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SUMMARY OF COST-BENEFIT STUDY RESULTS FOR NAVY ALCOHOLISM REHAB--ETC(U)

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Technical Report No. 346  
SUMMARY OF COST-BENEFIT STUDY  
RESULTS FOR NAVY ALCOHOLISM  
REHABILITATION PROGRAMS

by

R. B. Borthwick

1 July 1977

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Prepared for  
Chief of Naval Personnel  
Navy Alcohol Prevention Personnel  
Washington, D.C.  
Under  
Contract No. N00123-77-C-0910

2361 S. Jefferson Davis Highway  
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ABSTRACT

This report summarizes the results of the cost-benefit studies carried out for the Department of the Navy's (DoN) Alcoholism Prevention Program (NAPP). This work focuses on the effects of the resident treatment programs on replacement, hospitalization, accidents, jurisprudence and productivity aspects of Navy and Marine Corps operations. Aggregated economic costs and losses due to alcohol abuse in the DoN are estimated and presented. The report concludes that the existing resident treatment effort for alcoholics is highly cost effective and in the best interests of the Navy and Marine Corps. Further, the annual economic losses to the DoN are of such magnitude that continued efforts toward alcoholism prevention and earlier identification of alcoholics are warranted.

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SUMMARY

1. This report presents a summary of results arising from a study and analysis of the Department of the Navy's (DoN) alcoholism rehabilitation effort. Principal attention is directed at the rehabilitation versus replacement proposition. In addition, the areas of hospitalization, accidents, jurisprudence and productivity are also addressed. The work was performed for the Director of the Alcoholism Prevention Division of the Bureau of Naval Personnel under Contract No. N00123-C-77-0910.

2. Major findings and conclusions of the study are:

- Alcohol abuse results in annual economic losses ranging between \$360 and \$680 million per year (page 1).
- The alternative of arbitrarily discharging diagnosed alcoholics and replacing them with new personnel is 2.2 times more costly than the present alcoholism rehabilitation initiative. Most important, the advantage in rehabilitating the career personnel group (ages-26-and-over) is more than 5 to 1 (pages 14 and 28).
- With 5,077 Navy and Marine Corps personnel afforded resident alcoholism treatment during 1976, the DoN spent \$22.6 million. To obtain the same number of man-years of future service by replacing these personnel, it would have cost the DoN \$49 million (page 16).
- Treatment effectiveness for the age-26 and-over group (essentially career personnel) is 83%. The present treatment effectiveness for age-25-and-under personnel is 44% based upon a 2-yr posttreatment evaluation (pages 2, 13, and 15).
- Prior to treatment, alcoholics have a sick day rate three times higher than the average Navy-Marine Corps service member.

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Successful rehabilitation returns the sick day rate to the all-Navy-Marine Corps average of 2.7 days per person per year. Considering only the 5,077 alcoholics treated in residential facilities during calendar year 1976 (not including the 12,609 alcoholics treated as nonresident or outpatients), this reduction in demand for inpatient health care services in the 2-yr posttreatment period equates to a cost avoidance of \$5.5 million. Similarly, an additional \$2.3 million in outpatient health care resources are made available during the same 2-yr posttreatment period (pages 20 and 21).

- Thirty percent of the treated alcoholics were not hospitalized for any reason during the 2-yr period immediately prior to alcoholism treatment. Thus, medical officers cannot be expected to assume the entire responsibility for identifying alcoholics. Therefore, alcoholism identification functions must also be performed in line and operating organizations (page 21).
- The performance of the Alcohol Rehabilitation Drydocks shows an effectiveness rate comparable to the ARC/ARU system. The increased utilization of ARD facilities increases the overall cost-benefit advantages of the resident alcohol rehabilitation program (pages 18 and 19).
- Examination of the medical histories of 538 Navy enlisted alcoholics shows that prior to treatment 20% of the group suffer personal injury accidents at a rate six times higher than the all-Navy average. Conversely, the remaining 80% injure themselves at one-half the all-Navy average rate prior to treatment (page 25).

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I. INTRODUCTION AND BACKGROUND

INTRODUCTION

1.1 Alcohol abuse problems in the United States are a \$32 billion a year headache according to the National Institute on Alcohol Abuse and Alcoholism. By conservative estimates, alcohol abuse in the Department of the Navy results in an annual \$360 million to \$680 million economic loss.

Scope

1.2 To reduce these losses and simultaneously improve personnel operational readiness, the Chief of Naval Personnel in 1971 initiated the Navy Alcoholism Prevention Program (NAPP). This report summarizes the findings and conclusions of cost-benefit analyses and management effectiveness studies carried out during the past 2 yr. The study efforts have examined the cost-benefit impacts on the Department of the Navy with respect to:

- Rehabilitation versus replacement of alcoholic personnel
- Hospitalization rates
- Alcohol-related accidents
- Jurisprudence actions
- Productivity.

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1.3 Of these areas, the rehabilitation versus personnel replacement proposition has the greatest impact and offers the most immediate and readily quantifiable results. For example, the resident alcohol rehabilitation effort in the Department of the Navy treated 5,077 personnel during 1976.\* Had the Navy elected simply to discharge these alcohol-dependent personnel instead of treating them, it would have cost the Department of the Navy \$49 million. Instead, the \$22.6 million expended in the resident rehabilitation effort resulted in a \$26.4 million savings. In addition, substantial numbers of skilled, experienced Navy and Marine personnel were retained in the system.

1.4 Further, the policy of sending the rehabilitated individuals back to their commands contributed greatly to increased awareness throughout the Navy and Marine Corps that alcoholism is a disease that can be arrested. This treatment system presently shows an 83% effectiveness in rehabilitating alcoholic members who are age 26 and over and a 44% effectiveness rate for persons age 25 and under based upon 2-yr posttreatment evaluation.

### Facilities

1.5 The Navy now operates three large alcohol rehabilitation centers (ARCs), 15 smaller alcohol rehabilitation units (ARUs) in designated naval medical centers, and 56 alcohol rehabilitation drydocks (ARDs) in selected local commands. Additionally, the Navy's original pilot project begun in 1967 continues as the 80-bed Alcoholism Rehabilitation Service (ARS) of the Long

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\* Including outpatients and nonresidents, the total treated last calendar year was 17,686, and the total treated by the Navy from program inception through last December 31 exceeded 50,000 active duty service members.

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Beach Naval Regional Medical Center (NRMC). Table 1.1 provides a summary of facility operating characteristics.

TABLE 1.1  
CALENDAR YEAR 1976--NAPP RESIDENT TREATMENT FACILITIES

<u>Category</u>	<u>Centers</u> <sup>1/</sup>	<u>Units</u>	<u>Drydocks</u>
Sponsor	BUPERS	BUMED	BUPERS
Capacity	75 beds	12-20 beds	15 beds <sup>2/</sup>
Average time in residence	50.2 days <sup>3/</sup>	43.8 days	14 days <sup>4/</sup>

<sup>1/</sup> ARS Long Beach is equivalent to a center but is part of BUMED's NRMC, Long Beach.

<sup>2/</sup> Fifteen of these facilities are equipped for resident and nonresident treatment; 41 other facilities provide nonresident treatment only.

<sup>3/</sup> During the past year ARCs reduced their average patient time in treatment to 45.8 days, further improving the overall cost-benefit picture.

<sup>4/</sup> Continuing follow-on treatment for 8 to 10 wk is provided on a part-time, nonresident basis.

1.6 Treatment methods are generally similar among the different types of facilities. The treatment is a combination of the best multidisciplinary medical technology, professional and paraprofessional counseling, and Alcoholics Anonymous (A.A.). Sufficient latitude exists to vary the treatment regimen to meet individual needs.

1.7 Section II of this summary report provides the methodology and rationale for the study effort along with significant results. Section III provides significant conclusions and recommendations for management action.

## II. STUDY AND ANALYSIS RESULTS

2.1 During the past 2 yr, a comprehensive study and analysis effort of the program management within the Navy's Alcoholism Prevention Program has been conducted. Included in the results are the program's strong points and areas where changes could improve the program's effectiveness. This section discusses the methodologies and rationale employed and the significant findings developed. The areas of study included:

- Rehabilitation
- Hospitalization rates
- Alcohol-related accidents
- Jurisprudence actions
- Productivity.

### REHABILITATION VERSUS REPLACEMENT

2.2 The rehabilitation versus replacement alternative provides the most immediate and tangible cost-benefit advantage. Rehabilitation of alcoholics is not generally considered to be part of the mission of the Navy. However, alcoholism rehabilitation is justifiable from a personnel support standpoint if it improves the basic organizational operation or efficiency. If rehabilitation does not contribute directly to operational readiness, then it should be carried out by other agencies in the federal

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structure charged with alcoholism rehabilitation such as the Veterans Administration (VA).

2.3 This poses the basic tenets of the study: Should the Department of the Navy attempt to fully rehabilitate and retain its alcohol-dependent personnel or would it be more cost-effective to provide the minimum treatment required by law and discharge them to VA cognizance? In the former case, a successful rehabilitation effort returns an individual with experience and skills to the system. However, it is recognized that some fraction will not respond to the rehabilitation efforts and must ultimately be replaced in the system. In the latter procedure, replacement is automatic with the attendant risks of acquiring other alcoholic recruits from civilian sources.\* The rehabilitation versus replacement argument must consider the impact of manpower inventory level, expected future service in the system and dollar costs to quantify the alternatives for decision-making purposes.

2.4 Three basic criteria must be addressed in the rehabilitation alternatives. These are:

- The overall manpower inventory level will be maintained
- The man-years of future service obtained via the rehabilitation option should be greater than or equal to the man-years of service that could be obtained from any alternative solution

---

\* This study does not consider the percentage of replacement personnel who would be alcoholic and would eventually have to be treated and replaced. Inclusion of this factor, if known, would make the option to rehabilitate and retain alcoholic members even more attractive.

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- The cost of the rehabilitation option should be less than or equal to the cost of any alternative solution.

The first of the above conditions must be satisfied and the latter two should be mutually satisfied in the most desirable case. However, if only one of the latter two conditions is satisfied, the rehabilitation choice may still be advantageous. Where this occurs, either expected future service or dollar costs must be equalized for purposes of analysis and the other criteria then tested to make a final determination.

### Manpower Inventory

2.5 The size of the nation's military manpower inventory is legislated annually as part of the congressional budget authorization-appropriation process and Navy and Marine Corps endeavor to keep their manpower pools at this level. For the present peacetime environment, the combined strengths of the two services is approximately 720,000 officers and enlisted personnel.

2.6 It is also recognized that there is a continuing personnel turnover due to expiration of service contracts, retirements, medical unsuitabilities, discipline problems, etc. Therefore, each service's recruiting command must acquire personnel to fill the vacancies in the inventory and keep the manpower inventory at a prescribed level. This manpower pool process for enlisted personnel is depicted in Figure 2.1.

### Expected Future Service

2.7 A second consideration in the manpower system is the notion of personnel turnover or the time people remain in the Navy-Marine Corps manpower inventory. Currently, reenlistment and

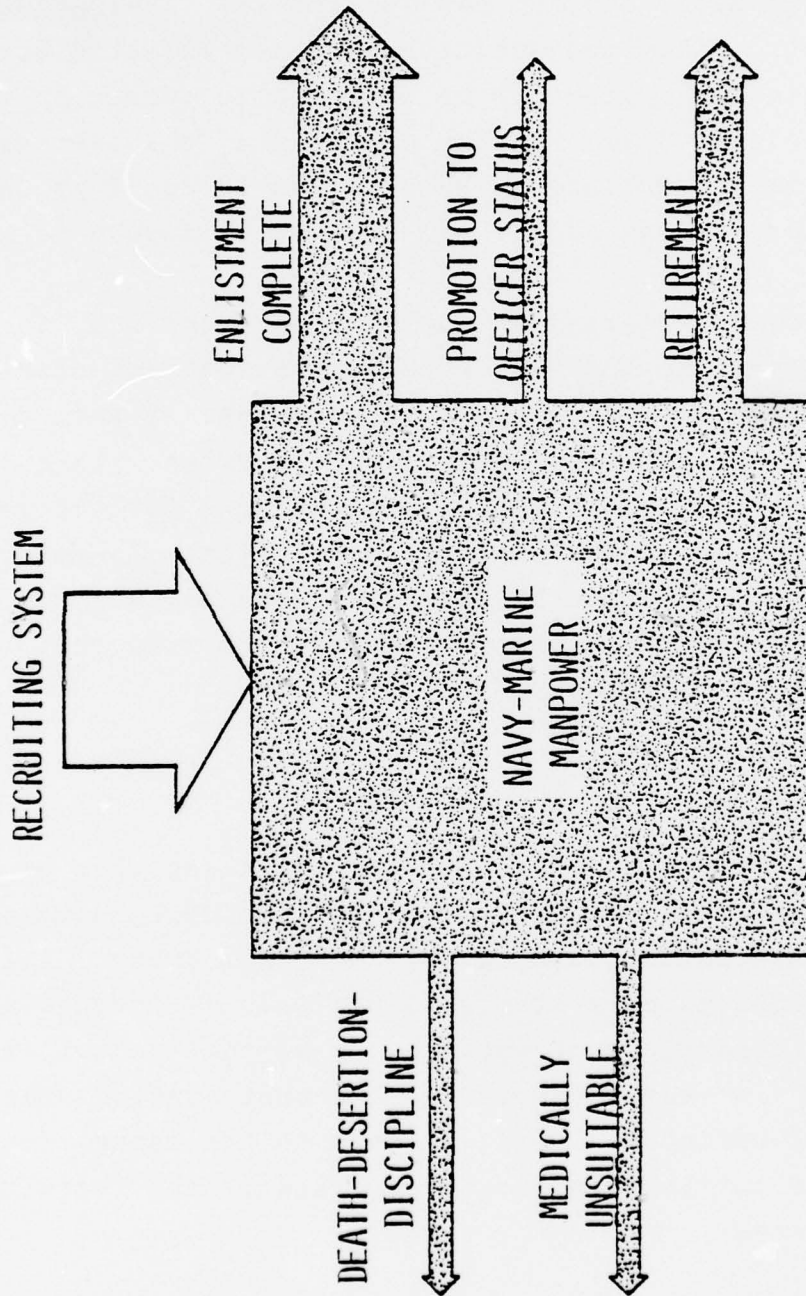


FIGURE 2.1  
ENLISTED MANPOWER INVENTORY

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attrition rates are such that the Navy and Marine Corps must recruit and train about 120,000 new service personnel annually to maintain their authorized strengths. A new enlisted acquisition brought into the system can be expected to remain on the average a little over 4 yr. On the other hand, the average career service member who has already served 10 to 11 yr can be expected to provide an additional 10.5 yr of future service.

2.8 As individuals progress through military service, there is continuing attrition due to discharge, medical and discipline problems, etc. The surviving group in each year-of-active-service cell has a different expectancy for future service. This is an actuarial function and is shown in Figure 2.2 for the composite Navy and Marine Corps enlisted population. Therefore, the return in terms of expected future service to the Navy or Marine Corps is predictable and varies with the time that the individual has already served.

Costs

2.9 The model methodology used herein recognizes that expenses incurred for recruiting, recruit training (including some percentage of initial skill training) are marginal costs. That is, the personnel acquisition system will continue to recruit and train personnel regardless of whether the alcohol rehabilitation program functions or not. Therefore, the costs reflect the resource impact of adding 1, 5, or 100 more to the annual recruiting load, but do not include the fixed costs of the recruiting and training system.

2.10 The cost of alcoholism rehabilitation, however, includes the fixed costs of overhead and administrative expenses associated with center, unit, and drydock facilities along with directly

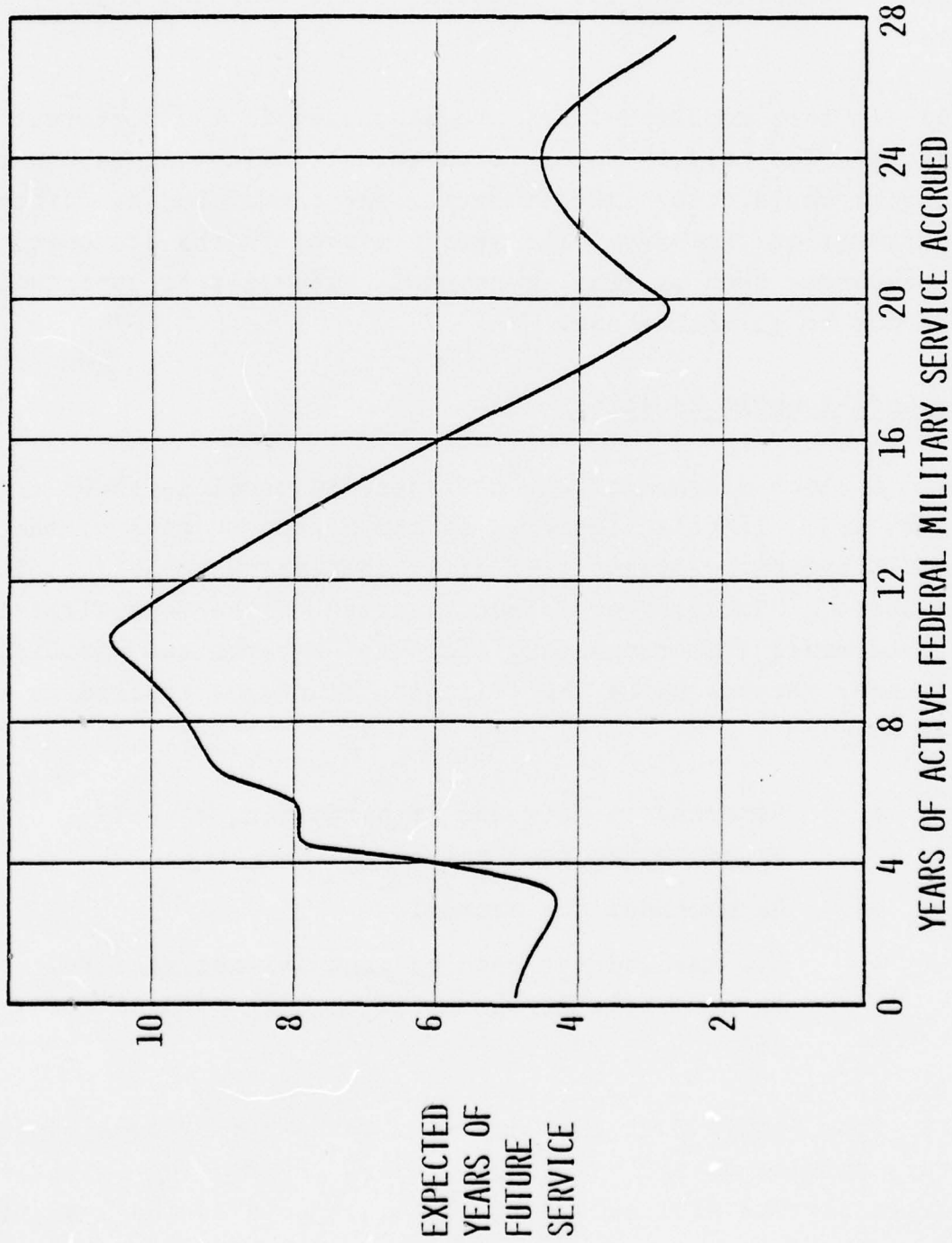


FIGURE 2.2  
COMPOSITE NAVY-MARINE CORPS FORECAST OF EXPECTED FUTURE MILITARY SERVICE  
VERSUS ACTIVE FEDERAL SERVICE ALREADY PERFORMED

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variable costs. Also included are the salaries of patients, counselors, and support staff in the alcoholism treatment system. Table 2.1 provides a listing of the items included in each of the categories and the resulting costs computed in 1977 dollars.

2.11 In this report dollars are discussed in two different aspects. The primary focus is on actual dollar changes that occur or could occur in formulating the annual budget for the Department of the Navy. The second aspect is the economic value of resources such as time, personnel, materials or opportunities lost due to alcohol abuse.

### The Cost-Benefit Equation

2.12 A block diagram of the cost-benefit model is shown in Figure 2.3. In this figure, X is the "success" rate of the rehabilitation treatment 2 yr after completing rehabilitation treatment. "Success" or "effectiveness" of the rehabilitation is determined from commanding officers' reports and official personnel records using the following standards applied to each person:

- Returned to duty and is performing as well as or better than peers
- Recommended for promotion
- Recommended for reenlistment (or has received an honorable discharge if no longer on active duty).

2.13 From Figure 2.2, the composite Navy-Marine Corps expected future service of the new accession is 4.8 yr. The net productive service will be 4.3 yr allowing for 6 months lost time

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TABLE 2.1  
COST CONSIDERATIONS

Rehabilitation Program		Replacement Alternative
Success	Failure	
Composite cost of ARC-ARU-ARD rehabilitation (including staff salaries)	Composite cost of ARC-ARU-ARD rehabilitation (including staff salaries)	Cost of minimum required alcoholism treatment (including staff salaries)
Individual's salary during treatment	Individual's salary during treatment	Individual's salary during treatment
--	Cost of discharging rehabilitation failure	Cost of discharging the alcoholic
--	Cost of new accession (replacement)	Cost of new accession (replacement)
Cost per person \$2,302	Cost per person \$8,187	Cost per person \$6,680

$$\begin{array}{ccc} \text{SUCCESSFUL} & & \text{ALTERNATIVE ROUTE} \\ \text{REHABILITATION} & & \\ \boxed{\begin{array}{c} X \\ \text{EXPECTED} \\ \text{FUTURE SERVICE} \\ \text{COST} \end{array}} & + & \boxed{\begin{array}{c} \text{UNSUCCESSFUL} \\ \text{REHABILITATION} \\ \text{EXPECTED} \\ \text{FUTURE SERVICE} \\ \text{COST} \end{array}} \\ & & = \\ & & \boxed{\begin{array}{c} \text{EXPECTED} \\ \text{FUTURE SERVICE} \\ \text{COST} \end{array}} \end{array}$$

FIGURE 2.3  
COST-BENEFIT EQUATION

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to accomplish recruit training, initial skill training (special schools) in 65% of the cases, and travel between training sites and the first duty station. Thus, the break-even equation for alcohol rehabilitation versus replacement is:

$$\frac{(X) (EFS) + (1-X) (4.3)}{(X) (2302) + (1-X) (8187)} = \frac{(4.3)}{6680}$$

where:

X = treatment success (in percent times .01) at the 2-yr posttreatment point

EFS = expected years of future service.

2.14 The results of this equation are plotted in Figure 2.4. Success is measured at the 2-yr posttreatment point because the relapse or "slip" rate over time has become relatively stabilized as shown in Figure 2.5. The current program treatment success rates are displayed in Figure 2.4 as two discrete points for the age-26-and-over group and for the age-25-and-under group. The success rate has been 83% and 44% respectively.

Output Results for 1976

2.15 The Navy's residential alcoholism facilities provided treatment for 5,077 active duty military personnel during 1976. The cost-benefit analysis of the costs and man-year benefits are summarized in Table 2.2. It is clearly apparent from Figure 2.4 and Table 2.2 that the rehabilitation alternative for the age-26-and-over group is far more advantageous than replacing these alcoholics with new recruits. For example, during 1976 the replacement alternative for this age group would have cost the Navy \$17 million for the year that treatment took place

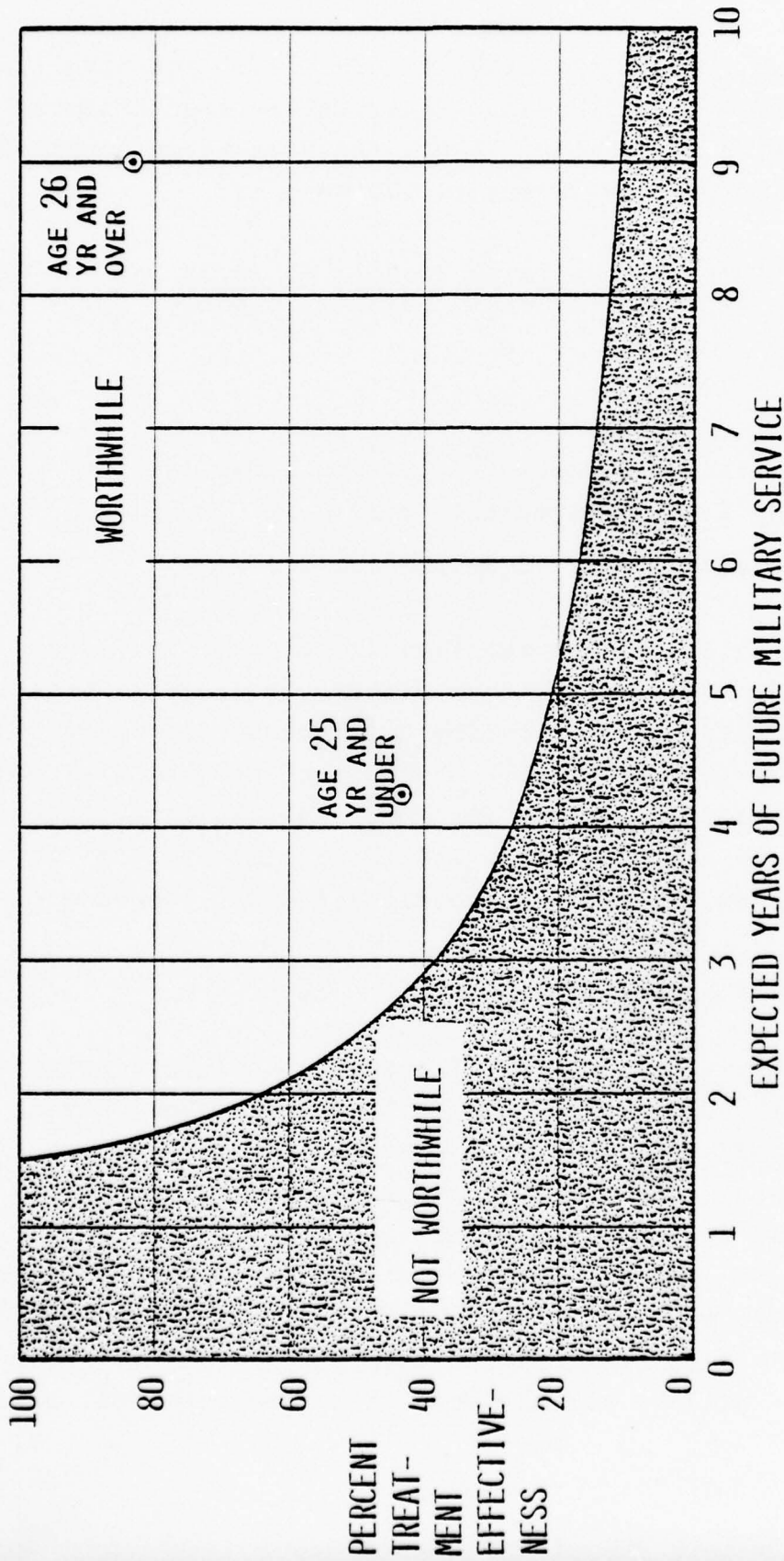


FIGURE 2.4  
PERCENT TREATMENT EFFECTIVENESS VERSUS EXPECTED FUTURE MILITARY SERVICE TO ACHIEVE A BREAK-EVEN PROGRAM

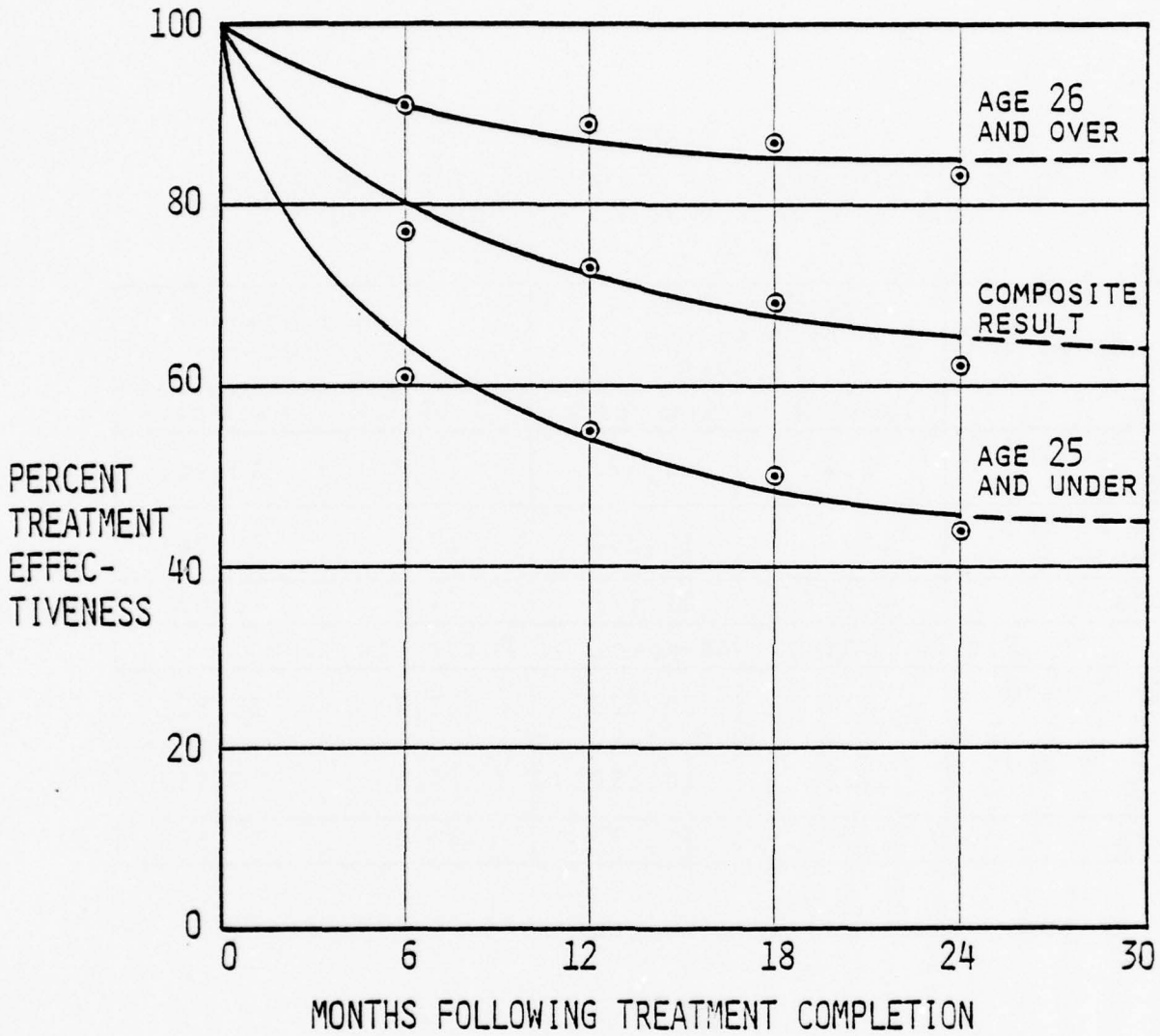


FIGURE 2.5  
REHABILITATION SURVIVAL TRENDS FOLLOWING TREATMENT  
(Navy and Marine Corps Enlisted Personnel)

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TABLE 2.2  
 COSTS AND MAN-YEARS OF FUTURE SERVICE COMPARISON  
 FOR 1976 TREATMENT PROGRAM EXPERIENCE\*

Category	Resident Rehabilitation Program		Replacement Alternative	
	1977 \$M	Man-years	\$ 1977 M	Man-years
Age 26 and over	8.4	20,825	17.0	10,965
Age 25 and under	14.2	10,852	17.0	10,965
Total	22.6	31,677	34.0	21,930
For Equivalent Man-years of Future Service				
Age 26 and over	8.4	20,825	32.2	20,825
Age 25 and under	14.2	10,852	16.8	10,852
Total	22.6	31,677	49.0	31,677

\* Resident load for calendar year 1976--5,077 persons.

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whereas actual treatment expenditures amounted to only \$8.4 million. On the other hand, had the replacement option been selected, the Navy would have essentially spent \$32.2 million to obtain the same number of man-years that were acquired by the rehabilitation program. (This is shown in the bottom portion of Table 2.2.)

2.16 The age-25-and-under resident treatment population also provides a distinct cost benefit advantage. The return, in man-years, is approximately the same at 20% cost differential. For the whole 1976 resident treatment program, \$22.6 million were expended. Had the replacement alternative been chosen, as shown in Table 2.2, the costs would have ultimately amounted to \$49.0 million (undiscounted). Thus, for the two age groups, the whole resident alcoholism rehabilitation program has a clear 2.2 to 1 cost-benefit advantage over the replacement alternative. For the age-26-and-over group (essentially career personnel) the overall cost-benefit advantage is 4 to 1 (\$32.2 million versus \$8.4 million).

2.17 The more recently formed ARD facilities have shown treatment results nearly equivalent to the more sophisticated ARC, ARS, and ARU treatment modalities. Table 2.3 shows the average treatment effectiveness of five ARD facilities that are equipped for resident treatment. The cost-benefit advantage for these ARD facilities is illustrated in Figure 2.6 where the composite ARC, ARU and ARD break-even line is compared with ARDs in their present usage.

2.18 Figure 2.6 shows the impact of the ARDs on overall system performance. If age-25-and-under alcoholic treatment is limited to ARC/ARU facilities, the cost-benefit advantage for the rehabilitation alternative becomes marginal. However, as more of

TABLE 2.3  
 ARD TREATMENT EFFECTIVENESS IN FIVE  
 SELECTED RESIDENTIAL FACILITIES  
 (percent)

Category	Time Since Completion of Treatment			
	6 Months	12 Months	18 Months	24 Months
Age 25 and under	65	62	57	41
Age 26 and over	90	88	87	82
All-age group composite	77	75	73	65

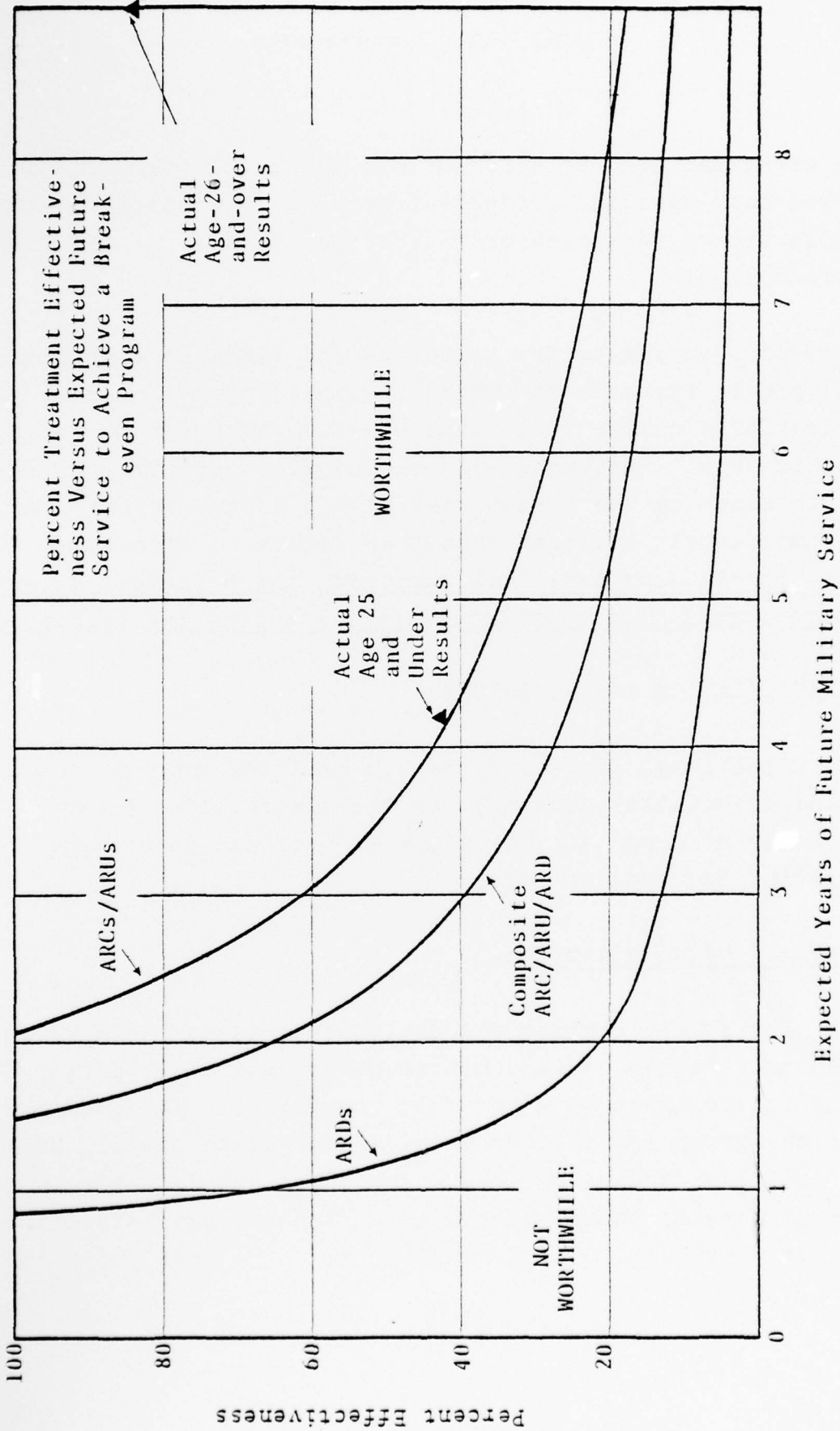


FIGURE 2.6  
NAVY ALCOHOLISM PREVENTION PROGRAM

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the treatment load is shifted into ARD facilities, the overall system cost-benefit advantage improves. Therefore, the NAPP should strive to increase utilization of existing ARD facilities where feasible.

2.19 In addition to the immediate and tangible cost benefits obtained by the present rehabilitation program, the Navy and Marine Corps derive additional benefits that are not readily quantifiable. Personnel with substantial service experience are retained in the system where their useful military skills are immediately utilized when they return to operational duty. Thus, by reducing personnel turnover, the practical experience and personnel readiness levels in the system are increased.

### HOSPITALIZATION AND ACCIDENTS

2.20 Additional study efforts explored the impacts of alcohol-dependent military personnel on the health care system. Further, the study examined alcohol abuse in personal injury accidents involving Navy personnel.

#### Personnel Hospitalization

2.21 The study examined the health records of 538 Navy enlisted personnel treated for alcoholism covering a 10-yr period (3 yr prior to treatment to 2 yr after treatment). The study revealed that the group had a lower sick day rate than the all-Navy average of 2.7 sick days per year per person until 2 yr prior to alcohol rehabilitation treatment. Then the average daily sick day rate rose to 7.3 sick days per year the year prior to rehabilitation.

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2.22 Within the sample, the patient histories varied widely. A detailed analysis of 270 client histories covering a 4-yr period (2 yr prior to 2 yr after treatment) revealed that 10% of the alcoholics accounted for 50% of the group's sick days. On the other hand, 30% of the alcoholics had no history of hospitalization other than their alcoholism treatment. Thus, medical officers and their staffs cannot be expected to be the sole means of identifying alcohol-dependent persons needing rehabilitation. (However, they must continue to be responsible for the diagnosis of alcoholism.) Figure 2.7 describes the entire group pattern of sick days.

2.23 The second significant finding arising from the study of hospitalization of 270 alcoholics addresses sick day rates before and after rehabilitation. Figure 2.8 shows the abrupt reversal of sick day rates in personnel that responded to rehabilitation. For successful respondents, the sick day rate returned to normal in the year following treatment and showed continued improvement in the following year. The sick day rate for unsuccessful cases continued to rise following treatment. (The drop in sick day rate during the second year resulted from medical or administrative discharge of the worst cases (44 in number).) The overall reduction in hospital care required by the 5,077 alcoholics afforded resident treatment in 1976 produces a cost avoidance of \$5.5 million for a 2-yr period following treatment. In addition, the reduction in demand for outpatient care by these 5,077 people makes an additional \$2.3 million worth of health care resources in the medical care system available for other uses.

### Economic Impact of Alcohol Abuse on Hospitalization

2.24 The impact of alcohol abuse and alcoholism on the military health care system has the largest economic effect of the five

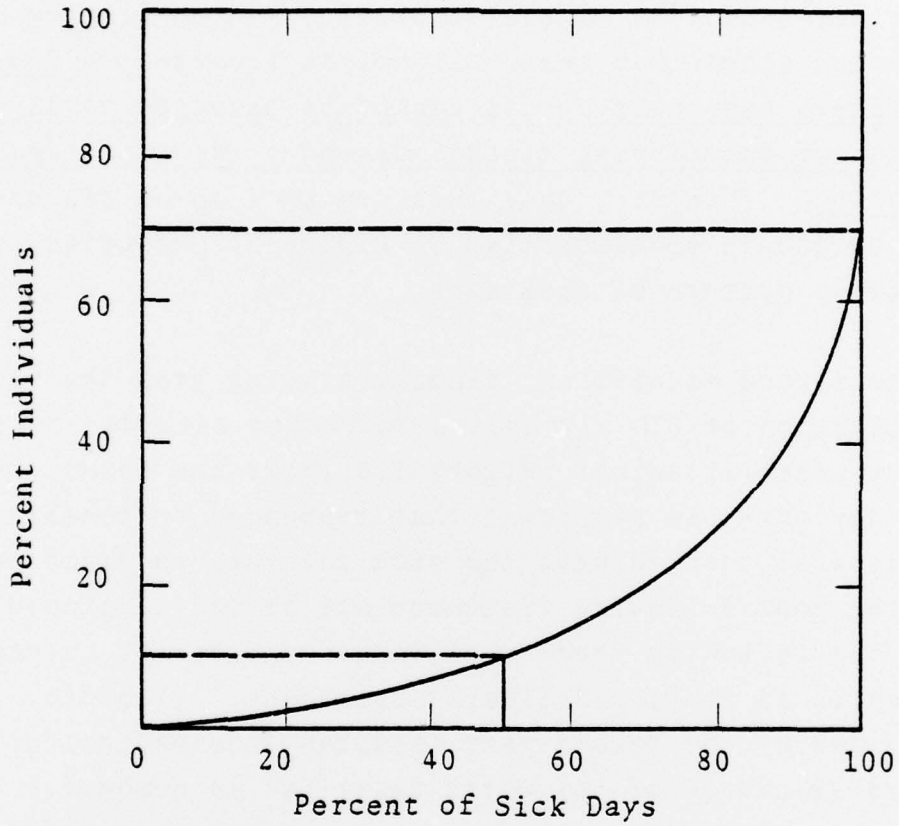
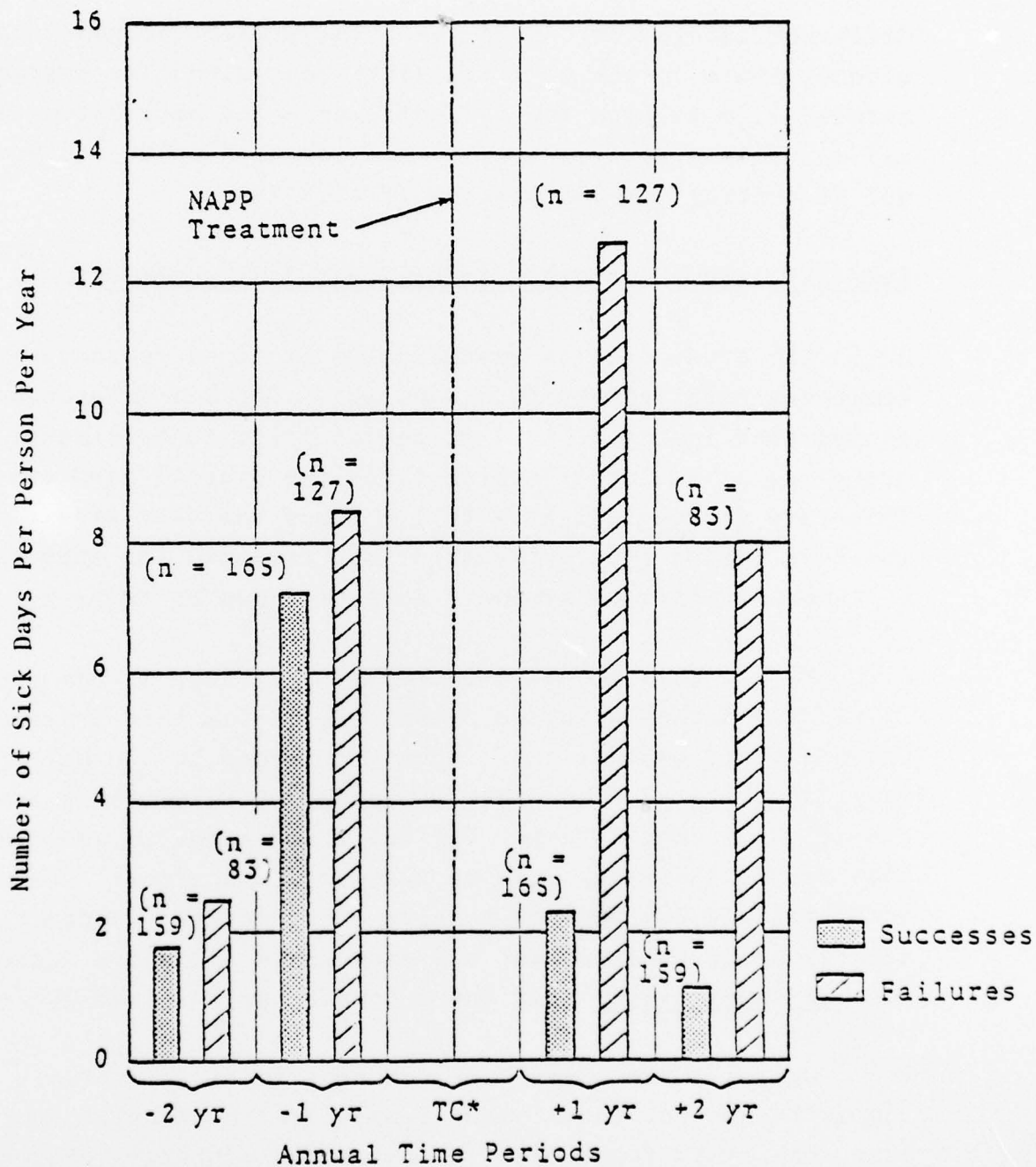


FIGURE 2.7  
DISTRIBUTION OF HOSPITAL SICK DAYS AMONG ALCOHOLICS  
(4 yr period--2 yr prior to alcoholism  
rehabilitation to 2 yr after treatment)



\* Treatment completion.

FIGURE 2.8  
ADJUSTED SICK DAY TRENDS FOR  
NAPP CLIENTS

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different categories considered. The present economic cost of alcohol abuse on the military services health care system ranges between \$136 million and \$430 million. The best estimate for all eligible personnel is \$200 million with active duty personnel accounting for \$96 million of this amount.

Personal Injury Accidents Among Treated Alcoholics

2.25 The study efforts specifically examined personal injury accidents with respect to alcoholics. The 538 cases examined showed that in the 3- to 4-yr period prior to treatment, this group had an accident rate of twice the overall Navy average. This rate dropped slightly to 1.6 times the Navy-wide rate in the 2-yr period before treatment and remained the same in the 2-yr period after treatment. This is shown in Table 2.4.

2.26 Within this group, the results vary over a wide range. It was found that a subset comprising 80% of this treatment group experienced personal injury accidents at one-half the all Navy annual rate. The other 20% suffered injuries at six times the all Navy annual rate. The 80% group seems to adapt to roles that reduce their exposure to accident situations. Conversely, the remaining 20% appears to have acquired self-destruction tendencies prior to treatment and experience an injury accident rate 12 times higher than their counterparts in the 80% group.

2.27 Overall, the studies showed no significant gain in reducing accidents for the alcohol rehabilitation population. However, the study found that screening and education programs similar to the Department of Transportation's Alcohol Safety Action Program will reduce alcohol abuse recidivism (DWIs, etc.) among social and potential problem drinkers 40% to 60%. (This parallels

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TABLE 2.4  
 EFFECT OF ALCOHOL REHABILITATION ON PERSONAL INJURY  
 ACCIDENTS REQUIRING HOSPITALIZATION AMONG  
 ALCOHOLICS BEFORE AND AFTER TREATMENT\*

Group	Accident Admissions/Yr/1,000 Persons		
	3 and 4 Yr Prior to Treatment	1 and 2 Yr Prior to Treatment	1 and 2 Yr After Treatment
Top 80%	27.9	9.3	20.8
Bottom 20%	84.4	111.1	74.1
Composite	39.2	29.6	31.5

\* The average annual rate for active duty personnel is 18.2 admissions/yr/1,000 persons.

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the experience of the Navy Alcohol Safety Action Program). Economically, alcohol abuse costs the DoN \$15 million dollars per year in personal injury accidents. Not included in this figure is the substantial amount of private or personal property destroyed or damaged by active duty personnel because of alcohol abuse.

### JURISPRUDENCE AND PRODUCTIVITY

2.28 The expanded Phase II study effort also addressed alcoholism and alcohol abuse impacts on jurisprudence and productivity in the Department of the Navy. This effort identified several time impact areas, but could not quantify any direct cost savings or avoidances resulting from a resident alcohol rehabilitation program.

#### Jurisprudence

2.29 While the number of direct alcohol abuse charges in the Navy justice system are small (2.8%), a sampling of commanding officers indicates that 33% of the nonjudicial punishment cases addressing unauthorized absence, unmilitary conduct, etc., involved alcohol abuse. It is also estimated that 21% of the lower court martial cases involved alcohol abuse.

2.30 From a personal viewpoint, the commanding officers, as a group, were more concerned about drug abuse problems within their commands. The study observed that the genesis of these feelings stemmed from (1) the general illegality of drugs and (2) the resulting security clearance decisions. While no direct dollar benefits can be attributed to an alcoholism treatment program, the alcohol abuse problem does create an annual economic loss ranging between \$28 and \$49 million per year. The best estimate is \$37 million per year.

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Productivity

2.31 The study of productivity found no quantifiable direct budget savings in productivity resulting from the resident rehabilitation effort. However, data resulting from earlier Department of the Navy surveys can identify \$117 million per year in economic loss to the Navy. Further, the survey data found that 3% of the Navy population account for 20% of the total production days lost due to alcohol abuse. The recently initiated Navy Alcohol Safety Action Program (NASAP) should alleviate that problem.

LIMITING CONSTRAINTS

2.32 The study and analysis efforts have concentrated on residential treatment of enlisted personnel for two reasons. First, approximately 95% of the alcoholics treated to date have been enlisted personnel. Second, residential treatment--where the alcoholic is retained at a treatment facility for periods ranging from 2 to 6 wk--generates higher costs than nonresidential treatment. Thus, the study efforts have addressed the major consumer of resources in the treatment programs so that management decisions can be based upon the most significant information.

2.33 Expansion of the study into the officer corps would show an increased value of the NAPP. For example, the successful rehabilitation of a naval aviator with 1 to 10 yr since designation represents a saving of \$65,000 to \$400,000 dollars, depending on costs of undergraduate pilot training and readiness training for type and model of aircraft.

2.34 Overall, the cost-benefit ratios developed in the study effort have tended to be conservative. The prime example of

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this is the use of the marginal cost for new recruits and replacements compared with the composite of fixed and variable costs for the alcohol rehabilitation program. Thus, the actual dollar benefits derived in carrying out a rehabilitation program should be greater than stated in the study.

III. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Cost Benefits of Residential Rehabilitation Programs

3.1 Based upon the analysis of data developed during this study effort, the results show that:

- a. A positive cost benefit advantage exists for alcoholism rehabilitation for the average service member in any length of service cell from 0 to 20 yr. For career personnel with 5 to 15 yr of accrued service, a 5 to 1 or better advantage exists for rehabilitation versus the alternative of discharging the alcoholic and replacing this person with a new accession.
- b. The overall advantage for the DoN rehabilitation system is 2.2 to 1 over the new accession alternative.
- c. On an individual basis, the general alcoholism treatment of personnel with less than 2 yr of obligated service remaining cannot be justified on an economic basis. However, use of the ARD facilities provides an effective alternative for personnel with obligated service commitments as low as 1 yr.

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3.2 The DoN Alcoholism Prevention Program (NAPP) provides a positive payback in terms of resources expended. The program is economically worthwhile from the annual dollars expended standpoint as well as meeting legal and humanitarian requirements.

3.3 The NAPP has just started to penetrate the problem of economic losses to the DoN due to alcohol abuse.

3.4 The problem of identification of alcohol-dependent personnel cannot be done by medical department personnel alone. While medical officers should retain responsibility for diagnosis, the identification must be triggered by line organizations in the field.

RECOMMENDATIONS

3.5 Based upon the findings of this study effort, the following actions are recommended:

- a. Stress early identification programs to increase the probability of treatment success and reduce the demands on the health care systems. This would include the following:
  - (1) Development and dissemination of information to aid supervisors in noting indicators of alcohol abuse or alcoholism. Such indicators include declining work performance; domestic difficulties, including spouse and child abuse; indebtedness; traffic and other civil offenses; and military offenses such as disrespect, insubordination, and unauthorized absenteeism.

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- (2) In the medical area, use of pathological indicators of alcohol abuse or alcoholism arising from induction reenlistment and annual physical examination, laboratory test results or sick call visits.
- b. Educate management levels regarding the characteristics, costs and other effects of the disease of alcoholism and of alcohol abuse.
- c. Reexamine the several modalities of treatment now in use (ARC/ARS, ARU, ARD) to determine which is most effective for each segment of the alcoholic or alcohol abusing population. For example, initial indications are that the Navy Alcohol Safety Action Program (NASAP) will be more effective with the younger abusers who can benefit from the 36-hr of concentrated remedial education. (NASAP also concentrates heavily on improving the students' self-image and self-esteem without regard for types of substance abuse. This makes the program valuable to drug abuse prevention efforts as well.)
- d. Improve record keeping, within existing reporting systems, so as to make data complete and more accurate, and therefore more useful to management at all levels.

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alcoholics is highly cost effective and in the best interests of the Navy and Marine Corps. Further, the annual economic losses to the DoN are of such magnitude that continued efforts toward alcoholism prevention and earlier identification of alcoholics are warranted.

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