

Evaluation of Alcoholism Treatment Programs for Drinking Drivers

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In 1971, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) initiated a program to support centers designed to extend and improve the treatment and rehabilitation services available for problem drinking drivers. These centers were located at selected Alcohol Safety Action Program (ASAP) sites of the National Highway Traffic Safety Administration (NHTSA). This paper presents a preliminary evaluation of the clients provided services at these sites. Demographic data, various drinking-related measures, a self-esteem index, and financial and employment status variables were obtained for the large sample of clients who received service from May 1973 through March 1974. Clients were classified into five groups and were compared. The results indicate that for all programs for which follow-up data were obtained (a) the percentage of clients who abstained from alcohol increased, (b) the amount of absolute alcohol consumed per day decreased, (c) behavioral impairment caused by drinking decreased, and (d) self-esteem improved. Although a trend for an increase in financial status was observed, further follow-up study is needed for confirmation. Treatment outcome was more successful with clients showing less involvement with alcohol. The data from this study support the NIAAA premise that is the basis for its support of ASAP programs: ASAP programs include a large number of individuals for whom early intervention into their alcohol problems would be worthwhile.

The driving-while-intoxicated (DWI) problem is of vital concern to two federal agencies, the National Highway Traffic Safety Administration (NHTSA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Although alcohol has been recognized as a significant factor contributing to motor vehicle accidents, program efforts have not differentiated between social drinkers and problem drinkers. Persons with a history of social, psychological, or physiological problems associated with excessive alcohol consumption were defined as problem drinkers. Program efforts were directed toward the alcoholic person and the problem drinker since research indicates that problem drinkers have more serious and fatal motor vehicle accidents than social drinkers (1).

In 1971, NIAAA expanded its program activities to include community-level treatment for the alcoholic person and problem drinker. Concurrent with this NIAAA

activity, NHTSA developed community-based programs to provide appropriate services for those individuals arrested for driving while intoxicated. NIAAA then began alcoholism treatment programs for DWIs who had been identified by the NHTSA Alcohol Safety Action Program (ASAP).

In late 1971, NIAAA initiated a program to support 10 alcoholism centers (ACs) designed to extend and improve the treatment and rehabilitation services available for the alcoholic person and the problem drinking driver at selected ASAP sites. In June 1972, the monitoring system for these 10 sites was developed under contract with the Stanford Research Institute. This paper is a preliminary evaluation of the monitoring system, and, in particular, of the 6-month follow-up data for clients who were serviced at the ACs from May 1973 through March 1974 (2).

This evaluation does not represent a precisely designed experiment. It is a real-world evaluation to provide quantifiable data that bear on the critical question of program effectiveness for the various programs tried and the extent to which they seem to differ in effectiveness. Data are presented for four groups of DWIs and for a comparison group of non-DWIs referred by non-ASAP sources. All groups used the 10 ACs for treatment and rehabilitation.

The 10 ACs had a common orientation toward treating the problem drinking driver. Outpatient treatment was stressed. Although there are a number of differences in the organizational structure and in the treatment emphases of the ACs, this paper does not systematically compare the effects of these program variations to treatment outcome.

SAMPLES

Clients were divided into the following groups, which were identified by assignment codes.

| <u>Assignment Code</u> | <u>Description</u> |
|------------------------|--|
| DWI probation | Clients sentenced to probation only, including those who received a jail sentence, fine, or unconditional probation. |

| Assignment Code | Description |
|---------------------------|---|
| DWI school | Clients assigned to attend school only, even though they may have received a jail sentence or fine. |
| DWI non-AC treatment | Clients assigned to attend other treatment programs such as those of Alcoholics Anonymous, community health centers, and hospitals. |
| DWI AC treatment Non-ASAP | Clients assigned to attend AC treatment programs. Clients contacting or entering AC programs by non-ASAP referral. |

DATA COLLECTION

A total of 6015 Client Intake Forms (CIFs) were submitted from the 10 ASAP/AC sites. Table 1 gives the number and percentage of CIFs submitted by assignment code and frequency distribution. The data reporting results for the total sample are heavily weighted to results from Tampa. About 75 percent of the 542 Non-ASAP clients stem from AC centers at Wichita, Columbus, and Columbia. For the DWI Non-AC Treatment group, centers at Tampa and Denver account for 97.4 percent of the data submitted. For the DWI School group, Tampa provides over 90 percent of the data.

DESCRIPTIVE CHARACTERISTICS OF THE INTAKE POPULATION

Demographic Characteristics

Table 2 gives a summary demographic profile of baseline information submitted on the DWI and Non-ASAP clients. In general, the demographic characteristics do not present five widely different population groups, except for the greater racial mix and notably shorter length of time in the present community for the DWI Probation group. All other characteristics (age, sex, ethnicity, marital status, residence status, military status, and education level) show relatively small variations in the profiles of the four DWI groups. The Non-ASAP clients are older and have the highest percentage of females and of those living alone. An example of the magnitude of the differences among the groups is age at entering the program. The mean age for the five groups ranges from 37.9 years (DWI School) to 41.1 years (Non-ASAP); the median age is 39.4 years for the four DWI groups.

Arrest-related characteristics for the various groups are also given in Table 2. The mean level of breath alcohol content (BAC) is lowest for the DWI School and about equal for the other three DWI groups. This level is not available for the Non-ASAP group since this group is in the AC for a non-DWI reason. The arrest data indicate that the DWI School is the most socially intact group of the four DWI groups. This group has the lowest percentage of prior DWI arrests (14.1 percent) and prior non-DWI arrests (16.8 percent). The DWI Probation is next in line on this continuum as shown by a 40.4 percent prior DWI-arrest rate that is only slightly lower than the remaining DWI groups; however, its prior non-DWI arrest percentage of 21.1 percent is considerably lower.

Employment History and Financial Status

Table 3 gives data on baseline employment history and financial status for the intake population. These data suggest an occupational-economic continuum in which the DWI School ranks highest at the professional and income levels and is followed closely by the DWI Probation. The Non-ASAP are ranked the lowest on this continuum. The DWI Non-AC and DWI AC Treatment groups fall in be-

tween the two other DWI categories. The DWI Non-AC Treatment is slightly higher on the occupational-economic continuum than the DWI AC Treatment, but the magnitude of this difference was small and did not compare to the clearly lower status of the Non-ASAP.

Client Drinking History

The history of the clients with respect to drinking is inferred primarily from data on arrests, hospitalization, institutionalization, prior alcoholism treatment, and Alcoholics Anonymous attendance. The data in Table 4 suggest that the Non-ASAP show a more severe involvement with alcohol than do DWI. All data categories appear to reflect this alcoholic tendency, except for the percentage of institutionalized. Hospitalization for alcohol-related reasons is reported to have occurred in 33.2 percent of Non-ASAP but for a median percentage of only 2.7 for the four DWI. Similarly, the percentage of clients who reported ever having attended Alcoholics Anonymous is 48.4 percent for the Non-ASAP and a median percentage of 10.3 for the four DWI. The data are likewise consistent for frequent and heavy drinking, arrests, and previous treatment for alcoholism. The average number of days for those institutionalized is also consistent with the preceding, but the percentage of clients institutionalized for the Non-ASAP is not consistent since 30 percent reported being institutionalized. However, this percentage is neither the highest nor the lowest percentage for the five groups that were compared.

Current Drinking Practices and Behavior

Current drinking practices and behavior for the five baseline populations are summarized in Table 5. The average number of days that clients drank during the month preceding arrest (month preceding intake for Non-ASAP) was 8.5 to 12.1 for DWI and 15.7 for Non-ASAP. The percentage reporting abstinence was 9 to 22 for DWI and 8 for Non-ASAP. The percentages of clients who reported drinking beer, wine, and liquor are also given in Table 5. Compared to the other two beverages the percentage of clients drinking beer is higher across all client groups, except for liquor in Non-ASAP. Some 66 to 77 percent of the clients reported drinking beer. Liquor was next at 23 to 44 percent for DWI and 73 percent for Non-ASAP. Wine was last at 5 to 12 percent for DWI and 26 percent for Non-ASAP. However, this pattern changes for the average amount of ethanol (absolute alcohol) consumed from the three alcoholic beverages. The quantity-frequent (Q-F) index was used to estimate average daily intake of alcohol in milliliters of absolute ethanol (3). The Q-F index for beer is much higher for Non-ASAP, even though the percent drinking beer is less than for DWI. The Q-F index for wine is low for all DWI except for Non-ASAP. Interestingly, the Q-F index is lower for liquor than for beer in all DWI except for DWI AC Treatment.

The total Q-F index increases progressively across the five client groups from DWI Probation to Non-ASAP; the latter consumed almost five times more than the highest DWI group (DWI AC Treatment). By comparison, some data show ethanol consumption (Q-F index) of 13 mL/d (0.44 fl oz) for the normal U.S. population (age 18 and over) and 23.1 mL/d (0.78 fl oz) for the drinking population. Thus, clients in the DWI Probation and School groups reported drinking less than the normal drinking population, DWIs in the treatment groups reported drinking twice as much as the normal drinking population, and Non-ASAP clients reported drinking almost ten times as much as the normal drinking population. Data for DWI clients, particularly Probation and School groups, may reflect behavior from the month before administration of

the CIF rather than the month before arrest. Therefore, the reported alcohol consumption may be understated relative to the month before arrest.

The overall behavioral pattern associated with alcohol consumption was assessed by using the impairment index, which is based on work by Shelton (4). It involves responses to questions related to the conditions given in Table 5 under behavioral patterns. The impairment index and the percentage of clients that gave positive responses to each question are given in Table 5.

The average impairment index for DWI groups varies from 1.2 (DWI School) to 3.5 (for both DWI Treatment).

The Non-ASAP group is considerably higher at 13.4. The DWI Probation have a slightly lower alcohol consumption but an impairment index that is twice as high as the DWI School—these indicate greater behavioral problems related to drinking.

The pattern of responses to the behavioral questions is similar to the impairment index values. The DWI School has the lowest values for most questions, followed by the DWI Probation, the DWI AC and DWI Non-AC Treatment groups. The Non-ASAP has the highest values of all groups on all questions. The question of being drunk one or more times during the preceding month is

Table 1. CIFs submitted by assignment code.

| Alcoholic Center | DWI Probation | | DWI School | | DWI Non-AC Treatment | | DWI AC Treatment | | Non-ASAP | | Total | |
|--------------------------|---------------|--------------|-------------|--------------|----------------------|--------------|------------------|--------------|------------|--------------|-------------|--------------|
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Portland, Maine | — | — | — | — | — | — | 87 | 3.5 | 16 | 3.0 | 103 | 1.7 |
| Boston | — | — | 4 | 0.3 | — | — | 591 | 23.7 | — | — | 595 | 9.9 |
| Waterbury | 4 | 2.5 | 9 | 0.7 | — | — | 37 | 1.5 | 91 | 16.8 | 141 | 2.3 |
| Tampa | 1 | 0.6 | 1210 | 91.3 | 1099 | 73.2 | 340 | 13.7 | 18 | 3.3 | 2668 | 44.4 |
| Columbus, Georgia | — | — | — | — | — | — | 78 | 3.1 | 160 | 29.5 | 238 | 4.0 |
| Columbia, South Carolina | 35 | 22.2 | 29 | 2.2 | 1 | 0.1 | 58 | 2.3 | 75 | 13.8 | 198 | 3.3 |
| Indianapolis | 1 | 0.6 | 3 | 0.2 | 0 | 0.0 | 834 | 33.5 | 0 | 0.0 | 838 | 13.9 |
| Wichita | 1 | 0.6 | 70 | 5.3 | 37 | 2.5 | 106 | 4.3 | 174 | 32.1 | 388 | 6.4 |
| Denver | 116 | 73.4 | — | — | 364 | 24.2 | 160 | 6.4 | 8 | 1.5 | 648 | 10.8 |
| Portland, Oregon | — | — | — | — | — | — | 198 | 8.0 | — | — | 198 | 3.3 |
| Total | 158 | 100.0 | 1325 | 100.0 | 1501 | 100.0 | 2489 | 100.0 | 542 | 100.0 | 6015 | 100.0 |

Table 2. Demographic and arrest-related characteristics.

| Characteristic | DWI Probation | DWI School | DWI Non-AC Treatment | DWI AC Treatment | Non-ASAP |
|---|---------------|-------------|----------------------|------------------|----------------|
| Mean age, years | 40.0 | 37.9 | 38.7 | 41.0 | 41.1 |
| Males, percent | 91.1 | 88.6 | 91.9 | 93.7 | 75.4 |
| Ethnicity, percent | | | | | |
| White | 66.1 | 83.5 | 76.5 | 74.6 | 79.2 |
| Black | 15.1 | 13.4 | 9.7 | 21.5 | 19.9 |
| Spanish surname | 18.1 | 2.4 | 13.4 | 3.4 | 0.2 |
| Other | 0.3 | 0.7 | 0.4 | 0.6 | 0.6 |
| Marital status, percent | | | | | |
| Married | 54.2 | 54.3 | 46.1 | 48.9 | 43.4 |
| Married more than one time (of those who have been married) | 25.8 | 33.0 | 38.6 | 32.4 | 39.0 |
| Divorced | 15.5 | 16.1 | 22.6 | 19.5 | 22.7 |
| Residence status | | | | | |
| Living alone, percent | 19.9 | 15.3 | 22.2 | 19.3 | 23.9 |
| Mean years in community | 6.3 | 12.9 | 12.4 | 12.0 | 14.8 |
| Military status | | | | | |
| Active duty and reserves, percent | 7.8 | 4.6 | 2.0 | 3.9 | 1.1 |
| Veterans, percent | 53.5 | 44.8 | 52.1 | 50.0 | 43.9 |
| Mean years of service | 4.6 | 6.1 | 5.1 | 4.7 | 4.8 |
| Education, median years | 11.0 | 11.2 | 11.0 | 10.9 | 10.9 |
| Mean level of breath alcohol content | 0.19 | 0.16 | 0.19 | 0.20 | — ^a |
| Mean number previous alcoholism treatments | 0.0 | 0.1 | 0.2 | 0.3 | 0.9 |
| Prior DWI arrests | 40.4 | 14.1 | 43.6 | 50.0 | — ^a |
| Prior non-DWI arrests | 21.2 | 16.8 | 31.6 | 44.9 | — ^a |
| Prior probation | 87.8 | 91.1 | 87.8 | 55.9 | — ^a |
| Number of clients ^b | 139 to 298 | 831 to 1325 | 962 to 1501 | 1423 to 2490 | 493 to 1099 |

^aNot applicable since arrest records were not obtained for non-DWI clients.

^bThe number of responses is shown as a range for the variables in each column. The range will vary due to (a) differential response rates to individual items or (b) interaction of the source of the items (e.g., a list of items may include responses from more than one form) or (c) both of these.

Table 3. Employment history and financial status.

| Characteristic | DWI Probation | DWI School | DWI Non-AC Treatment | DWI AC Treatment | Non-ASAP |
|---|---------------|--------------|----------------------|------------------|------------|
| Professional and managerial, percent | 10.6 | 14.0 | 11.6 | 10.0 | 8.6 |
| Laborers, percent | 13.2 | 10.7 | 16.1 | 19.8 | 10.4 |
| In labor force, percent | 91.1 | 91.0 | 93.1 | 95.3 | 88.2 |
| Employed full-time, percent | 81.7 | 83.1 | 80.8 | 76.0 | 40.0 |
| Mean number days worked (preceding month) | 19.7 | 20.4 | 18.7 | 18.0 | 11.3 |
| Mean monthly income, \$ | 688 | 710 | 635 | 589 | 312 |
| Number of clients | 129 to 158 | 1271 to 1323 | 1409 to 1494 | 2437 to 2487 | 530 to 541 |

interesting because the responses for the four DWI groups tend not to follow the general pattern for the other eleven questions. However, if the several response categories to the number of times drunk are examined, then a general pattern emerges at the higher end of the scale.

CLIENT CHANGE DATA

Changes in Alcohol Consumption

The size and scope of the analyses of client change data were limited by the number of cases for whom 6-month follow-up data were submitted on form CPF. Since the data collection period for this study was from May 1973 through the end of March 1974, CPF could only have become available by virtue of the 6-month follow-up re-

quirement for the sample of clients for whom CIFs were completed before October 1973. This number of CIFs is estimated to be 2615, assuming a CPF was submitted for every client having a CIF. Essentially no CPFs were submitted on the DWI Probation; therefore, this group was excluded from this part of the study. For the 964 clients of DWI School and DWI Non-AC Treatment groups only 429 CPFs were submitted for a completion rate of 36.1 percent. The AC programs should have submitted a total of 1304 CPFs for the DWI AC and Non-ASAP groups; however, only 598 CPFs were submitted for a completion rate of 45.9 percent. For all groups combined, the completion rate was 45.3 percent.

The selective return of CPF follow-up data forms imposes a limitation on the conclusions made concerning program effectiveness. Nevertheless, we believe that there is a consistent pattern to the results and therefore

Table 4. Drinking history.

| Characteristic | DWI Probation | DWI School | DWI Non-AC Treatment | DWI AC Treatment | Non-ASAP |
|---|---------------|--------------|----------------------|------------------|-------------------|
| Frequent and heavy drinking | | | | | |
| Mean age started, years | 22.2 | 20.5 | 20.8 | 22.2 | 24.7 |
| Mean years this type of drinking | 13.7 | 11.8 | 16.1 | 11.6 | 14.9 |
| Arrests during preceding year | | | | | |
| Mean number for DWI ^a | 1.2 | 1.0 | 1.2 | 1.2 | 1.3 ^b |
| More than one DWI arrest, percent | 15.9 | 1.1 | 16.1 | 20.6 | 24.7 ^b |
| Drinking offenses not related to driving, percent | 5.2 | 3.5 | 10.5 | 17.5 | 20.3 |
| Mean number of arrests | 1.5 | 1.2 | 1.4 | 2.2 | 2.2 |
| Hospitalization during preceding year, percent | | | | | |
| Hospitalized for all reasons | 12.9 | 8.8 | 16.3 | 18.6 | 47.6 |
| Hospitalized for alcohol-related reason | 1.3 | 0.6 | 4.1 | 6.1 | 33.2 |
| Institutionalization during preceding month | | | | | |
| Institutionalized, percent | 31.2 | 36.4 | 40.9 | 12.1 | 30.0 |
| Average number of days for those institutionalized | 2.2 | 1.5 | 3.0 | 6.0 | 12.3 |
| Previous alcoholism treatment during preceding 5 years | | | | | |
| Reported previous treatment, percent | 2.6 | 0.4 | 7.7 | 13.0 | 40.6 |
| Average number of times for those reporting prior treatment | 1.0 | 1.3 | 1.2 | 1.6 | 2.1 |
| Attendance at Alcoholics Anonymous, percent | | | | | |
| Ever attended | 2.5 | 3.0 | 17.6 | 19.5 | 48.4 |
| Attended regularly in recent weeks | 0.0 | 0.2 | 2.5 | 4.1 | 14.2 |
| Number of clients | 129 to 158 | 1205 to 1323 | 1382 to 1490 | 2131 to 2485 | 386 to 542 |

^aIncluding present arrest for DWI.

^bFor the 20 percent reporting one or more arrests.

Table 5. Drinking practices and behavior.

| Characteristic | DWI Probation ^a | DWI School ^a | DWI Non-AC Treatment ^a | DWI AC Treatment ^a | Non-ASAP ^a |
|---|----------------------------|-------------------------|-----------------------------------|-------------------------------|-----------------------|
| Ethanol consumption during preceding month | | | | | |
| Average days drank | 8.5 | 9.7 | 12.1 | 10.4 | 15.7 |
| Abstained, percent | 22.4 | 8.6 | 14.3 | 15.6 | 8.4 |
| Drank beer, percent | 68.7 | 76.6 | 74.6 | 73.5 | 66.0 |
| Drank wine, percent | 5.3 | 11.2 | 9.8 | 11.7 | 26.1 |
| Drank liquor, percent | 22.7 | 40.2 | 39.4 | 43.9 | 72.9 |
| Beer Q-F ^b | 7.7 | 10.3 | 21.6 | 18.3 | 42.6 |
| Wine Q-F ^b | 0.6 | 0.9 | 1.8 | 2.4 | 23.1 |
| Liquor Q-F ^b | 4.2 | 4.2 | 16.0 | 22.5 | 150.5 |
| Total Q-F ^b | 12.4 | 15.4 | 39.7 | 44.1 | 215.3 |
| Behavioral pattern during preceding month, percent | | | | | |
| Reported being drunk | 44.0 | 36.7 | 54.4 | 37.0 | 74.6 |
| Longest period between drinks of less than 12 h | 3.9 | 13.5 | 16.9 | 12.8 | 35.2 |
| Longest period of continued drinking of 6 h or more | 18.3 | 14.8 | 31.0 | 27.5 | 66.6 |
| Drank upon awakening | 9.2 | 1.1 | 12.0 | 11.2 | 56.6 |
| Missed meals as a result of drinking | 12.5 | 4.8 | 20.8 | 17.3 | 67.5 |
| Drank alone more than half of the time | 13.3 | 3.5 | 10.1 | 11.6 | 40.4 |
| Had memory lapses due to drinking | 7.2 | 1.4 | 17.0 | 16.5 | 52.5 |
| Had the "shakes" due to drinking | 2.6 | 0.7 | 15.5 | 12.2 | 58.2 |
| Had difficulty sleeping | 12.5 | 2.5 | 15.3 | 13.8 | 59.4 |
| Quarreled with others while drinking | 12.4 | 4.6 | 17.2 | 14.8 | 45.7 |
| Drank on the job or during daily activities | 3.9 | 1.9 | 6.7 | 11.7 | 35.5 |
| Missed one or more days of work because of drinking | 4.5 | 0.8 | 8.5 | 9.5 | 43.4 |
| Impairment index | 2.24 | 1.21 | 3.51 | 3.53 | 13.37 |
| Number of clients | 150 to 155 | 1308 to 1319 | 1417 to 1462 | 2451 to 2465 | 531 to 538 |

Note: 1 mL = 0.033 fl oz.

^aFor the month preceding arrest for DWI and for the month preceding intake for non-ASAP.

^bThe quantity-frequency for the beverage shown is the average milliliters of absolute alcohol (ethanol) consumed per day for all clients, whether drinking that beverage or not; total Q-F is the average milliliters of ethanol consumed per day for all clients from all beverages.

willing to make tentative inferences from these data with the understanding that more definitive follow-up data should be obtained to confirm these conclusions.

Table 6 gives alcoholic consumption at intake and at 6 months for the four groups of clients having CIFs and CPFs. The amount at the end of the 6-month period, 41.4 percent of the DWI School, 34.8 percent of the DWI Non-AC Treatment, 36.7 percent of the DWI AC Treatment, and 37.8 percent of all clients in the four groups were abstaining from alcohol (Table 6). Compared with data given in Table 5 for all groups at intake, abstainers increased during the 6-month period from about 13 percent to about 38 percent. Table 6 also shows that the amount of alcohol consumed each day also declined for the four groups. The majority of clients either abstained or drank less than 30 mL/d (1 fl oz) of alcohol at 6 months. The clients who consumed more than 89 mL/d (3 fl oz) at 6 months seemed to have an average daily alcohol consumption that was about the same as, or greater than that at intake with the exception of the Non-ASAP who showed a 20 percent decrease from 416.9 to 334.1 mL/d (14.1 to 11.3 fl oz). However, caution must be used in accepting the results of these two groups since very few cases were involved.

Changes in Behavioral Impairment and in Self-Esteem

The impairment index was used to measure the degree of behavioral impairment caused by excessive use of alcohol (Table 7). A measure of client self-esteem was also obtained by clients indicating their agreement or disagreement with the following two statements: "I wish I could have more respect for myself," and "On the whole, I am satisfied with myself." All four groups show a reduction in behavioral impairment from alcohol usage at 6-month follow-up compared to scores at intake. The index of 4.7 for the Non-ASAP suggests that they showed more behavioral impairment from alcohol consumption following treatment than did the other groups.

The data on self-esteem following treatment are consistent with those for behavioral impairment. All four groups showed higher self-esteem at 6 months than they showed at intake. Furthermore, the Non-ASAP group, which showed the greatest behavioral impairment at follow-up, also showed the lowest self-esteem ratings.

Changes in Financial Status and Employment

A 6-month period was too short a time to expect any drastic changes in earning power; however, the trends for this important variable were of interest. The earning measure was based on responses to gross income earning categories. The midpoint of these categories was used to estimate the mean figures for individual clients and then averaged for the client group under analysis.

The average monthly earned income was divided by the average number of days worked to obtain an average daily wage. Since income and days worked are combined into a single figure, it indicates the economic well-being of the client. In addition to this index, the percentage of the groups who were unemployed is also listed although this measure is not so sensitive as the average daily wage. These measures refer to the period of 1 month before either intake or follow-up. Table 8 gives the results reported for three samples: the CIF and CPF samples at intake, and the CPF sample at 6 months. The differences observed between the last two groups are the critical observations for assessing change in financial status among the four treatment groups. The financial status variables on the CIF intake sample are

reported to suggest the direction of bias in the CPF intake sample. For all four treatment groups, the monthly income, the days worked, and the average daily wage are consistently poorer for the CIF intake sample than for the CPF sample at intake. This suggests that the subjects studied at intake but not located for follow-up were systematically different from those for whom follow-up data were obtained. The direction of the difference is that those lost to follow-up were economically poorer at intake. The comparison of variables between the CPF sample at intake and at 6 months are crucial for assessing the effect treatment had on these variables. However, the bias noted introduces an additional caution in interpreting the findings as definitive. The small sample size and the relatively short 6-month follow-up period also dampens the effects; therefore, testing for statistical significance in the variables was not considered.

Only the data on the CPF samples for average daily wages reflect any important differences in financial status. The DWI School shows an increase of about \$1 and the DWI AC Treatment shows an increase of about \$0.50. The other two groups show a decline in average daily wage.

The relative financial characterization of these four groups is similar to what has been observed concerning other previously mentioned variables. The DWI School and DWI AC Treatment groups were the most socially intact, exhibited the least amount of behavioral impairment caused by alcohol, and rated high on the self-esteem index. On the basis of average daily wage, these two groups also appear to be notably better off than the other two groups.

The decline in average daily wage for the DWI Non-AC and the Non-ASAP groups does not necessarily reflect a failure in treatment, since the decline in average daily wage would have been more severe if treatment intervention had not occurred. It is recognized that untreated alcoholism frequently results in a downward economic and social progression.

The unemployment percentage indicates an economic improvement following treatment. The DWI School shows a decline in unemployment from 4.7 to 3.1 percent and Non-ASAP shows a decline from 32.0 to 24.0 percent. The DWI Non-AC Treatment shows no change, but the base percentage is only 1.7 percent, so virtually everyone is employed at both intake and follow-up. This change coupled with the 24.0 percent unemployment figure for the Non-ASAP following treatment, suggests that the difference in employment rates for these groups at intake to follow-up is not a sensitive and accurate index of change.

SUMMARY

This paper presents data that describes the qualities of the various assignment groups. However, the data can be used to suggest those groups more likely to respond to treatment. It appears reasonable to assume that clients with a greater history of failure from prior alcoholism treatment efforts and from the criminal justice system are less responsive to treatment.

On the basis of this reasoning, the data show that all four DWI groups are generally better off than the Non-ASAP group. Clearly, these DWI groups as groups are more socially intact and more amenable to any kind of treatment than the Non-ASAP; therefore, intervention efforts with potential DWIs hold a greater promise for treatment improvement because the DWIs appear more intact and less involved with alcoholism than Non-ASAP groups. This supports an NIAAA premise for supporting ASAP programs; ASAP programs include a large number of individuals for whom early intervention into their alcohol problems would be worthwhile.

Table 6. Client data classified by alcohol consumption at intake and at 6 months.

| Assignment Code | Amount of Alcohol Consumed at 6 Months* (mL/d) | Clients | | Avg Amount of Alcohol Consumed (mL/d) | | | |
|----------------------|--|---------|---------|---------------------------------------|-------------|----------------|----------------|
| | | No. | Percent | At Intake | At 6 Months | Change | |
| | | | | | | Amount | Percent |
| DWI school | 0 | 108 | 41.4 | 8.9 | 0.0 | -8.9 | 100.0 |
| | <30 | 144 | 55.2 | 17.7 | 6.8 | -10.9 | 61.7 |
| | 30 to 89 | 6 | 2.3 | 47.0 | 48.5 | 1.5 | 3.1 |
| | >89 | 3 | 1.1 | 17.7 | 229.5 | - ^b | - ^b |
| Total or average | | 261 | 100.0 | 14.8 | 7.4 | -7.4 | 50.0 |
| DWI non-AC treatment | 0 | 57 | 34.8 | 23.7 | 0.0 | -23.7 | 100.0 |
| | <30 | 96 | 58.5 | 51.5 | 7.1 | -44.4 | 88.5 |
| | 30 to 89 | 9 | 5.5 | 87.2 | 48.2 | -39.0 | 44.8 |
| | >89 | 2 | 1.2 | 75.7 | 160.9 | - ^b | - ^b |
| Total | | 164 | 100.0 | 44.1 | 8.9 | -35.2 | 79.9 |
| DWI AC treatment | 0 | 207 | 36.7 | 29.9 | 0.0 | -29.9 | 100.0 |
| | <30 | 314 | 55.7 | 32.8 | 7.1 | -25.7 | 78.4 |
| | 30 to 89 | 35 | 6.2 | 71.0 | 51.7 | -19.3 | 27.1 |
| | >89 | 8 | 1.4 | 94.3 | 252.0 | - ^b | - ^b |
| Total | | 564 | 100.0 | 34.9 | 10.7 | -24.2 | 69.5 |
| Non-ASAP | 0 | 17 | 41.5 | 286.5 | 0.0 | -286.5 | 100.0 |
| | <30 | 17 | 41.5 | 89.3 | 10.6 | -78.7 | 88.1 |
| | 30 to 89 | 3 | 7.3 | 65.6 | 47.0 | -18.6 | 28.4 |
| | >89 | 4 | 9.7 | 417.2 | 334.1 | -83.1 | 19.8 |
| Total | | 41 | 100.0 | 201.4 | 40.5 | -159.9 | 79.9 |

Note: 1 mL = 0.033 fl oz.

^aAverage mL/d during preceding month.^bNot calculated because of small number of clients.**Table 7. Client change data classified by alcohol impairment and self-esteem indices.**

| Assignment Code | Alcohol Impairment Index | | | Self-Esteem Index | | |
|----------------------|--------------------------|-----------|-------------|-------------------|-----------|-------------|
| | No. of Clients | At Intake | At 6 Months | No. of Clients | At Intake | At 6 Months |
| DWI school | 263 | 0.9 | 0.3 | 233 | 6.3 | 6.6 |
| DWI non-AC treatment | 162 | 2.7 | 0.4 | 150 | 5.6 | 5.9 |
| DWI AC treatment | 575 | 2.7 | 1.0 | 547 | 5.4 | 5.8 |
| Non-ASAP | 41 | 11.7 | 4.7 | 41 | 3.8 | 4.9 |

Table 8. Client change data for employment and financial status.

| Assignment Code | Sample | Monthly Income (\$) | Days Worked | Average Daily Wage (\$) | Unemployed (%) |
|----------------------|-----------------|---------------------|-------------|-------------------------|----------------|
| DWI school | CIF at intake | 710 | 20.4 | 34.80 | 3.8 |
| | CPF at intake | 721 | 20.7 | 34.83 | 4.7 |
| | CPF at 6 months | 761 | 21.2 | 35.00 | 3.1 |
| DWI non-AC treatment | CIF at intake | 635 | 18.7 | 33.96 | 7.2 |
| | CPF at intake | 685 | 20.1 | 34.08 | 1.7 |
| | CPF at 6 months | 684 | 21.4 | 31.96 | 1.7 |
| DWI AC treatment | CIF at intake | 589 | 18.0 | 32.72 | 13.3 |
| | CPF at intake | 687 | 19.6 | 35.05 | 9.3 |
| | CPF at 6 months | 683 | 19.2 | 35.57 | 9.7 |
| Non-ASAP | CIF at intake | 312 | 11.3 | 27.61 | 35.9 |
| | CPF at intake | 353 | 11.9 | 29.66 | 32.0 |
| | CPF at 6 months | 287 | 11.0 | 26.09 | 24.0 |

Within the four DWI groups, the DWI Probation and School appear, on the basis of intake data, less clearly involved with alcoholism than either the DWI Non-AC or the DWI AC Treatment groups. This is clearly observed in terms of the impairment index. By nature, the DWI Non-AC and AC Treatment groups would be expected to deal with more severe cases of alcoholism in comparison to the DWI Probation or School groups. The finding reported is consistent with a policy of assigning clients to these groups, based directly or indirectly on an assessment of the severity of the problem drinking. The data suggest that this process appears successful.

The follow-up data are critical because whatever selective factors resulted from initial assignment to the various groups were controlled by comparing intake to follow-up data. A large decline in behavioral impairment and in alcohol consumption was shown for the four follow-up groups. The decline at follow-up was much greater for some groups than for others: the Non-ASAP showed a mean consumption of 40.5 mL/d (1.37 fl oz) of absolute alcohol whereas other groups were much lower. The critical variable for percentage of group abstaining from alcohol increased almost threefold over intake percentage. Thus, in terms of both abstinence and average alcohol consumption, improvement at follow-up for all groups was found.

It seems likely that with a sizable reduction in alcohol intake there will also be a sizable reduction in behavioral impairment, and this may well spill over to improve the client's own self-esteem rating. As a matter of interest, the self-esteem ratings did considerably improve at 6 months over intake values.

A reduction in alcohol intake seems to be a necessary but not sufficient condition for client improvement in other areas of functioning. By ultimately improving control over alcohol consumption, clients will lead more socially and economically productive lives. However, the reported data on economic improvement are tenuous. Nevertheless, the trends are interesting and consistent with the other findings in this study: a trend toward improved earnings at follow-up for the DWI School and for the DWI AC groups. It does not appear accidental that these same groups also show higher scores on the other criterion measures.

The average daily wage was considered a useful measure for group comparisons of this type. However, further follow-up data are required before the economic trends can be established. Economic measures, such as the average daily wage, must be employed with caution since economic times change and over a long time period wages will presumably be affected.

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