United States General Accounting Office

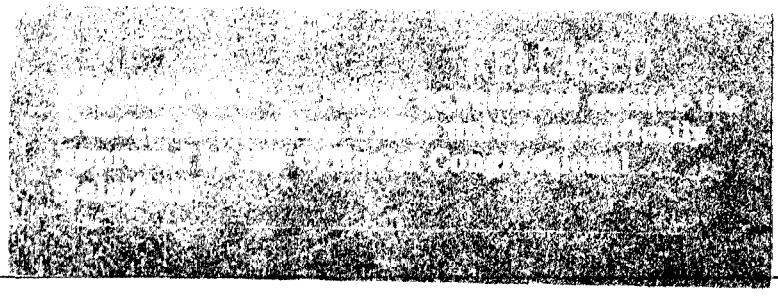
GAO

Report to the Chairman, Committee on Governmental Affairs, U.S. Senate

March 1991

VA HEALTH CARE

Alcoholism Screening Procedures Should Be Improved



GAO/HRD-91-71

GAO

United States
General Accounting Office
Washington, D.C. 20548

Human Resources Division

B-243075

March 27, 1991

The Honorable John Glenn
Chairman, Committee on Governmental
Affairs
United States Senate

Dear Mr. Chairman:

Alcoholism is a frequently overlooked health problem despite its significant medical, economic, social, and legal consequences. Over 18 million Americans have alcohol use problems, but fewer than 15 percent of them receive treatment. At your request, we reviewed how physicians in the Department of Veterans Affairs (VA) detect alcohol use problems in veterans who apply for health care at VA medical centers. As agreed with your office, we also estimated the number of veterans at five VA medical centers who potentially need alcohol use treatment and compared that estimate to the number of veterans receiving treatment at these centers.

Of the 172 hospitals and 240 outpatient clinics VA operates, most are organized into 159 medical centers. VA provides medical care in over 70 specialty areas. For fiscal year 1990, VA reported providing care to about 2.6 million veterans, at a cost of $11.3 billion. During visits to five medical centers in late fiscal year 1990, we interviewed physicians to determine how they diagnose veterans' alcohol use problems. Using a questionnaire, we gathered information from 2,253 veterans on their attitudes and those of others toward their drinking habits.[1] These veterans applied for health care at the five centers during a 10-day period. In addition to reviewing relevant research studies on alcoholism, we interviewed headquarters officials regarding VA's policies and procedures for diagnosing and treating veterans' alcohol use problems. On December 12, 1990, we briefed your staff on the results of our work.

Results in Brief

Information from 29 percent of the veterans we surveyed at the five VA medical centers strongly indicates that they have alcohol use problems. An additional 14 percent provided information that raises suspicions of alcohol use problems. Yet the five centers provided alcohol treatment to fewer than 3 percent of veterans applying for medical care during fiscal year 1990. The disparity between these rates may be explained by several factors, including physicians not diagnosing alcohol use problems in

[1]Bureau of the Census staff conducted these interviews under an interagency agreement with GAO.

many of their patients. Physicians' screening practices varied widely at the five centers; few routinely or systematically screened all veterans for potential alcohol use problems when they applied for health care.

Background

Alcoholism is a chronic, progressive, potentially fatal condition characterized by the continued use of alcohol, despite resultant emotional, social, legal, or physical problems. Alcohol use can result in a wide variety of diseases and disorders, such as cirrhosis of the liver, which is the ninth leading cause of death in the United States. Other alcohol-related diseases include those of the nervous, gastrointestinal, and respiratory systems. The Department of Health and Human Services (HHS) estimated the annual economic costs of alcohol-related problems in 1986 to be $128 billion, including health care costs of $16.5 billion.[2]

VA's Alcohol Screening and Treatment Processes

Veterans generally apply in person for health care at one of VA's medical centers. As part of the routine admissions screening, VA physicians examine veterans to determine whether they have conditions needing medical treatment. While these examinations focus primarily on conditions the veterans present in their applications, VA physicians have wide latitude in diagnosing other conditions, including alcohol use problems, that may warrant VA treatment. Currently, VA leaves decisions on whether to screen for alcohol use problems and procedures for screening up to individual medical centers.

In 1985, VA started a preventive medicine program to focus physicians' attention on conditions that lead to high mortality and morbidity among VA patients. The program consists of 11 preventive medicine services, including alcohol use screening and counseling (see app. I). Each fiscal year, VA selects one condition to receive special emphasis. Influenza immunizations were highlighted in 1985 and 1986, colorectal cancer screening in 1987, smoking cessation counseling in 1988, and cholesterol screening in 1989 and 1990. Officials have not determined when the program will emphasize screening for alcohol use problems.

VA physicians diagnosing potential alcohol use problems are to refer the veterans to an alcohol treatment specialist. This specialist will counsel

[2]HHS, National Institute on Alcohol Abuse and Alcoholism, Seventh Special Report to the U.S. Congress on Alcohol and Health From the Secretary of Health and Human Services, Rockville, MD, Jan. 1990, p. ix.

and further assess veterans' potential treatment needs, including development of a treatment plan, when appropriate. These plans may include additional counseling, detoxification, education, and follow-up therapy. At the close of fiscal year 1989, VA operated 123 units that specialized in providing alcohol use treatment; other VA units, such as psychiatry, also provide such treatment. Treatment is available on an inpatient or an outpatient basis.

Medical center directors have wide latitude in allocating resources for alcohol use treatment. Because many veterans who have alcohol use problems also have drug use problems, an increasing number of medical centers have begun combining their alcohol and drug programs.

VA spent $320 million treating veterans' alcohol and drug use problems in fiscal year 1990. This included $60 million targeted to improve alcohol and drug treatment services. After reviewing proposals, VA distributed the targeted funds to 144 medical centers for projects designed to (1) expand treatment facilities and (2) enhance education and prevention activities.

Alcoholism Screening Techniques

Two principal types of alcoholism screening instruments are available to health care practitioners:

- Questionnaires that address the psychosocial consequences of drinking.
- Laboratory tests that focus on biochemical indicators of alcohol-related disorders.

Four questionnaires frequently used to screen for alcohol use problems are the Michigan Alcoholism Screening Test, the Addiction Severity Index, the MacAndrew Scale, and the CAGE. These involve brief interviews or written tests, in which the patient answers questions about his or her drinking behavior and its consequences. Among the laboratory tests used to detect alcohol-related disorders are analyses of enzyme levels and other biomedical measures. Results are analyzed to determine if they deviate from expected values. Values outside normal ranges frequently indicate alcohol-related disorders, such as liver disease.

Important practical considerations in selecting a screening instrument include validity, cost, and the practitioner's need for immediate results. HHS reports that the validity (ability to accurately identify alcoholism) of self-report questionnaires generally exceeds that of biochemical indicators because the psychosocial consequences of drinking surface

earlier than the physiological effects.[3] Also, questionnaires are cheaper to administer and provide immediate results. A bibliography of selected research studies on alcohol use screening techniques appears at the end of this report.

Scope and Methodology

We reviewed VA's policies and procedures for processing veterans' applications for health care. We also discussed the extent to which alcohol use screening is part of these procedures with headquarters officials responsible for VA's alcohol treatment and rehabilitation activities. During visits to the five medical centers, we interviewed officials in the office of the director, medical administration service, and alcohol treatment units. We also talked with 20 physicians who diagnose the health care needs of veterans who apply for care.[4] Through these interviews, we obtained views on the prevalence of alcohol use problems among veterans and obstacles to the diagnosis and treatment of such problems. We also interviewed officials at HHS's National Institute on Alcohol Abuse and Alcoholism to obtain their views regarding alcohol use screening.

We selected the CAGE questionnaire as our screening instrument, based on our review of research and literature pertaining to a wide range of alcohol screening techniques. We also discussed the CAGE with the physician who developed it. Using the CAGE, we screened 2,253 veterans applying for health care at medical centers in Albuquerque, New Mexico; the Bronx, New York; Iowa City, Iowa; New Orleans, Louisiana; and Seattle, Washington. These centers were selected to represent a mix of characteristics, such as size (number of beds), geographic location, and settings (for example, rural or urban service area). We screened veterans for a 10-day period at each medical center.

The 2,253 veterans represent 89 percent of the veterans who applied for care during our test periods. We were unable to locate the remainder after they had submitted their applications. These figures exclude veterans who applied for care and whom VA determined required emergency or immediate treatment. The results of our work are not

[3]HHS, National Institute on Alcohol Abuse and Alcoholism, Sixth Special Report to the U.S. Congress on Alcohol and Health From the Secretary of Health and Human Services, Rockville, MD, Jan. 1987, p. 111.

[4]The five centers had a total of 44 physicians who diagnosed veterans' health care needs when they applied for care. We judgmentally selected the 20 physicians interviewed based on their work schedules and availability during our fieldwork. Accordingly, their responses are not generalizable to all physicians at the medical centers.

generalizable to veterans applying for care at other times at these medical centers or to the overall veteran population applying for care at all VA medical centers. We conducted our fieldwork from May to December 1990 in accordance with generally accepted government auditing standards.

CAGE Screening Instrument

HHS reports that the CAGE questionnaire is an effective initial screening technique for detecting persons who may have alcohol use problems. Obtaining answers to its four questions, which are normally included in a health screening process, generally takes less than a minute. The questions are designed to help patients remember past, as well as current, drinking experiences and determine whether they were negatively affected by drinking, or criticized by others about their drinking. The CAGE questions are:

- "Have you ever felt you should Cut down on your drinking?"
- "Have people ever Annoyed you by criticizing your drinking?"
- "Have you ever felt bad or Guilty about your drinking?"
- "Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (Eye-opener)?"

A positive response to one CAGE question should raise suspicions of an alcohol use problem, HHS said in a January 1990 report to the Congress. A positive response to more than one question is a strong indication that an alcohol use problem exists.[5] This view is consistent with interpretations of CAGE results in clinical and research studies over the last 20 years. Several researchers have validated the CAGE as an effective screening instrument by testing its ability to accurately identify persons who have alcohol use problems, generally referred to as sensitivity, and those who do not have such problems, generally referred to as specificity.

In one study in a private hospital, researchers administered the CAGE to 518 patients who had been divided into two groups. One group had been determined on the basis of interviews, laboratory tests, and medical records to have alcohol use problems. The second group was determined not to have alcohol use problems. When researchers administered the CAGE to the group that had alcohol use problems, 85 percent of the group

[5]HHS, National Institute on Alcohol Abuse and Alcoholism, Seventh Special Report to the U.S. Congress on Alcohol and Health From the Secretary of Health and Human Services, Rockville, MD, Jan. 1990, p. 187.

answered at least one CAGE question positively. This showed that the CAGE's sensitivity in this study was 85 percent. When the CAGE was administered to the group that had been judged not to have alcohol use problems, 89 percent answered all the questions negatively; thus, the CAGE's specificity in this study was 89 percent. For these 518 patients, the CAGE did not identify 15 percent who had alcohol use problems and falsely identified 11 percent as having such problems, as table 1 shows.

Table 1: CAGE Sensitivity and Specificity, by Number of Positive Responses

	Sensitivity in detecting patients with alcohol use problems		Specificity in detecting patients without alcohol use problems	
Number of positive responses	Percent	Cumulative percent	Percent	Cumulative percent
4	20	20	0	0
3	31	51	1	1
2	24	75	3	4
1	10	85	7	11
0	15		89	

Source: B. Bush and others, "Screening for Alcohol Abuse Using the CAGE Questionnaire," The American Journal of Medicine, Vol. 82, Feb. 1987.

Deciding how many positive CAGE responses to use for screening purposes represents a trade-off between sensitivity and specificity, as the above research results show. Thus, how the results will be used is a critical factor. For example, when a physician in a general medical setting can make referrals to a more specialized diagnostic unit, the major concern should be the sensitivity of the results. Any false positive can be identified quickly at the next stage of the screening process. But for certain research purposes, and in any legal proceeding where alcoholism is an issue, specificity should be of equal or greater importance.[6]

Demographic Profile of Veterans Screened

Almost all (97 percent) of the 2,253 veterans we screened were male, and about two-thirds were 45 years of age or older. The proportion in this age group varied widely by location, from 63 percent in New Orleans and Seattle to 84 percent in Iowa City. Of the 2,253 veterans, 49 percent were white, 29 percent black, 17 percent Hispanic, and 5 percent from other racial or ethnic backgrounds. The racial and ethnic characteristics of those interviewed varied considerably by medical center. Over three-fourths of the veterans screened in Iowa City and Seattle

[6]J. Allen, M. Eckardt, and J. Wallen, "Screening for Alcoholism: Techniques and Issues," Public Health Reports, Vol. 103, No. 6, Nov.-Dec. 1988.

were white, almost two-thirds in New Orleans were black, over two-fifths Albuquerque were Hispanic, and nearly three-fourths in the Bronx were either black or Hispanic.

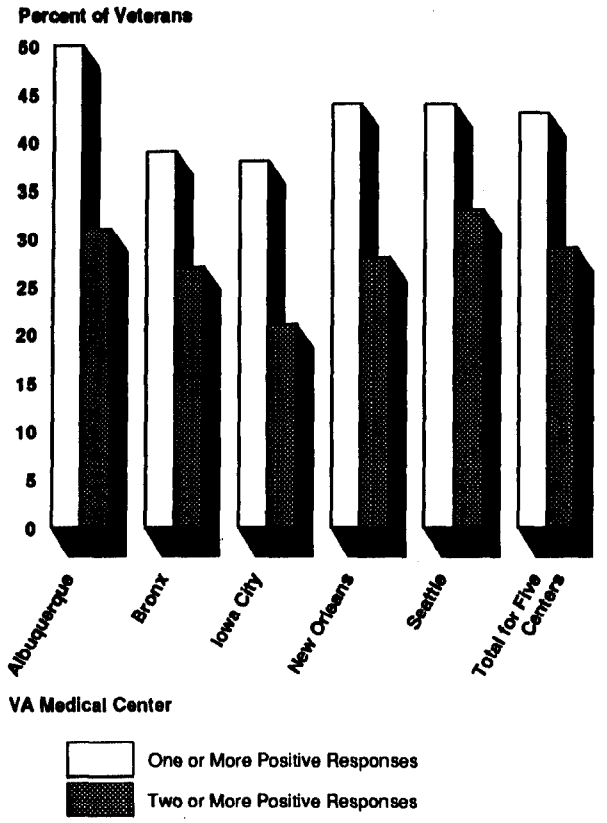
Fifty-one percent of those screened reported that they had served in combat zones during their military service. Of this group, three-fourths said that they had been exposed to combat. Appendix II contains additional information on the demographic profile of veterans included in our screening process.

Many Veterans May Have Alcohol Use Problems

From our screening results and interviews, it appears likely that many veterans in our sample have alcohol use problems. Of the 2,253 veterans we screened, 43 percent provided positive responses to one or more CAGE questions. About 29 percent answered two or more CAGE questions positively, and 14 percent answered one question positively. The proportion of veterans giving positive responses varied among the medical centers, as figure 1 shows.[7]

[7]App. III shows the percentage of veterans providing positive responses to one, two, three, or four CAGE questions.

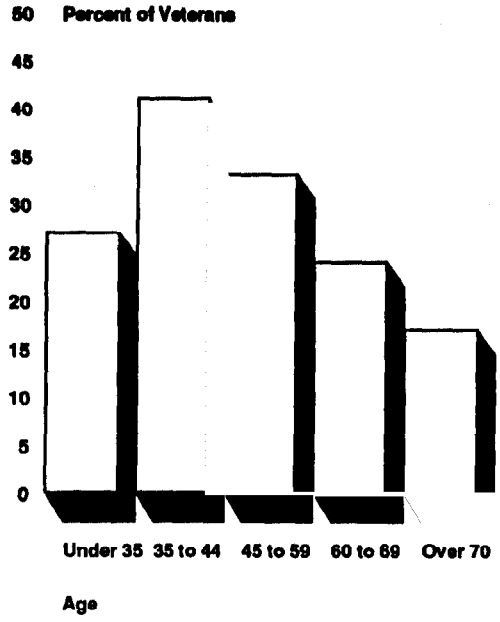
Figure 1: Veterans Screened With Positive CAGE Responses, by VA Medical Center



Our screening results showed that potential alcohol use problems among the veterans we interviewed were evident among different age groups, races, and ethnic backgrounds. For instance, the proportion of veterans with two or more positive responses ranged from 17 to 41 percent by age group. Veterans aged 35-44 years accounted for the largest proportion. By contrast, those over 70 years of age had the smallest proportion of two or more positive responses, as figure 2 shows.[8]

[8]App. IV contains additional information on these veterans by medical center.

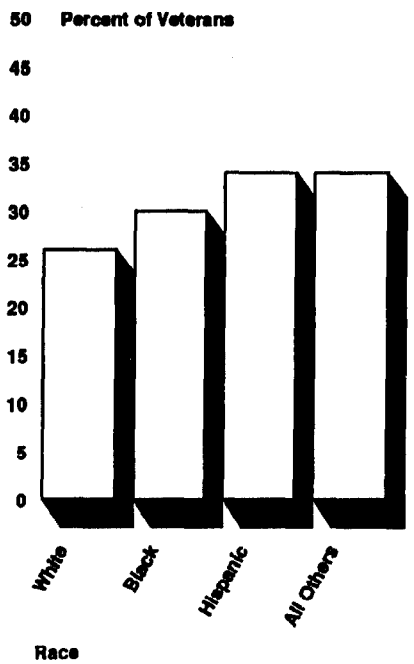
Figure 2: Veterans With Two or More Positive CAGE Responses, by Age



Also, potential alcohol use problems were evident in veterans, regardless of race or ethnic background. The proportion of veterans by race or ethnic background who had two or more positive CAGE responses ranged from 26 to 34 percent, as figure 3 shows.[9]

[9]App. V contains additional information on these veterans by medical center.

Figure 3: Veterans With Two or More Positive CAGE Responses, by Race and Ethnic Background



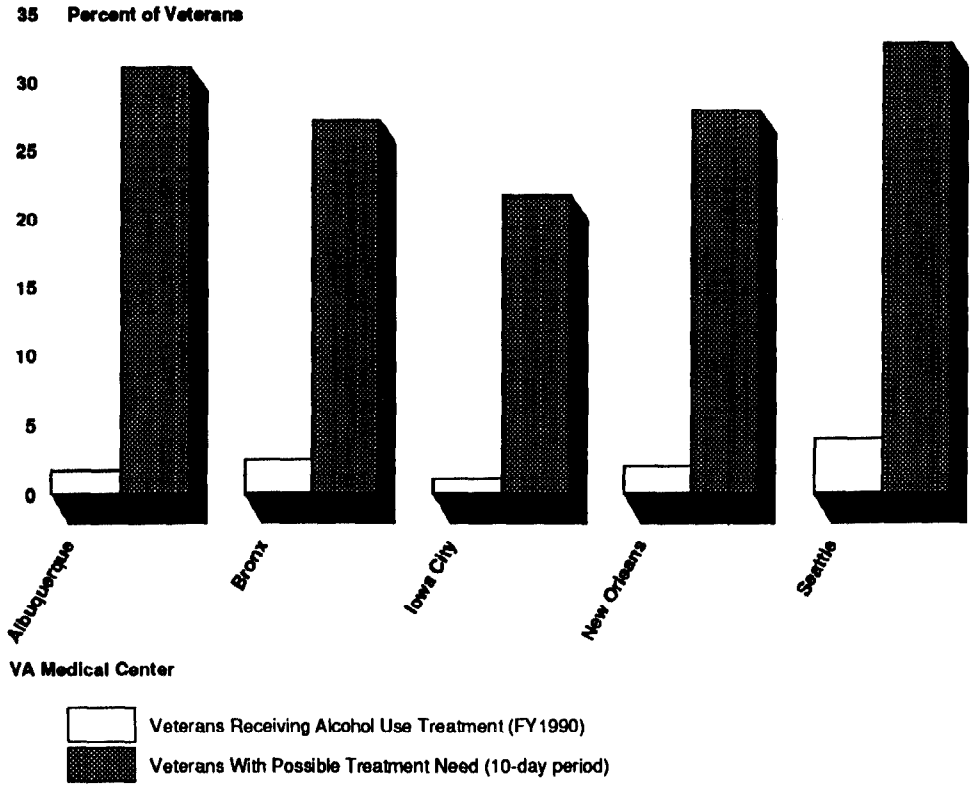
Our screening results are consistent with the views expressed by officials in VA's Office of Alcohol and Drug Dependence Treatment Rehabilitation as to the potential need for alcohol use treatment of veterans using VA medical centers. However, VA has not systematically collected data, through routine monitoring processes or special studies, to quantify veterans' need for alcohol use treatment, the officials noted.

The 20 physicians we interviewed at the five centers also agreed that alcohol use is a problem among veterans. Fourteen physicians estimated that more than 10 percent of the veterans applying for health care might have alcohol use problems; four of them thought that more than 30 percent might have such problems.

Few Veterans Receive Treatment for Alcohol Use Problems at VA Medical Centers

During fiscal year 1990, the five VA centers provided alcohol use treatment to about 3,100, or 2.3 percent, of the 134,000 veterans given health care.[10] Among the centers, the percentages ranged from 1.1 to 4.0. These numbers are far below the percentage of veterans in our screening who showed strong indications of alcohol use problems (positive responses to two or more CAGE questions), as figure 4 shows.

Figure 4: Comparison of Alcohol Screening Results and Treatment Provided



Several factors might explain the disparity between the proportion of veterans potentially needing treatment and those receiving treatment; however, we have no basis on which to estimate quantitatively the extent to which these factors contributed to this disparity. One important factor is that VA physicians do not always screen veterans for alcohol use problems. Only four of the physicians we interviewed said

[10]Systemwide, VA provided alcohol treatment to 3.1 percent of all veterans who received any type of health care at a VA medical center in fiscal year 1990.

that they screen all veterans for such problems. Ten said they often screen, and the rest sometimes or rarely screen.

Because of the high prevalence of alcohol use problems among outpatients, some researchers have recommended that all patients be screened regardless of their reason for seeking care.[11] But seven of the VA physicians we interviewed did not agree they should routinely screen veterans for alcohol use problems when they apply for health care at VA medical centers. Long waiting lines were a factor that prevented them from doing so, the physicians noted.

Further, when physicians do screen, they do not systematically use effective procedures or processes. The VA physicians we interviewed did not ask a uniform set of questions. Most commonly, they asked their patients if they drink, how often they drink, and if they have been arrested for driving while intoxicated. This kind of approach, which relies on general interview questions, is less effective than the systematic use of a screening instrument, such as the CAGE, research has shown. For example, among a sample of patients receiving care in a community hospital, physicians using the CAGE correctly detected 94 percent of those who had alcohol use problems but physicians not using it identified only 63 percent.[12]

Education and training are critical factors that may limit physicians in diagnosing their patients' alcohol use problems. Although primary care physicians are in a key position to make early diagnosis of alcohol problems, a 1990 HHS report concluded that they often fail to diagnose such problems because of inadequate training in this area. Education and training programs for physicians have not adequately prepared them to confront alcohol problems in their patients, another recent study concluded.[13] In its report to the Congress, HHS concluded that greater emphasis on screening and treatment in the medical education and training of residents could contribute significantly to early diagnosis and timely treatment referrals.[14]

[11]M.G. Cyr and S.A. Wartman, "The Effectiveness of Routine Screening Questions in the Detection of Alcoholism," Journal of the American Medical Association, Vol. 259, No. 1, Jan. 1, 1988.

[12]B. Bush and others, "Screening for Alcohol Abuse..."

[13]D.C. Lewis, "Putting Training About Alcohol and Other Drugs Into the Mainstream of Medical Education," Alcohol, Health, and Research World, Vol. 15, No. 1, 1989.

[14]HHS, National Institute on Alcohol Abuse and Alcoholism, Seventh Special Report to the U.S. Congress on Alcohol and Health From the Secretary of Health and Human Services, Rockville, MD, Jan. 1990, p. 199.

Patients' refusing treatment may also affect the extent of treatment provided at the five medical centers. When VA physicians initiate discussions about alcohol use, patients often deny that they have problems, most VA physicians we interviewed noted. Researchers have identified patient denial as a major obstacle to the diagnosis and treatment of alcohol use problems.[15]

Finally, even when veterans recognize that they have problems, they may be unaware that VA provides alcohol use treatment. Of 26,143 veterans surveyed nationwide in 1987, 60 percent were unaware that VA provided treatment for veterans with drinking problems, VA reported.[16] This lack of awareness was fairly consistent among the age groups we identified as having the largest proportion of veterans who may have alcohol use problems.

Conclusions

Some veterans likely have alcohol use problems that physicians do not effectively diagnose when the veterans apply for health care at VA medical centers. VA's admissions process could be improved if physicians used a more systematic approach, such as a series of structured questions (like the CAGE or other validated instruments), to routinely screen all applicants for alcohol use problems. This approach would afford VA a better chance of identifying veterans in need of treatment.

Recommendation

We recommend that the Secretary of Veterans Affairs require, as a part of VA's preventive medicine program, that each medical center systematically screen veterans for potential alcohol use problems when they apply for health care services.

Agency Comments

We did not obtain written comments on this report. After discussing the issues in the report with VA officials, we included their comments where appropriate.

[15]B. Bush and others, "Screening for Alcohol Abuse..."

[16]1987 Survey of Veterans, Department of Veterans Affairs (Washington, D.C.: 1989), pp. 63 and 64.

Unless you publicly announce its contents earlier, we plan no further distribution of this report for 30 days. At that time, we will send copies to the Secretary of Veterans Affairs and interested congressional committees. We will make copies available to others upon request. The report was prepared under the direction of David P. Baine, Director, Federal Health Care Delivery Issues. If you have any questions, you may contact him at (202) 275-6207. Other major contributors are listed in appendix VI.

Sincerely yours,

Lawrence H. Thompson
Assistant Comptroller General

Contents

Abbreviations

HHS	Department of Health and Human Services
VA	Department of Veterans Affairs

VA's Preventive Medicine Program Services

The Department of Veterans Affairs, through its Preventive Medicine Program, has identified the following preventive health care services:

1. Hypertension screening.
2. Cholesterol screening.
3. Breast cancer screening.
4. Cervical cancer screening.
5. Colorectal cancer screening.
6. Smoking/tobacco cessation counseling.
7. Alcohol misuse inquiry/counseling.
8. Nutrition/weight control counseling.
9. Physical fitness/exercise counseling.
10. Injury prevention counseling.
11. Immunizations.

Demographic Profile of Veterans GAO Screened

Numbers in percent

	Distribution of veterans screened by center					
	Albuquerque	**Bronx**	**Iowa City**	**New Orleans**	**Seattle**	**Total**
Sex						
Male	94	98	96	98	95	97
Female	6	2	4	2	5	3
Age (years)						
Under 35	7	13	7	14	13	11
35-44	22	19	10	23	25	21
45-59	18	25	23	20	20	21
60-69	33	24	38	29	27	29
70+	20	19	22	14	15	18
Race and ethnic origin						
White	47	24	93	26	78	49
Black	4	45	5	65	13	29
Hispanic	41	28	1	4	2	17
All others	8	3	1	5	7	5
Military service						
Stationed in war zone	59	45	57	43	54	51
Exposed to combat	48	31	45	34	43	39

Veterans Providing Positive Responses to One, Two, Three, or Four CAGE Questions

Numbers are percent of veterans screened

Medical center	Positive responses to CAGE questions				Total—one or more positive responses	Total—two or more positive responses
	One	Two	Three	Four		
Albuquerque	19	12	11	8	50	31
Bronx	12	11	10	6	39	27
Iowa City	17	10	7	4	38	21
New Orleans	16	12	11	5	44	28
Seattle	11	10	10	13	44	33
Total for five centers	**14**	**11**	**10**	**8**	**43**	**29**

Veterans Providing Positive Responses to Two or More CAGE Questions, by Age and Medical Center

Medical center	Age of veteran					Total
	Under 35	35-44	45-59	60-69	70+	
Albuquerque						
Number of veterans screened	30	97	77	141	87	432
Percent who screened CAGE-positive	30	46	31	24	25	31
Bronx						
Number of veterans screened	91	132	167	164	129	683
Percent who screened CAGE-positive	20	37	35	27	11	27
Iowa City						
Number of veterans screened	18	26	62	104	59	269
Percent who screened CAGE-positive	17	31	24	21	17	22
New Orleans						
Number of veterans screened	53	87	75	108	52	375
Percent who screened CAGE-positive	28	34	32	24	17	28
Seattle						
Number of veterans screened	63	122	99	133	77	494
Percent who screened CAGE-positive	37	48	37	22	17	33
Total						
Number of veterans screened	255	464	480	650	404	2,253
Percent who screened CAGE-positive	27	41	33	24	17	28

Veterans Providing Positive Responses to Two or More CAGE Questions, by Race or Ethnic Background and Medical Center

Medical center	White	Black	Hispanic	Asian-Pacific Islander	Indian/ Eskimo	Other	Total
Albuquerque							
Number of veterans screened	201	18	176	1	24	8	428
Percent who screened CAGE-positive	27	33	36	0	38	13	31
Bronx							
Number of veterans screened	166	308	189	1	5	12	681
Percent who screened CAGE-positive	21	28	32	0	0	33	27
Iowa City							
Number of veterans screened	251	14	1	0	3	0	269
Percent who screened CAGE-positive	21	29	0	0	33	0	22
New Orleans							
Number of veterans screened	99	244	14	1	11	5	374
Percent who screened CAGE-positive	24	30	14	0	36	20	28
Seattle							
Number of veterans screened	384	63	8	13	14	10	492
Percent who screened CAGE-positive	30	38	50	38	57	40	33
Total							
Number of veterans screened	1,101	647	388	16	57	35	2,244
Percent who screened CAGE-positive	26	30	34	31	39	29	29

Major Contributors to This Report

Human Resources Division, Washington, D.C.	Paul R. Reynolds, Assistant Director, (202) 233-5281 William R. Stanco, Evaluator-in-Charge Andrea L. Rozner, Evaluator Kopp F. Michelotti, Evaluator David P. Alexander, Technical Advisor

Bibliography

Abrams, Michael. "Ethanol Trauma Syndrome (ETS)." Iowa Medicine, Mar. 1986.

Allen, John P., and others. "Screening for Alcoholism: Techniques and Issues," Public Health Reports, Vol. 103, No. 6, Nov.-Dec. 1988.

Babor, Thomas F., and others. "Verbal Report Methods in Clinical Research on Alcoholism: Response Bias and Its Minimization," Journal of Studies on Alcohol, Vol. 48, No. 5, 1987.

Barchha, Ramnik, and others. "The Prevalence of Alcoholism Among General Hospital Ward Patients," American Journal of Psychiatry, Vol. 125, No. 5, Nov. 1968.

Beresford, Thomas P., and others. "Clinical Applications: Screening for Alcoholism," Preventive Medicine, Vol. 17, 1988.

Bernadt, M.W., and others. "Comparison of Questionnaire and Laboratory Tests in the Detection of Excessive Drinking and Alcoholism," The Lancet, Feb. 6, 1982.

—. "A Discriminant-Function Analysis of Screening Tests for Excessive Drinking and Alcoholism," Journal of Studies on Alcohol, Vol. 45, No. 1, 1984.

Brown, Richard L., and others. "Diagnosis of Alcoholism in a Simulated Patient Encounter by Primary Care Physicians," The Journal of Family Practice, Vol. 25, No. 3, 1987.

Bush, Booker, and others. "Screening for Alcohol Abuse Using the CAGE Questionnaire," The American Journal of Medicine, Vol. 82, Feb. 1987.

Chakerian, Armen, and others. "In Support of a Consolidated Alcoholism Treatment Program," IB, Vol. XV, No. 4, Nov. 1973.

Clement, Sue. "The Identification of Alcohol-Related Problems by General Practitioners," British Journal of Addiction, Vol. 81, 1986.

Coulehan, John L., "Recognition of Alcoholism and Substance Abuse in Primary Care Patients," Archives of Internal Medicine, Vol. 147, No. 2, Feb. 1987.

Cyr, Michele G., and Steven A. Wartman. "The Effectiveness of Routine Screening Questions in the Detection of Alcoholism," Journal of the American Medical Association, Vol. 259, No. 1, Jan. 1, 1988.

Davis, Leo J., Jr., and others. "Discriminant Analysis of the Self-Administered Alcoholism Screening Test," Alcoholism: Clinical and Experimental Research, Vol. 11, No. 3, May/June 1987.

Estes, Nada J., and M. Edith Heinemann. Alcoholism: Development, Consequences and Interventions, The C.V. Mosby Company, 1986.

Ewing, John A. "Detecting Alcoholism: The CAGE Questionnaire," Journal of the American Medical Association, Vol. 252, No. 14, Oct. 12, 1984.

Friedrich, William N., and Sheldon O. Loftsgard. "A Comparison of the MacAndrew Alcoholism Scale and the Michigan Alcoholism Screening Test in a Sample of Problem Drinkers," Journal of Studies on Alcohol, Vol. 39, No. 11, 1978.

Glaze, Lee W., and Peter G. Coggan. "Efficacy of an Alcoholism Self-Report Questionnaire in a Residency Clinic," The Journal of Family Practice, Vol. 25, No. 1, 1987.

Gomberg, Edith S. "Prevalence of Alcoholism Among Ward Patients in a Veterans Administration Hospital," Journal of Studies on Alcohol, Vol. 36, No. 11, 1975.

Helzer, John E. "Epidemiology of Alcoholism," Journal of Consulting and Clinical Psychology, Vol. 55, No. 3, 1987.

Lewis, David C. "Putting Training About Alcohol and Other Drugs Into the Mainstream of Medical Education," Alcohol Health & Research World, Vol. 13, No. 1, 1989.

Magruder-Habib, Kathryn, and others. "Correspondence of Clinicians' Judgments with the Michigan Alcoholism Screening Test in Determining Alcoholism in Veterans Administration Outpatients," Journal of Studies on Alcohol, Vol. 44, No. 5, 1983.

—. "Validation of the Veterans Alcohol Screening Test," Journal of Studies on Alcohol, Vol. 43, No. 9, 1982.

Mayfield, Demmie, and others. "The CAGE Questionnaire: Validation of a New Alcoholism Screening Instrument," American Journal of Psychiatry, Vol. 131, No. 10, Oct. 1974.

McAuley, Thomas, and others. "Comparative Effectiveness of Self and Family Forms of the Michigan Alcoholism Screening Test," Journal of Studies on Alcohol, Vol. 39, No. 9, 1978.

Mendelson, Jack H., and Nancy K. Mello (Ed.). The Diagnosis and Treatment of Alcoholism, McGraw Hill Book Company, 1985.

Morse, Robert M., and Wendell M. Swenson. "Spouse Response to a Self-Administered Alcoholism Screening Test," Journal of Studies on Alcohol, Vol. 36, No. 3, 1975.

National Council on Alcoholism, Criteria Committee, "Criteria for the Diagnosis of Alcoholism," Annals of Internal Medicine, Vol. 77, No. 2, Aug. 1972.

Pokorny, Alex D., and others. "The Brief MAST: A Shortened Version of the Michigan Alcoholism Screening Test," American Journal of Psychiatry, Vol. 129, No. 3, Sept. 1972.

Ringer, C., and others. "The N.C.A. Criteria for the Diagnosis of Alcoholism: An Empirical Evaluation Study," Journal of Studies on Alcohol, Vol. 38, No. 7, 1977.

Selzer, Melvin L. "The Michigan Alcoholism Screening Test: The Quest for a New Diagnostic Instrument," American Journal of Psychiatry, Vol. 127, No. 12, June 1971.

Selzer, Melvin L., and others. "A Self-Administered Short Michigan Alcoholism Screening Test (SMAST)," Journal of Studies on Alcohol, Vol. 36, No. 1, 1975.

Skinner, Harvey A., and others. "Identification of Alcohol Abuse Using Laboratory Tests and a History of Trauma," Annals of Internal Medicine, Vol. 101, No. 6, Dec. 1984.

—. "Lifestyle Assessment: Just Asking Makes a Difference," British Medical Journal, Vol. 290, Jan. 19, 1985.

—. "Clinical Versus Laboratory Detection of Alcohol Abuse: the Alcohol Clinical Index," British Medical Journal, Vol. 292, June 28, 1986.

Skinner, Harvey A., "A Multivariate Evaluation of the MAST," Journal of Studies on Alcohol, Vol. 40, No. 9, 1979.

Skinner, Harvey A., and Stephen Holt. The Alcohol Clinical Index: Strategies for Identifying Patients with Alcohol Problems, Addiction Research Fd., 1987.

Sobell, Linda C., and others. "The Reliability of Alcohol Abusers' Self-Reports of Drinking and Life Events That Occurred in the Distant Past," Journal of Studies on Alcohol, Vol. 49, No. 3, May 1988.

Zung, Burton J. "Factor Structure of the Michigan Alcoholism Screening Test," Journal of Studies on Alcohol, Vol. 39, No. 1, 1978.

—. "Psychometric Properties of the MAST and Two Briefer Versions," Journal of Studies on Alcohol, Vol. 40, No. 9, 1979.

Zung, Burton J., and K.D. Charalampous. "Item Analysis of the Michigan Alcoholism Screening Test," Journal of Studies on Alcohol, Vol. 36, No. 1, 1975.

Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office
Post Office Box 6015
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are $2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.

United States
General Accounting Office
Washington, D.C. 20548

Official Business
Penalty for Private Use $300

First-Class Mail
Postage & Fees Paid
GAO
Permit No. G100