
6.

**Analyses of the Costs and
Benefits of Alcoholism Treatment**

Analyses of the Costs and Benefits of Alcoholism Treatment

This chapter describes the costs and benefits of alcoholism treatment and the issues underlying the reimbursement debate about alcoholism treatment. Its goal is to provide a framework for consideration of Medicare and other reimbursement policy for alcoholism treatment (see ch. 7). The methods of cost-effectiveness and cost-benefit analysis (CEA/CBA) are described, and the costs of alcoholism are analyzed. The present discussion of the costs and benefits of alcoholism treat-

ments extends chapter 5's analysis of the effectiveness of alcoholism treatments. Many of the same methodological problems and caveats apply to analyses of the costs of treatment. Thus, it is necessary to indicate where reliable and valid data are not available and which conclusions must be tentative. Suggestions for the development of research that can assist in reducing this ambiguity are noted.

COST-EFFECTIVENESS AND COST= BENEFIT ANALYSES

Conducting cost and outcome studies of alcoholism treatments is complex and potentially controversial. Clearly, it would be desirable to conduct formal CEAS and CBAS in order to determine definitively which of various treatment alternatives currently available are most effective at particular resource utilization levels. As the Office of Technology Assessment (OTA) noted in its assessment of the methods of CEA and CBA, however, these techniques are probably most useful for structuring policy problems (228). Rarely is it possible to develop CEA/CBAs definitively.

CEAS and CBAS are difficult to conduct with precision, because it is almost impossible to specify comprehensively the costs and benefits of alternative treatments. This is especially true in the area of alcoholism because of the lack of good data directly comparing alternative treatments and because of the difficulties in measuring and specifying outcomes of treatment (see ch. 5). It is also important to recognize that factors other than those that can be quantified in a CEA should be considered in making a policy decision (228).

The potential costs and benefits of alcoholism treatment can be assessed with varying degrees of comprehensiveness, and means for estimating costs and benefits vary. In a CBA, the cost of a

treatment program includes not only the direct costs of salaries of treatment providers, medication, administration, and overhead, but also indirect costs, such as lost productivity due to patients' missing time from work. An analyst conducting a CBA must decide which benefits to measure, how to measure them (if measurement is at all possible), and what values to place on those measurements.

Unemployment and lost productivity from alcoholism may, for example, be among the greatest costs of alcoholism, but limiting analyses to work-related measures would underestimate the potential benefits of a program that might aid individuals not currently in the labor force (e.g., the unemployed, full-time homemakers, adolescents in school). For example, Cicchinelli, Binner, and Halpern's output-value analysis (61) (a simplified CEA/CBA) of an alcoholism treatment program indicated that the program was more efficient for men than for women. This finding was due to the average lower cost of treatment for men and the estimated lower salary rates for women. Another finding was that the efficiency of the program tended to decline with severity of impairment. If a choice had to be made concerning which program was more cost beneficial, a decision based

on an analysis which valued benefits either by income gained or by degree of impairment could foster inequities.

OTA has developed 10 principles (see table 4) to guide the conduct, use, and evaluation of CEA/CBA studies (228). The principles most relevant to the assessment of alcoholism treatment programs are that all foreseeable benefits/effects and expected costs should be defined and, if possible, measured; present-value discounting should be performed; sensitivity analyses should be conducted to show a range of possible outcome values; uncertainties should be explicitly and clearly stated; and ethical issues should be addressed. The rigorous specification of data sources for quantitative analyses is another important criterion for CBAS and CEAS. The importance of these principles in the few cost-based alcoholism treatment studies that have been conducted will become apparent when the studies are reviewed later in the chapter.

Despite problems, when CBA is done well, its use aids “the complete enumeration of expected costs and benefits as well as explicit consideration of assumptions underlying quantitative evaluations of the costs and benefits” (310). Assuming such specification is possible, such analyses provide a solid scientific basis to aid in making deci-

sions. Given the substantial variance in alcoholism program costs (e.g., inpatient v. outpatient) and the current policy debate over reimbursement policy, such information would obviously have great utility.

To understand what can be obtained from CEAS and CBAS, several distinctions must be made. A CEA implies a comparative analysis of the costs and health effects of alternative treatments. In a CEA, a common outcome is specified (e.g., functional status), and the costs of providing alternative treatments are compared. Treatment costs are typically specified in monetary terms. A CBA, in contrast, requires that both cost and benefits be assigned monetary values. A CBA examines the ratio of resources used (cost) to resources saved (benefits) when particular treatments or even different programs are employed (133). The result of a CBA is usually a net cost-benefit ratio. According to Swint and Nelson (310), CBA is conceptually superior to CEA because: 1) programs with different goals (e.g., alcoholism treatment v. highway improvement) may be compared, and 2) CBA analyzes (in a limited way) whether an objective is worth achieving. Even if a treatment is not cost effective (i.e., other treatments achieve the same outcome equally as well but at a lower cost), the same treatment may still be cost beneficial (i.e., the benefits are greater than the cost).

A further, perhaps technical, distinction must be made about the term “cost.” In most CBAS, costs are considered the value of resources used in providing the treatment program (e.g., salaries, overhead, medicine). The social and economic costs incurred because treatment is not given or is ineffective are, for these analyses, considered negative benefits (cf. 225). Whether they are considered negative benefits or additional costs is usually not critical. It is the comprehensive assessment of such effects that is essential for making the best comparison of resources used and saved.

Table 4.-Ten General Principles of Analysis for CEA/CBA Methodology

1. Define problem.
2. State objectives.
3. Identify alternatives.
4. Analyze benefits/effects.
5. Analyze costs.
6. Differentiate perspective of analysis.
7. Perform discounting.
8. Analyze uncertainties.
9. Address ethical issues.
10. Interpret results.

SOURCE: Office of Technology Assessment, U.S. Congress, *The Implications of Cost-Effectiveness Analysis of Medical Technology*, GPO stock No. 052-00340765-7 (Washington, D. C.: U.S. Government Printing Office, OTA-H-126, August 1960).

ANALYSES OF THE COSTS AND BENEFITS OF ALCOHOLISM TREATMENT

Cost Context

Evaluating treatments for alcoholism must be done in the context of what has been called the "cost of alcoholism." In 1981, Cruze and associates (78) at the Research Triangle Institute prepared a report for the Alcohol and Drug Abuse and Mental Health Administration (ADAMHA), in which they estimated the cost of alcoholism to U.S. society in 1977 to be nearly \$50 billion. As shown in table 5, Cruze and associates divided total costs to society between "core costs" and "other related costs." "Core costs" were those costs most directly related to the alcoholism problem that are borne by some component of the health care system or are the indirect costs of mortality and morbidity (i. e., lost productivity). "other related costs" included the direct costs of social programs other than those related to health, accident costs, and indirect costs of incarceration and

noninjured time loss. The distinctions arise from Public Health Service guidelines for the cost-of-illness studies (137).

Cruze and associates also identified health care settings involved in the treatment of alcohol abusers and determined their alcohol-related expenditures. As shown in table 6, for example, they estimated that to treat alcohol-abuse-specific illness (e.g., alcoholism, alcohol psychosis, cirrhosis) in 1977, alcohol specialty facilities expended about \$700 million, and general health facilities spent \$2 billion. Another \$3 billion was spent for alcohol-related illness and trauma. Cruze's \$700-million figure for expenditures by alcohol specialty facilities for alcohol-abuse-specific illness is close to the amount of funding for all alcoholism treatment units reported by the National Institute on Alcohol Abuse and Alcoholism (216).

Table 5.—Estimated Economic Costs of Alcoholism in 1977

	Millions of dollars	
Core costs		
Direct:		
Treatment (for alcoholism and causally related illness)		\$5,637
Support (research, education and training, construction, insurance administration).		735
Indirect:		
Lost productivity due to:		
Premature mortality.	\$10,715	
Morbidity resulting in:		
Reduced productivity and lost work time	23,593	
Lost employment.	2,481	
	\$36,789	36,789
Total core costs.		\$43,161
Other Related Costs:		
Direct:		
Motor vehicle crashes (funeral, legal/court, insurance administration, accident investigation, vehicle damage) . .		\$1,782
Criminal justice system		1,685
Social welfare program administration		142
Other (fire losses, fire protection, highway safety)		832
Indirect:		
Lost productivity due to:		
Alcoholics' incarceration		1,418
Others' lost worktime because of motor vehicle crashes .		354
Total other related costs		\$6,213
Total economic costs		\$49,374

SOURCE: Adapted from A. M. Cruze, H. J. Harwood, P. L. Kristiansen, et al., *Economic Costs to Society of Alcohol and Drug Abuse and Mental Illness 1977*, final report prepared by the Research Triangle Institute for the Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services, October 1981.

Table 6.—Estimated Health Care Expenditures for Alcohol Abuse in 1977, by Setting (millions of dollars)

Setting	Total expenditures	Expenditures on alcohol-abuse-specific illnesses
Alcohol specialty facilities		
Hospital-based facilities:		
State and county psychiatric hospitals	\$200	\$200
Private psychiatric hospitals	34	34
Veterans Administration neuropsychiatric hospitals	29	29
General hospitals with separate psychiatric facilities	43	43
Subtotal	\$306	\$306
Other facilities and services:		
Federally funded community mental health centers	129	129
Residential treatment centers for children	—	—
Halfway houses	37	37
Multiservice mental health facilities	8	8
Other free-standing facilities	198	198
Alcohol specialty units in correctional facilities	3	3
Private practice psychiatrists	18	18
Private practice psychologists	8	8
Subtotal	\$401	\$401
Total	\$707	\$707
General health facilities		
Hospital-based facilities		
Community hospitals	\$2,274	\$880
Veterans Administration general hospitals and other facilities	425	321
Other Federal facilities	149	84
Subtotal	\$2,848	\$1,285
Other facilities and services:		
Nursing homes	108	98
Private practice physicians	548	16
Dentists	443	195
Other health professionals	133	62
Drugs and drug sundries	525	232
Other health services	222	90
Volunteer services	103	45
Subtotal	\$2,082	\$716
Total	\$4,930	\$2,001

SOURCE: Adapted from A. M. Cruze, H.J. Harwood, P. L. Kristiansen, et al., *Economic Costs to Society of Alcohol and Drug Abuse and Alcoholism* 1977—final report prepared by the Research Triangle Institute for the Alcohol—Drug Abuse, and Mental Health Administration, Department of Health and Human Services, October 1981.

As can be seen in table 5 drawn from Cruze, lost productivity accounted for the greatest share of the economic costs of alcoholism, followed by costs for treatment, motor vehicle crashes, the criminal justice system, other, and social welfare administration (indirect "other related costs" are included here under productivity)—for a total of about \$49.4 billion. Using a double-digit minimum for inflation since 1977 (i.e., an average of 10 percent per year), one can estimate that the current cost of alcoholism and alcohol abuse is \$72 billion annually.

Although the double-digit minimum procedure provides a rough total, a more accurate way of assessing the impact of inflation is to make separate estimates for each market segment (e.g., medical costs, education and training, and earnings). If that were done, the costs of treatment would double (both because of inflation and with unreliability), but the costs of motor vehicle crashes would decrease as a consequence of inflation, drinking age increases, tougher drunk driving and safety laws (58), and lowered average driving speeds. Productivity losses would also

decrease slightly because wage increases have not kept up with inflation. Whatever method is used to estimate costs, however, the total cost of alcoholism is substantial and has steadily increased.

The Cruze study, although it used a method that at times significantly departed from earlier studies, yielded a total cost of alcoholism that, when adjusted to inflation, was similar to the estimate of the prior principal study. That study, by Berry, Boland, Smart, and Kanak (29), found the costs of alcoholism to be \$43 billion in 197s. However, there were major differences in the two studies' costs by category; for present purposes, the most important of these differences was Berry's estimate of \$12 million in health care costs owing to alcoholism and alcohol abuse compared with Cruze's estimate of \$5 million.

Cruze and associates used a so-called illness-specific method and thus did not include health care costs of illnesses related to alcoholism or complicated by alcohol abuse. Berry and associates, on the other hand, used a population-specific method whereby they estimated all health care costs incurred by individuals with a history of alcohol abuse, including hospital care, physicians' services, drugs, and nursing home care. They then compared these costs to the per capita rate of health care utilization for the non-alcohol-abusing population. The difference between the two rates was attributed to alcohol abuse and was multiplied by the estimated prevalence of alcohol abuse to produce an estimate of total health care costs caused by alcohol abuse. They also included government public health activities, training, and facilities construction as part of the total health care costs, although these costs were relatively minor.

The primary difference between the Cruze and Berry figures—and perhaps between any estimated and actual health care costs for alcohol abuse—can be accounted for by their differing estimates of the range of illnesses thought to be associated with alcohol abuse (cf. 85). The Berry analysis comes closer to including costs associated with all such illnesses. However, the exclusion of data for family members and victims of accidents related to alcohol abuse, as well as the conservatism of the estimates, probably resulted in an underestimate.

Support for the view that costs are underestimated by these analyses is provided by the Institute of Medicine's report on alcoholism as a health problem (144). In a chapter prepared for the report, it is argued that each of Berry's categories underestimate the populations affected by alcoholism (see 276). In particular, the estimate of health costs did not include costs of related problems (such as fetal alcohol syndrome) and of illnesses not directly related to the abuse of alcohol. The Institute of Medicine indicates that Berry's estimate of the health care costs of alcoholism was understated by 40 percent. Nevertheless, it represented 12 percent of the total national health care expenditures by adults in 197s.

Noting the fact that various studies emphasize the conservative biases of almost all of their estimates, the Institute of Medicine points out that disagreements over details should not obscure "the essential qualitative conclusion" that alcohol abuse imposes very large costs on society (144). The analysis of Schifrin and colleagues (276) for the Institute of Medicine indicated that the 197s total economic costs could be as high as \$60 billion (40 percent greater than Berry's estimate), which would make the 1982 economic costs of alcohol abuse approach \$120 billion. Research that could contribute to a lessening of these costs is, in the view of the Institute's panel, seriously underfunded. The Institute notes by way of comparison that cancer research receives 70 times as much money as does alcoholism research in relation to the costs of the illnesses (cancer costs were estimated at \$19 billion in 197s; Berry's estimate of \$43 billion was used for the costs of alcoholism). In 1978, \$627 million was spent for cancer research and only \$16 million was spent for alcoholism research.

Assessment of the economic costs of alcoholism and alcohol-related problems is obviously limited by the inability to clearly identify problems directly caused by, rather than merely associated with, alcohol. The prevailing view seems to be that most estimates of these costs are too low, because alcoholism's role in medical problems cannot be fully explicated. The opposite position has also been adopted by at least one analyst (194), who reported in a study for the Distilled Spirits Council of the United States that none of the costs assigned

by Berry and associates could be attributed unconditionally to alcohol use. Such arguments, however, would seem to be diluted by the potential for illnesses to be missed.

One additional type of cost to which researchers invariably allude, but which is particularly difficult to measure, are the indirect psychological costs of alcoholism. Effects on children whose parents are alcoholic, including future losses in productivity (e.g., in children who underachieve because of low self-esteem associated with having alcoholic parents) are also typically omitted from CBAS (78). Even if these psychological costs were identified, their effects on the future (e.g., for productivity) are often exceedingly difficult to measure.

One way of understanding the costs of alcoholism has been noted by Luce and Schweitzer (183). On the basis of 1975 data, these analysts estimated the yearly cost to society for each alcoholic to be approximately \$5,000. Luce and Schweitzer's calculation of this figure was based on the assumptions that there were 9 million alcoholics and alcohol abusers and approximately \$44 billion in costs to society from alcoholism. If the figure is conservatively adjusted for inflation, the yearly cost for each alcoholic at present is over \$10,000. If only a portion of that \$10,000 could be recovered by a moderately effective treatment system, it should be possible to achieve significant reductions in the economic, social, and health care costs of alcoholism and alcohol abuse.

Cost-Effectiveness and Cost-Benefit Studies of Alcoholism Treatment

Led by State governments and private industry employers, a number of efforts to expand alcoholism treatment benefits have been developed and studied during the past 10 years. In 1979, Jones and Vischi, ADAMHA staff members, reviewed available literature with respect to alcoholism treatment's impact on medical care utilization and produced a comprehensive review of cost-effectiveness and cost-benefit studies (158). Their review, which included analyses of the dozen such studies then available, found surprisingly consistent results across studies. Each of the investigations Jones and Vischi evaluated found that alco-

holism treatment resulted in a significant reduction in medical care use and expenditures. The median reduction in sick days and accident benefits was 40 percent.

From a technical point of view, the 12 studies reviewed were principally cost-benefit rather than cost-effectiveness studies. Their focus was on the benefits of alcoholism treatment in terms of externalities (rather than a comparison of treatment effectiveness according to cost). Not all the studies concluded with a cost-benefit ratio, although most could have. In several of the studies reviewed, a benefit was established only when partial effects (e.g., reductions in sick leave, net reductions in health care costs or effects of improved health status on others) were considered.

Unfortunately, methodological problems were present in each of the studies reviewed by Jones and Vischi. One difficulty was a treatment design problem. Most studies were conducted in employee-based alcoholism programs or in organized health care settings, particularly health maintenance organizations (HMOS). Such programs and settings have particular economic incentives and tend to emphasize treatments that are low cost and do not take individuals away from their work. All 12 of the studies were flawed by their failure to identify medical utilization outside of the study (e.g., in HMOS, by private practitioners) because they used nonequivalent comparison groups (i.e., quasi-experimental design). The studies also failed to control or adjust for increases in pretreatment medical utilization caused by the referring visit. In general, the studies were of short duration (1 year or less) and used limited treatment outcome measures.

Nevertheless, the existence of positive results across 12 studies conducted by independent investigators in different settings gives added weight to the conclusion that alcoholism treatment is cost beneficial. Four representative studies reviewed by Jones and Vischi and two studies completed subsequent to their review are further described below.

Philadelphia Police and Fire Departments

Jones and Vischi (158) reviewed two studies conducted in Philadelphia, one with the police

department (319) and one with the fire department (318). The results of both studies illustrate not only the potential benefits of alcoholism treatment programs, but also the problems in developing definitive statements about the results of such programs.

In both programs, a counseling service was set up for employees with alcohol and other drug, mental health, or financial problems. An insurance program paid for hospitalization and rehabilitation where referrals were made. The studies included a relatively small number of individuals: 170 police officers and 77 firefighters. In both groups, only a small group actually accepted and received treatment other than brief counseling.

The findings in both studies are relatively consistent. The number of sick days and days lost due to injury following counseling or inpatient or outpatient care for alcoholism sharply declined. The data indicate that the more intensive the treatment, the better: the inpatient group showed the largest reduction in sick and injured days; the outpatient group, the next largest reduction; and the group that only received counseling, a smaller decline (to a level below the average rate for police and firemen).

In cost effectiveness, outpatient programs appeared to have an advantage. For the police program, the ratio of savings (savings were equated with the dollar value of reductions in sick leave minus the costs of counseling) for outpatient treatment to costs for outpatient treatment was 3:1; for the fire program, the ratio was 1.5:1. For inpatient treatment, the benefit-cost ratios were 0.9:1 (police) and 0.25:1 (fire). According to Jones and Vischi, the poor cost savings of the inpatient fire program may be attributable to the program's practice of assigning only the worst cases to inpatient treatment. Overall benefit-cost ratios were 1:1 (police) and 0.4s:1 (fire).

Despite these seemingly positive results, any conclusions from the Philadelphia studies are clouded by the exclusion of variables on both sides of the benefit-cost equation. On the benefit side, savings were calculated only for the departments involved and not for the individuals or insurance companies. On the cost side, inpatient costs apparently included only the cost of sick leave and

not the costs of treatment beyond counseling. Without more comprehensive data, the relative cost effectiveness of the treatment settings cannot be determined in any definitive way.

The Philadelphia studies also lack a control group and random assignment of participants to treatment. It is not clear whether declines in sick days and injured days are merely a regression toward the mean phenomenon (extreme responses should naturally become more average over time, hence regression to the mean (67) or whether they represent the direct effects of counseling and treatment. It is, of course, suggestive of the causal relation that most posttreatment rates (e.g., injured days per year for police, both sick and injured days per year for the fire program) were below rates for average police and firemen. However, statements concerning cost effectiveness are limited by the exclusion of data on the costs of inpatient care and insurance premiums on the cost side and of posttreatment medical use on the benefit side.

General Motors

Jones and Vischi (158) also reviewed Lunn's study (185) of a program for General Motors employees in Canada. This study used an untreated comparison group. Approximately 100 employees who were interviewed by the company doctor and referred to treatment were compared to approximately 50 employees who were similarly referred but did not undergo active treatment. During the time of treatment (not specified), the experimental group's use of sickness and accident benefits declined by 48 percent, while the comparison (untreated) group's use increased 127 percent.

Although the changes in utilization rates are significant, it is not clear whether the groups were really comparable. Post hoc analyses indicated that there was a significant difference in the level of use of health benefits prior to entry into treatment. Differences in outcomes between groups may just reflect the doctors having "caught" alcoholics at different stages in their illnesses. The comparison group appears to have lagged behind the study group by about a year in the severity of the impact of their alcoholism.

California Pilot Program

The so-called California pilot program study (139) reviewed by Jones and Vischi (158) was designed, in part, to investigate whether health insurance coverage for alcoholism treatment had any impact on overall health care use and expenditures by alcoholics and their families. Although study conclusions are limited by the failure to present data on a comparison group of untreated alcoholics, strengths of the study include the inclusion of costs and benefits in monetary terms and the inclusion of treatment provided in both organized and unorganized care settings, on both prepaid and fee-for-service bases.

Alcoholism benefits in the California pilot program were provided through three different insurance carriers to a study group of 240 families that had at least one alcoholic member. The benefit consisted of a maximum of 6 days of detoxification, 21 days in a general hospital or specialized alcoholism treatment center, 30 days in a recovery home or other residential facility, and 45 outpatient visits. Mean monthly medical utilization and costs for alcoholics and their family members were collected for 12 months prior to treatment and from 3 to 20 months after treatment. Results differed by carriers, setting, and person treated (alcoholics v. family members). Overall results from reduced medical use indicated a savings of \$46 per alcoholic per month. Extrapolated to the alcoholic population of the entire pilot program, estimated savings equaled \$280,000, or 41 percent of the total cost of the pilot program.

Blue Cross/Blue Shield, the carrier that had been the most restrictive in its alcoholism coverage prior to participating in the California pilot program, experienced a 41-percent decline in post-treatment average medical costs per month. The least restrictive carrier experienced a large (134 percent) increase in medical costs for alcoholics, although this increase may have been attributable to a skewed sample. Among the notable effects for all providers was a substantial posttreatment decrease in alcoholics' use of inpatient treatment and an increase in use of less expensive forms of care, such as outpatient treatment. However, the length and average cost per posttreatment inpatient stay across all providers increased for alco-

holics (length of stay increased an average of 50 percent, from 2.3 to 3.5 days; cost increased by 34 percent, from \$575 to \$771). On the other hand, these utilization rates and costs decreased for other family members.

A followup study (138) published in 1981 indicated substantial fluctuations in costs and utilization over a 5-year period. By the end of the fifth year, however, medical care utilization by alcoholics and their family members had declined, and both utilization and costs were lower than those of control group members. Results such as these indicate the importance of longitudinal studies. The problems of alcoholics and their families are both deep-seated and longstanding, and effects may take considerable time to appear. When treatment becomes available, previously hidden problems may be uncovered and presented for treatment; however, research indicates that eventually such treatment pays off, as less and less care is needed over time.

An additional important finding of the California pilot program study was the posttreatment decrease in diagnoses often reported for getting alcoholism treatment when such treatment is not legitimately reimbursable. Before the pilot program began, 91 persons had been diagnosed for gastrointestinal, psychiatric, and other alcohol-related illnesses; subsequent to treatment, the number was 20.

Group Health Association

The most extensive study of the cost effectiveness of providing alcoholism treatment benefits was available only in partial form at the time of Jones and Vischi's review (158), but has since been completed. The study, conducted by the Group Health Association of America (GHAA), was a 7-year study by Plotnick and associates that evaluated the feasibility of providing comprehensive alcoholism treatment programs in four HMOS (247). The programs were outpatient oriented, but each attempted to provide comprehensive and continuous treatment services. The investigators collected and analyzed data on patient functioning, health status, and treatment use for over 2,000 patients. Of the subjects in the study, 1,033 were alcoholics in treatment; others were spouses,

family members, and a group of nonalcoholic HMO members matched by age, sex, and length of membership in the HMO.

GHAA (247) found that outpatient-oriented alcoholism treatment programs appeared to be both effective and cost-beneficial. Patients in treatment over a 3-year period declined in their use of alcohol by 65 percent after 6 months and by approximately 70 percent after 2 years. Alcoholic patients also increased their length of abstinence from 8 days at intake to 19 days after 6 months, remaining at 19 or 20 days throughout the 3-year follow-up. Patients also showed improvement on work-related dimensions as measured through reduction in reprimands (75 to 90 percent) and days sick or absent from work (an average of 50 percent).

These improvements paralleled improvements in measures of medical care use. Alcoholic patients reduced ambulatory health care service use between 11 percent (after 6 months) to 30 percent (after 4 years). These patients also showed an immediate decline in the percentage of emergency care visits (from 31 to 9 percent after 6 months) and an increase in the percentage of regularly scheduled visits (from 59 to 78 percent after 6 months). However, alcoholics used more ambulatory care services than did the members of the comparison group. Relative utilization went from seven times as many encounters with health care providers to three times as many encounters over 4 years of study.

Hospitalization experience was less positive in the GHAA study (247). There were modest reductions relative to matched groups in three studies and an increase in a fourth site that was cautiously attributed to demographic characteristics of the sample. Furthermore, there was a substantial "peaking" phenomenon in one site at which utilization was measured frequently, with one increase in length of stay among alcoholics at 6 months before intake and another increase, though less dramatic, 24 months after intake. Plotnick and colleagues attribute this increase, and the high utilization rates overall, to the chronic and severe health problems generally experienced by alcoholics.

Because of methodological problems, it is unclear whether the small number of subjects or prior patterns of hospitalization account for the differences. The GHAA study (247) was limited by the fact that it compared alcoholics receiving treatment to a population of individuals who were presumably relatively free of alcoholism problems. It also did not directly compare outpatient alcoholism treatment with inpatient treatment, since the HMOS had previously concluded that outpatient treatment was more cost effective. Finally, cost data could not be included in the results of the study; because of their prepaid nature, HMOS seldom focus on costs per service. An analysis of costs by department, done by one of the HMOS participating in the GHAA study, was reviewed for alcoholism treatment effects by Plotnick and associates. They found no cost savings in health care utilization. It is noteworthy, however, that all of the HMOS involved in the 1982 study have decided to continue providing alcoholism treatment services.

U.S. Air Force

Orvis, Armor, Williams, Barras, and Schwarzbach (234) compared the cost-effectiveness of inpatient, outpatient, and education-only treatments for U.S. Air Force personnel in a nonexperimental clinical trial. Twenty-eight days of inpatient care at an Air Force Alcohol Rehabilitation Center cost \$3,000; 10 sessions of outpatient care cost \$900; and a series of awareness seminars cost \$60 per person. Much of the inpatient cost was attributable to lost work time. Direct costs were \$1,705 for inpatient treatment, \$649 for outpatient treatment, and \$28 for alcohol awareness seminars.

The CEA consisted of estimating the annual cost savings per capita for those severely and moderately impaired and comparing the savings to the cost of treatment. Using this method, it would take 4 years for a 28-day inpatient treatment for the severely impaired to pay for itself, compared to a little less than 2 years for outpatient treatment to pay for itself. For nondependent alcoholics, it would take longer. These figures, based on the equivalent effectiveness of all treatment

contexts, result in an average 50 percentage point reduction in problems for all participants and no statistical differences in remission rates, which were between 70 and 80 percent. However, while these figures are suggestive, the fact that patients

were not randomly assigned to treatments and that most clients received a combination of all types of treatment somewhat limits the usefulness of the study.

CONCLUSIONS

There is some evidence to support the hypothesis that alcoholism treatment is cost-beneficial. The benefits of alcoholism treatment, even if they fall short of what maybe claimed, seem to be in excess of the costs of providing such treatment. It is difficult from the available evidence to determine the relative effectiveness or cost effectiveness of inpatient v. outpatient treatment; it is also difficult to determine how changing the mix of providers or types of treatments would affect either effectiveness or cost effectiveness. Because different groups receive different treatments, there is an inherent methodological difficulty in interpreting most of the available research.

It does seem clear, however, that many alcoholism treatment services are not cost effective—i.e.,

there are less expensive ways of providing treatment than are reflected in current reimbursement policy. However, reimbursement systems, particularly the Medicare and Medicaid programs, have overwhelmingly emphasized the most expensive treatment services—inpatient, medically based treatment.

Questions about the wisdom of this approach have resulted in recent changes in private reimbursement systems as well as clarification of Medicare policy, and an attempt to systematically evaluate whether changes in policy would result in health care cost savings. Some of these issues are addressed in the following chapter.