggestions and comments throughout the course of the analysis. Thanks are due to many people in the Health Care Financing Administration, especially Allen Dobson and Roger McClung, for their cooperation and assistance. The author is particularly grateful to Paul Eggers of HCFA for his generous contributions of time and effort and his helpful comments. Toni Wright typed the drafts of this report and prepared the final manuscript.

In keeping with **CBO's** mandate to provide objective analysis, this study offers no recommendations.

Alice M. Rivlin
Director

SUMMARY

This analysis updates the results described in the June 1979 Congressional Budget Office evaluation of the Professional Standards Review Organization (PSRO) program as a means of controlling hospital utilization and health-care **costs**.¹ At that **time**, the most recent available data covered the **program's** impact in 1977. Since then, data have become available with which one can assess the impact in 1978. Consistent with the 1979 CBO report, this memo does not consider the costs nor the benefits of the quality-assurance portion of the PSRO program.

DOES PSRO REVIEW REDUCE USE OF INPATIENT HOSPITAL CARE?

The most recent data suggest that a PSRO program in which all Medicare patients are reviewed reduces Medicare days of hospitalization by about 1.5 **percent**.² The impact of the current "focused"

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1. CBO, The Effects of PSROs on Health Care Costs; Current Findings and Future Evaluations, June 1979. The Executive Summary of that report is appended to this memo.

Thanks are owed to many individuals in the Health Care Financing Administration, especially Allen Dobson and Roger McClung, for their **assistance**. The author is particularly grateful to Paul Eggers of HCFA for his generous contributions of time and effort.

2. The difference between this figure and the comparable figure in the June 1979 report reflects refinements in the estimating procedure rather than a decline in PSRO (continued)

system, in which only a fraction of cases are reviewed, is almost certainly less, but there are as yet no data indicating how much less.

PSROs affect utilization by Medicare patients primarily by shortening hospital stays rather than by preventing admissions. Of the days of care saved in 1978, roughly 90 percent can be attributed to shortened lengths of stay.

The evidence that PSROs reduce Medicare utilization, however, is not firm. Considering the nation as a whole, the program's apparent effect is sufficiently small and variable that it could be an artifact of chance variation in the data. Moreover, the effect of PSROs in the South seems to be to raise utilization, a pattern that is difficult to explain and throws all the results into some doubt.

There are still no data that allow a reliable assessment of the program's impact on Medicaid patients. Differences in the characteristics of the Medicare and Medicaid populations, however, suggest that PSROs are likely to have less impact on Medicaid utilization.

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2. (continued) performance. The same is true of the savings-to-cost ratio presented below. Had last **year's** data been analyzed with this **year's** methods, the results would have been similar to those presented here.

HAS PSRO PERFORMANCE IMPROVED?

The June 1979 CBO report noted that as of 1977, there was no evidence that PSROs become more effective in reducing utilization as they gain experience, and the more recent data confirm that finding. The program's performance did not improve appreciably between 1977 and 1978, even though the average duration of PSRO activity in active PSRO areas increased from 16 to 25 months during that interval.

DO PSROs SAVE RESOURCES?

Although PSROs appear to reduce Medicare utilization, the program consumes more resources than it saves. The 1978 data indicate that for every dollar spent on PSRO review of Medicare patients, only \$.40 in resources were recouped, for a net loss of \$.60 per dollar spent.³ This corresponds to a savings-to-cost ratio of 0.4-to-1.⁴ In other words, the PSRO program, by increasing the quantity of resources consumed, makes the health-care system less efficient.

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3. In all instances, only the portion of the PSRO program's costs that can be allocated to its utilization-reduction activities were considered.
 4. All savings-to-cost ratios presented here assume both the costs and the benefits of reviewing all Medicare admissions. The effect of the change to focused review on these ratios is unknown.

DO PSROs REDUCE FEDERAL OUTLAYS?

Although the PSRO program produces a sizable loss in **resources**, it has little impact on federal outlays.

PSRO **review--and** any other review system that succeeds in lowering Medicare **utilization--affects** federal reimbursement payments in two ways: by changing total resource expenditures for health care, and by transferring costs to the private sector. This paper uses the term "reimbursement savings" to refer to the total reimbursement change stemming from both of these factors. Subtracting program costs from reimbursement savings yields the **program's** net impact on federal outlays.

The 1978 data indicate that the ratio of reimbursement savings to total program costs is roughly **0.9-to-1**. That is, each dollar spent on review yields about 90 cents in reimbursement savings. The net budgetary impact is accordingly a \$.10 loss for every dollar in program expenditures.⁵ (This ratio of 0.9-to-1 corresponds to the cost-benefit ratio of **1.269-to-1** in the most

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5. This figure, like the estimate above of the **program's** impact on total resources spent for health care, considers only the Medicare portion of the program. If Medicaid review were **included--and** if it were assumed that PSROs are equally effective with Medicaid and Medicare **utilization--this** ratio would drop to **0.75-to-1**. This is because some of the Medicaid reimbursement savings would go to states rather than to the federal government.

recent evaluation of the program by the Health Care Financing Administration (HCFA) in that both figures estimate the ratio of reimbursement savings to total program costs.)⁶

The figures given above--including HCFA's--compare the savings generated by PSRO review to the total cost of the review portion of the program. Recently there has been considerable disagreement about this approach. Some maintain that since PSRO review replaces earlier forms of utilization review, the program's benefits are the incremental benefits over and above those of pre-PSRO utilization review and should be compared to the incremental cost of PSRO review over pre-PSRO utilization review. The best available estimate is that the resource savings generated by PSRO review are about 20 percent less than incremental costs, while the reimbursement savings to the federal government are about 20 percent greater than Incremental costs.

This last figure indicates that when only the incremental costs of the program are taken into account, the net impact on federal outlays is a savings equal to 20 percent of program costs. This savings in outlays, however, is achieved at the cost of a net increase of about the same amount in resources expended for health care. Moreover, the effect on outlays is small, amounting to less than two-tenths of one percent of the Medicare Part A outlays that the PSRO program was designed to control.

6. Health Care Financing Administration, 1979 PSRO Program Evaluation (Washington, 1980).

CHAPTER I: HOW DO PSROs WORK, AND HOW CAN THEY BE ASSESSED?

This staff draft analysis updates the results described in the June, 1979, Congressional Budget Office evaluation of the Professional Standards Review Organization (PSRO) program as a means of controlling hospital utilization and health-care costs.¹ At that time, the most recent available data covered the **program's** impact in 1977. Since then, data have become available with which one can assess the impact in 1978.

The PSRO program has two primary purposes: to control utilization of health-care services financed under the Social Security Act, and to assure the quality of those services. Both the history and the language of the PSRO legislation suggest that control of utilization and costs was the more salient of the two goals, and the implementation of the program similarly has emphasized reduction of inappropriate utilization. Although the mandate of PSROs under the law is very broad, in practice most of the **program's** utilization-reduction activities have been limited to inpatient care in short-stay general **hospitals**.²

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1. Congressional Budget Office, The Effect of PSROs on Health Care Costs; Current Findings and Future Evaluations (Washington, 1979).
 2. For more background on the program, see: CBO, The Effects of PSROs, pp. 1-11; and Office of Planning, Evaluation, (cont.)

This analysis, like the June 1979 report, focuses entirely on the utilization- and cost-control aspects of the program. PSRO effects on quality are not considered, nor are the costs associated with quality-assurance activities. The quality-assurance and utilization-control components of the program are largely distinct, and the success of one need not depend on the **success--** or even the **presence--of** the other. This makes it feasible and useful to evaluate the two components separately.

The basic questions considered in this analysis, then, are two: do PSROs reduce inpatient hospital care, and do they save money? The following issues are among those that arise in addressing these questions.

What Activities Are PSROs Conducting to Reduce Utilization?

This question is surprisingly hard to answer because PSROs have changed their activities over recent years in ways that are not fully known.

Utilization **review--that** is, review of a course of treatment to verify its appropriateness and medical **necessity--has** always been the principal tool of PSROs in controlling hospital **use.**³ In

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2. (continued) and Legislation (Health Services Administration), PSRO; An Initial Evaluation of the Professional Standards Review Organization, vol. 1, especially pp. 42-47.
 3. For more background on utilization review and on the differences between PSRO review and other types of utilization review, see CBO, The Effect of PSROs, pp. 5-11.

the early stages of the program, PSROs generally conducted "concurrent review," which is so named because patients are reviewed at the time of treatment rather than after the fact. Concurrent review typically comprises two activities: admissions review, conducted within a few days of admission, and "continued stay" reviews conducted at set intervals to determine the necessity of continued stay. During the **program's** first years, every Medicare and **Medicaid** patient in hospitals where a PSRO was active was given an admission review and, if the hospitalization was sufficiently long, one or more continued stay reviews.

Implementation of PSRO review in **short-stay** hospitals has been gradual. In mid-1978, when the evaluation data analyzed here were collected, 118 of the total of 203 PSRO areas (58 percent) had an active PSRO that had instituted review in at least one hospital. By the fall of 1979, that percentage had increased to 88 percent, and recently the figure has been about 95 percent. At the same time, active PSROs have been expanding their activities to cover a larger percentage of hospitals in their areas. In 1978, under half of all federal (Medicare and Medicaid) admissions were to hospitals where PSRO review had begun; in 1980, that figure had reached two-thirds, and the Health Care Financing Administration (HCFA) hopes to exceed 90 percent in 1981.

In recent years, the PSRO budget has not kept pace with the **program's** expansion, and the program has been under increasing financial pressure. As a result, full concurrent review of all cases became financially infeasible for most PSROs. The 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 or 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 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 in treatment. Some PSROs have abandoned concurrent review entirely in some hospitals, replacing it with retrospective monitoring of utilization.

Do PSRO Activities Reduce Utilization?

Evaluating the impact of the PSRO program on utilization is not entirely straightforward. The issues that arise in making such an assessment and **the** strategies used to resolve them are described briefly in Chapter II. A more complete discussion can be found in the earlier CBO report and is not repeated here.

How Much Do PSRO Activities Cost and How Much Do They Save?

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 review since the 1960s, but those utilization review activities are discontinued when PSRO review is instituted. "Total cost" refers to the outlays required to operate the PSRO program, while "incremental costs" refers 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. However, since PSRO review has always been a replacement for another pre-existing system of review, it has never been possible to assess the total 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 impact the pre-existing review system had produced.

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.

Resource Savings, Reimbursement Savings, and Transferred Costs. "Resource savings" refers to the change in the total expenditure of resources for hospital care stemming from such changes in utilization. "Reimbursement savings" refers to changes in government outlays (usually federal) resulting from PSRO-induced changes in utilization.

The difference between resource savings and reimbursement savings arises because 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 the days of hospitalization not used remain and must be absorbed by **someone**.⁴ 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 typically bearing most of it. 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. 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 resources savings. Since 60 percent of costs are fixed, the total resources saved when Medicare utilization declines amount to 40 percent of the costs of the days not used. This is the actual change in resources spent for hospital care. However, an additional portion of the costs of the days of care not used are transferred to private patients. While this transfer does not decrease the total expenditure of resources, it does reduce federal Medicare reimbursement payments.

4. 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.

The June 1979 CBO evaluation referred to resource savings simply as "savings." In contrast, the 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 total or incremental costs and reimbursement or resource savings. 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.

The savings-to-cost analysis in this report parallels the June 1979 CBO report in emphasizing total costs and resource

savings.⁵ However, since incremental costs and reimbursement savings can be important in some contexts, Chapter II also presents alternative **savings-to-cost** estimates based on all combinations of total and incremental costs and resource and reimbursement savings. Discussion of the merits and disadvantages of the various approaches are presented in Chapter II.

"Unit," Per-Admission, and Per-Review Costs. Since PSROs now focus review, many cases are never reviewed at all, and "cost per admission," is not the same as "cost per **review.**"⁶ Considerable confusion has arisen about this recently, since some offices in HCFA have continued to use terminology from earlier years, using both "unit costs" and "cost per review" to mean "cost per **admission.**"⁷

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5. 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.
 6. In "cost per admission," the admissions considered are only those in hospitals where PSRO review is in place.
 7. Since the amount of focusing is not known, the number of actual reviews, and therefore the costs per review, are not known for the years during which review has been focused (1979 on). Accordingly, while "per review" costs are available for years through 1978, most "per review" or "unit" costs in HCFA materials pertaining to 1979 and after can be read as "costs per **admission.**" Costs per review, while unknown, will of course be higher.

Has Focusing Altered the Effectiveness of the Program?

The results of the current evaluation reflect the impact of an unfocused PSRO program in which every Medicare patient was reviewed. The most recent data on the **program's** performance were collected in 1978, before any sizable amount of focusing had begun. It is almost certainly the case that focusing has decreased the **effectiveness** of review, but the extent of the change is **unknown**.⁸ In particular, it is not known whether focusing reduces **effectiveness** more or less than it reduces costs.

8. Focused review could only be as effective **as** unfocused review if PSROs were 100 percent effective in selecting the right cases to review. 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 would be low, and many providers and practitioners would know that they had already been "focused out" and would not be reviewed.

Since the only data on the **program's** impact reflect the **effectiveness** of an unfocused system, this report always uses the cost **of** unfocused review in estimating **savings-to-cost** ratios. To compare the impact of an unfocused system to the cost of a focused system would exaggerate the benefits of the program relative to its cost.

What Has Been 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. These costs comprise about 68 percent of the **program's** expenditures for utilization reduction. This limitation reflects the absence of any reliable data on Medicaid utilization rates at the PSRO level.

In the absence of 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.**⁹ 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) might suffice.

9. For the same general reason, it is risky to extrapolate PSRO performance to review of nonfederal patients.

Furthermore, in the case of infirm Medicare patients, there is often pressure to extend hospitalization if the family has no alternative means of providing continued post-hospital care. In contrast, with the exception of those individuals who receive both Medicare and Medicaid,¹⁰ 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 perhaps the best **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.¹¹

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 Medi-

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10. The hospital utilization of individuals receiving both Medicare and Medicaid is included in the Medicare data analyzed in this report.
 11. 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.

care and **Medicaid** patients. PSROs might increase private utilization by means of the "**Roemer** effect," which is the tendency for empty hospital beds to generate demand for their use.¹² That is, beds emptied by PSROs would tend to be filled by additional days of care among 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 June 1979 CBO report lowered the **program's savings-to-cost** ratio to account for the Roemer effect, but recent research by HCFA, while not conclusive, strongly 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 present analysis accordingly makes no adjustments for either spillovers or the Roemer **effect.**

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

CHAPTER II: THE IMPACT OF PSROs ON UTILIZATION AND COSTS

The results of this analysis of the 1978 data are largely consistent with the results based on the 1977 data reported in the June 1979 CBO study. The somewhat less optimistic estimates of the **program's effectiveness** presented below reflect refinements in the methodology used rather than deterioration in the program's performance.

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

Although the program has had a degree of success in curbing Medicare utilization, it has not been successful in lowering costs. The gross resource savings resulting from PSRO-generated

changes in Medicare utilization are about 60 percent less than the relevant PSRO program costs. Somewhat more favorable estimates are obtained if only the incremental costs of the program are considered or if reimbursement savings rather than resource savings are used. 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 reimbursement savings to incremental costs, ignoring costs transferred to the private **sector--indicates** a net budgetary savings equal to 20 percent of PSRO program costs. This amount corresponds to a net reduction of less than two-tenths of one percent of the Medicare Part A outlays that the program was intended to control.

THE EFFECT OF PSROS ON MEDICARE UTILIZATION

The impact of PSROs on Medicare **utilization** in 1978 was assessed by methods similar to those described in detail in the June 1979 **report.**¹ "Inactive" PSRO areas, in which PSRO review

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1. 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.

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**.² 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). The difference between these adjusted 1978 utilization rates in active and comparison areas provided the measure of PSRO impact.

Although this analysis does suggest a small PSRO impact on utilization, the evidence is somewhat tenuous. This **year's** analysis is subject to a major **qualification** described in detail in the June 1979 report. 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 model. In addition, 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

2. 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.

"marginal." To put this in concrete terms, if there were no real effect of PSROs, one would observe an apparent "effect" as large as that found in this **year's** analysis in roughly one out of every ten analyses just because of chance variation in the data. Second, there are striking regional differences in PSRO **impact--** described in more detail **below--that** are hard to explain and throw the basic findings into some doubt.

Details of the analysis of the 1978 data and some comparisons with 1977 program performance are described below.

The Effect of an Additional Year of Program Operation

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**)."³ 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**.⁴ 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

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

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

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.

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**.⁵ 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).

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5. 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. While approximate, this method provides the best available estimate.

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 showed similar patterns, even after adjusting for the impact 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 1.

TABLE 1. PSRO IMPACT BY REGION, 1978

Region	Percent Change in Hospital Days ^a	Statistically Significant <i>p</i> less than .05
Northeast	-4.8	Yes
North Central	-2.1	Yes
West	-1.4	No
South	+1.9^b	No

a. Per 1,000 Medicare enrollees.

b. 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 1977 CBO report, geographic region is important not in its own right, but rather as a proxy for variables that have

been omitted from the model. The fact that PSRO impact varies so markedly from region to region makes it important to know what those omitted variables are. What characteristics the North Central region (apart from the variables already in the model; see Appendix B) can account for a program effect less than half the size 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 characteristics of the regions, they must be due to chance variations in the data or to selection bias.⁶ As explained in the next section, the estimate of the impact of a nationally implemented program will differ depending in 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 the evaluation

6. Selection bias is discussed in detail in CBO, The Effects of PSROs.

discussed here 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.

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. 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 1978.⁷

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7. Active and inactive areas are known to differ in various **ways--including** the presence or absence of PSRO **review--and** to have differences in utilization rates. The method used (multiple regression) in effect adjusts the figures to compensate for all of the measured differences between the two types of areas except for PSRO review, so that any remaining differences in utilization can be attributed to the effects of review and not some other difference. If the model was specified **correctly--meaning** that the correct set of differences have been measured and accounted **for--then** the method produces an estimate of a fully implemented program. If the model is incorrectly specified, both the finding of a PSRO effect and the use of the results as an estimate of a fully implemented program are called into doubt, and both for precisely the same reason. If there are additional differences between the active and inactive areas that might make the PSRO effect different in inactive areas when it is begun, these same unmeasured differences will contribute spuriously to the apparent effect of the program. In statistical terms, the issue is one of internal validity. (Since the entire population of PSRO areas is in the analysis, external validity is not in **question.**)

An ambiguity arises, however, because of the pattern of regional differences discussed in the preceding section. As shown in Table 2, 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 regions remained inactive, whereas in the South, where the average PSRO seemed to increase utilization, the program remained 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 in the wrong direction.

What should be assumed about the **effectiveness** of these new PSROs? If the regional discrepancies in observed program impact are due to some real underlying difference between the regions, 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

TABLE 2. 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.

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 due to 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.⁸

8. 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, (continued)

Because of the sizable magnitude and statistical significance of the observed regional disparities in program impact, the decision was reached in conducting this analysis to assume that they reflect real underlying regional differences. The 1.5 percent decrease in Medicare utilization estimated above to be the impact of a fully implemented PSRO program 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 impact of the program would be estimated to be

8. (continued) 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 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.

~~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.)⁹

An additional **ambiguity** arises because the present concern is not the impact of a fully implemented program in 1978, but rather the impact of such a program in 1980. The data provide no clue about the effects of the ~~changes--apart~~ from increased implementation--that have occurred in the program between 1978 and 1980. The foremost of those changes has been the rapid growth of focusing. As noted in Chapter I, the effect of focusing has almost certainly been to lessen the impact of the **program**, but the degree to which this has happened is unknown. This is a major limitation of this and all other available evaluations of the program.

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 costs (total or **incremental**), find the

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9. 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 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.

monetary value of the days of hospitalization that have been saved, and finally compare the savings to the costs.

This section discusses four aspects of the analysis of savings and costs. The arguments in favor of using both total and incremental costs are presented, and an estimate of incremental costs is provided. A savings-to-cost ratio (based on resource savings and total costs) is calculated by modifying the cost-benefit ratio presented in the most recent HCFA evaluation of the program. For comparative purposes, a range of savings-to-cost ratios is calculated using all combinations of total and incremental costs and resource and reimbursement savings. Finally, long-term savings are contrasted with short-term savings.

Estimating the Incremental Cost of PSRO Review

Since PSRO review is a replacement of an existing program rather than a totally new one, considerable disagreement has arisen concerning measurement of the **program's** cost. Should the measured benefits of the program be compared to its total costs or to its incremental costs above and beyond pre-PSRO review? The controversy has centered around three questions:

- o Are total costs or incremental costs the most appropriate measure?
- o Are the data on incremental costs reliable enough to be useful? and
- o What is the best available estimate of incremental costs?

The Appropriateness of Incremental and Total Cost Measures.

The principal argument in favor of looking at incremental costs is that the available research assesses the incremental, rather than the total, benefit of the program. That is, the evaluations measure the change in utilization that accompanies the change from pre-PSRO to PSRO review, and it would be consistent to look at the corresponding change in costs. This argument has been advanced by the HCFA's Health Standards and Quality Bureau.

There are two countervailing arguments in favor of considering total costs, both advanced by HCFA's Office of Research, Demonstration, and **Statistics**.¹⁰ The first of these is that the quality of the data on the costs of pre-PSRO **UR** is so poor that it is not possible to **estimate** the incremental cost of PSRO review with any confidence. This argument is discussed in the following section. The second argument is that pre-PSRO **UR** is not a viable alternative to PSRO review. Dissatisfaction with pre-PSRO **UR** was widespread, and in the absence of data, it was widely believed that such review had little or no impact on utilization. Given that dissatisfaction, it is likely that if PSRO review were terminated, it would be replaced by a new form of **review--or** by no

10. 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.

review at ~~all--rather~~ than by a return to **pre-PSRO** utilization. The cost of maintaining the PSRO program is therefore its total cost, not its incremental cost. Moreover, if pre-PSRO utilization review was in fact largely ineffective, the incremental benefits of the PSRO program would be approximately the same as its total benefits, so total program costs would be an appropriate figure to use in comparison.

Are There Usable Data on the Incremental Costs of PSRO Review? The incremental costs of PSRO review can be estimated only if there are adequate estimates of the costs of both PSRO and pre-PSRO review. While most of the costs of PSRO review (except for indirect costs to hospitals, such as space and utilities) are clear, little is known about the cost of pre-PSRO review. Estimates of PSRO incremental costs are therefore very unreliable.

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 being conducted in hospitals where 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**.¹¹ 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 OPEL report on PSROs were devoted to estimating pre-PSRO utilization review costs.¹² 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

11. **Medicaid** Reimbursement Manual, Section 2126, p. 21-15.4.
12. Office of Planning, Evaluation, and Legislation (OPEL), Health Services Administration, PSRO: An Evaluation of the Professional Standards Review Organization (Washington, 1977), **vols.** 8-10. All figures here correspond to what the OPEL report calls "new **UR**," that is, review after the November 1974 UR regulations (Federal Register, 39 (231), November 29, 1974).

estimate of **pre-PSRO** review costs. Basing estimates of the national incremental cost of PSRO review on those figures would be risky and potentially greatly misleading.

What is the Best Available Estimate of PSRO Incremental Costs? If it is decided that incremental costs are the most appropriate measure and that the relevant data, although weak, are sufficient to warrant an estimate of incremental costs, what should that estimate be? All available estimates are based on the OPEL report, but very different figures have been produced by adjusting the **report's** estimates in various ways.

The OPEL **figures**, taken at face value and not further adjusted, provide the most appropriate estimate of PSRO incremental costs. This is not to say that they are adequately reliable, only that they are the best available. Those figures suggest that PSRO review is far more expensive than pre-PSRO review. Using data from all sampled hospitals, the report estimated that PSRO review is about twice as expensive as pre-PSRO **review**.¹³ 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.¹⁴ Since the OPEL study overestimated PSRO operating costs

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

14. 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 HSQB should (cont.)

(which inflated the estimate of incremental costs), the best estimate is that the incremental costs of PSRO review are roughly half of total program costs.

These incremental cost figures are based on the total costs of both PSRO and pre-PSRO review. If only the costs to the federal government are considered, the cost of replacing pre-PSRO review with PSRO review is greater. The government pays the full cost of each PSRO review of a Medicare patient, but because of the way in which pre-PSRO review costs are reimbursed, the government often pays less than the full cost of each pre-PSRO review of a Medicare patient. The balance of the cost of such a review is borne by private patients.¹⁵ As a result, when PSRO review replaces pre-PSRO review, the government often not only pays the

14. (continued) 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.
15. 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 payors 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 **reimbursible** 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.

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.

The average percentage of the cost of pre-PSRO review of Medicare patients paid by the federal government is not known. Given the reimbursement system, however, the percentage should vary from 100 percent in some hospitals to 30 percent or less in others.¹⁶ It is probably reasonable to estimate that the incremental costs to the government of the PSRO system are in the range of 65 to 75 percent of total costs.¹⁷

16. 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 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 received 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).

17. This range is obtained by assuming that the federal share of its UR costs is in the range of 60 or 70 percent and relating that assumption to the OPEL estimate of total incremental costs.

High estimate: pre-PSRO costs are 1/2 of PSRO costs; federal share of utilization review equals 50 percent.

(continued)

Two other ways of using the OPEL data to obtain estimates of PSRO incremental costs have been suggested by HCFA. Both involve adjusting the OPEL data in various ways--adjusting them for inflation or the growth in federal hospital admissions, for example. They produce lower estimates of PSRO incremental costs, but they suffer from technical and conceptual problems.

The first of the other methods, suggested by HCFA's Health Standards and Quality Bureau, compares OPEL's estimates of pre-PSRO utilization review to the PSRO program's actual budget in fiscal 1980. The OPEL figures for utilization review were for fiscal year 1976, so HSQB inflated them to take into account growth in the number of federal hospital admissions and inflation of review costs. Using this method, HSQB has estimated that PSRO review costs about the same as or even less than pre-PSRO utilization review. ¹⁸

17. (continued)

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

Low estimate: pre-PSRO costs are 1/2 of PSRO costs; federal share of utilization review equals 70 percent.

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

18. Memorandum to Daniel Koretz from Dr. Helen Smits, Director of HSQB, August 23, 1979; Supplementary materials on the fiscal year 1981 appropriations estimates presented to the House Committee on Appropriations by Leonard Schaeffer, Administration of the Health Care Financing Organization, May 1980.

This alternative estimate of incremental costs is inappropriate because it does not correspond to HCFA's--or CBO's--measure of the **program's** incremental benefits. All of the national evaluations of the program estimate the incremental benefit of replacing unfocused utilization review with unfocused PSRO review. HSQB's method of assessing incremental costs, however, compares unfocused utilization review to a highly focused PSRO program in which only a small **fraction** of admissions are actually reviewed. While the switch from unfocused to focused PSRO review has undoubtedly lowered **costs--indeed**, lowering costs has been a primarily motivation in **focusing--it** is also likely to have lowered the program's impact on **utilization**.¹⁹ In other words, **this** method does not estimate the incremental costs of the system of unfocused PSRO that was in effect in 1978 and that produced the decrease in utilization that has been measured. Rather, it estimates the incremental cost of a **cheaper--but** presumably less **effective--system** of focused review.²⁰

19. See Chapter I.

20. 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 the correct 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.

A second additional estimate of PSRO incremental costs was recently completed by HCFA's Office of **Research**.²¹ It estimates PSRO review to be about 4 percent more expensive than pre-PSRO utilization review. This estimate, however, did not include PSRO operating costs and was based on a high estimate of pre-PSRO utilization review costs. If adjustments are made for these two factors, this method produces an estimate of incremental costs quite close to the 50 percent figure explained **above**.²²

Both of these alternatives are estimates of overall incremental costs rather than incremental costs to the government. As noted above, incremental costs to the government are substantially higher.

21. Memorandum to Allen Dobson from Roger McClung and Sherry Terrell, April 17, 1980.

22. This estimate paralleled the first HSQB alternative in inflating estimate utilization review costs and comparing them to PSRO costs. However, utilization review costs were compared to PSRO costs in 1978, thereby avoiding the problem of comparing unfocused utilization review to focused PSRO review. Costs per review were compared rather than total costs, circumventing problems arising from incorrect estimates of the number of federal discharges. The other technical problems mentioned above* however, apply to this alternative as well.

Recalculation of the PSRO Savings-to-Cost Ratio

Based on the most recent data, CBO estimates that the resource savings generated by PSRO review are 60 percent less than total costs. 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 **1.269-to-1**, which would indicate that the savings generated exceed costs by 27 percent.²³

Four factors contribute to the difference between the HCFA and CBO estimates. They are described below.

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23. 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 analysis exclude two components of the **program's** total costs: 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, **how-**ever, 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.

Resource savings vs. 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.

Correcting 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).²⁴

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.

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24. 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 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 in Chapter I.

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 not a reasonable assumption, for two reasons. First, PSROs seem to affect utilization more by reducing length of stay than by preventing admissions. Since the first part (especially the first day) of hospital stays typically involves 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--including** ancillary **services--than** patients whose stays are allowed to continue.

While the direction of the bias in the HCFA analysis is clear, its magnitude is not. For this re-estimate, HCFA's estimate of per diem ancillary reimbursements has been reduced by 30 **percent.**²⁵ This reduces estimated savings by 7.4 percent.

25. 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.**²⁶

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 Program Costs.

Although a comparison of federal reimbursement savings to program costs overstates the actual savings generated by the program for

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

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

society as a whole, it can nonetheless be useful information for certain purposes. For example, the net budgetary impact of a change in PSRO funding can be calculated from the ratio of reimbursement savings to costs.

CBO estimates that the ratio of reimbursement savings-to-cost ratio for review of Medicare patients is **0.9-to-1**; that is, reimbursement savings are roughly 10 percent less than **costs**.²⁷ The ratio would fall to **0.75-to-1** if Medicaid were included, even if one assumes that PSROs are as effective with Medicaid as with Medicare patients. 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 ineffective with Medicaid patients, the reimbursement **savings-to-cost** ratio would fall to **0.6-to-1**.

Ratios of Savings to Incremental Costs. All of the estimates discussed above, including **HCFA's**, compare some measure of savings to total costs. Keeping in mind the caveats described earlier in this chapter, one can estimate very roughly the ratio of savings

27. More precisely, **0.87-to-1**:

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

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

to Incremental costs. As noted above, the best available estimate is that the incremental costs of the PSRO program are 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 costs would raise it to **0.8-to-1**.²⁸

Since the incremental costs to the federal government are higher than the overall incremental costs, a different adjustment is required calculate the ratio of reimbursement savings to incremental costs. Considering Medicare only, the ratio of reimbursement savings to costs (**0.9-to-1** when total costs are considered) rises to **1.2-to-1** if incremental costs are 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**.²⁹

29. 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 including 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 3 presents the range of cost estimates discussed in this section. They are arranged in accordance with the set of benefits (total savings vs. federal reimbursement savings) and the set of costs (total program costs vs. incremental costs) they take into account.

Long-Term vs. Short-Term Savings

Long-term savings from PSRO review may be substantially larger than short-term savings. 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**.³⁰ This amount would be slightly

30. Gross savings resulting from PSRO review are adjusted throughout this analysis (and in the earlier CBO and HCFA evaluations) by subtracting the cost of compensatory increases in ambulatory and long-term care. Patients whose hospitalizations are eliminated or shortened by (continued)

TABLE 3. RANGE OF SAVINGS-TO-COST RATIOS

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

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

- a. CBO's best estimate.
- b. If Medicaid were included and if PSROs are as effective with Medicaid as with Medicare, this would be 0.75-to-1. If Medicaid were included and if PSROs are ineffective with Medicaid, this would be 0.6-to-1.
- c. If Medicaid were included and if PSROs are as effective with Medicaid as with Medicare, this would be 1.1-to-1. If Medicaid were included and if PSROs are ineffective with Medicaid, this would be 0.8-to-1.

larger than short-term reimbursement savings, since as long as some costs remain fixed, Medicare will absorb some portion of them. If this optimum were eventually reached, the resource savings would approximately equal the total costs of the program.³¹

There are no data indicating how much time would elapse before an appreciable portion of fixed costs would be eliminated. Before the process of eliminating them 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

30. (continued) 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 substantial from the value of days saved to obtain gross savings.

Similarly, the maximum long-term savings from PSRO review would be the entire cost of days saved minus the cost of offsetting increases in ambulatory and long-term care. The figures above reflect that adjustment.

31. This figure refers to total program costs. 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:

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

$$.99 = \frac{.87}{1} \cdot \frac{1}{.885}$$

them for some time, since the typically small occupancy changes caused by PSROs (which average about 1/2 percent) would be swamped by much larger seasonal and yearly fluctuations in utilization. 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 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 eventually achieve the higher, long-term savings rate. A complex discounting procedure would be needed to combine the short- and long-term savings.

CHAPTER III: POLICY **ISSUES** AND QUESTIONS FOR RESEARCH

The evaluation results reported here are consistent with earlier evaluations of the PSRO program in indicating that while the program does have some impact on utilization, even the most optimistic estimates show it to be marginal as a means of controlling costs. These findings raise a number of policy issues and point to a need for several types of additional research.

POLICY ISSUES

Several policy issues arise in translating a **savings-to-cost** analysis into a decision about a **program's** value.

Changes in Efficiency Versus Reductions in Outlays. 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. Reduced costs then reduce federal reimbursements. 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

payors. 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 efficiency, but as long as the measure does not require the expenditure of a significant amount of additional resources, efficiency will not be lowered.

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 of reducing 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 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 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 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. $1 - .4 = .6$, 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 to eliminate the Medicare differential reimbursement rates for nursing services, for example, would save \$191 million in fiscal year 1981 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, the costs and benefits analyzed above and in Chapter II) in determining the value of the program. This cannot be done at present, however, since the relevant information on the uncounted costs and benefits 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 critical 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 impact 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.

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 improvements 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 Cost commission (present vs. absent);
- o PSRO "longevity" (Months of PSRO review; zero for inactive);
- 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.