nal electronic fetal monitoring devices among women with live births between 1980 and 1987, from 33.5 percent to 74.6 percent ($P<0.001$) and in the use of internal fetal monitoring devices, from 16.5 percent to 19.7 percent ($P<.001$). The greater increase in use of external fetal monitoring devices may be related to the less invasive nature of their use compared with internal fetal monitoring devices.

In summary, findings from the NMIHS pretest suggested recent trends toward nearly routine use of diagnostic ultrasound examinations and external electronic fetal monitoring devices in the medical care of pregnant women, while the use of medical X-ray examinations in pregnancy has not changed substantially.

References

1. Medical X-ray visits and examinations during pregnancy, United States, 1963. Vital and Health Statistics [22] No. 5. PHS Publication No. 1000. U.S. Government Printing Office, Washington, DC, 1968.
2. Hamilton, P. M., Roney, P. L., Keppel, K. C., and Placek, P. J.: Radiation procedures performed on U.S. women during pregnancy: findings from two 1980 surveys. Public Health Rep 99: 146–151, March–April 1984.
3. 1988 National Maternal and Infant Health Survey. Public Health Rep 102: 703, November–December 1987.
4. Simpson, G. A., and Placek, P. J.: 1987 National Maternal and Infant Health Survey: pretest results. *In* Proceedings of the American Statistical Association, Washington, DC, August 1988.
5. Placek, P. J., Keppel, K. C., Kessel, S. S., and Hutchins, V. L.: Uses of the National Natality and Fetal Mortality Surveys for the assessment of obstetric technologies. Isr J Med Sci 22: 529–540 (1986).
6. Hamilton, P. M., et al.: Ultrasound use during pregnancy: findings from the 1980 NNS/NFMS. *In* Proceedings of the American Statistical Association, Washington, DC, 1985, pp. 369–373.
7. National Institutes of Health Consensus Development Conference Consensus Statement: Diagnostic ultrasound imaging in pregnancy. NIH Publication No. 84–667, U.S. Government Printing Office, Washington, DC, 1984. pp.73–76.
8. Ultrasound in pregnancy. Technical Bulletin No. 116, American College of Obstetricians and Gynecologists, Chicago, May 1988.
9. Campbell, S., Chervenak, F. A., and Sabbagha, R. E.: Should every pregnant woman have a screening ultrasound examination? The Female Patient 13: 37–52, November 1988.
10. Bracken, M. B.: Ultrasonography in antenatal management: should it be a routine procedure? Fetal Therapy 2: 2–6 (1987).
11. Thacker, S. B.: Quality of controlled clinical trials—the case of imaging ultrasound in obstetrics: a review. Br J Obstet Gynecol 92: 437–444, May 1985.
12. Ewigman, B. G.: Should ultrasound be used routinely during pregnancy? An opposing view. J Fam Pract 29: 660–664 (1989).
13. Berkow, R., editor: Merck manual of diagnosis and therapy. Ed. 15, vol. 2, Merck & Co., Inc., Rahway, NJ, 1987, p. 98.
14. Kaczmarek, R. G., Moore, R. M., Keppel, K. G., and Placek, P. J.: X-ray examinations during pregnancy: National Natality Surveys, 1963 and 1980. Am J Public Health 79: 75–77, January 1989.

Providing Cost Efficient Detoxification Services to Alcoholic Patients

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Synopsis

The literature was reviewed to determine whether social model detoxification programs are safe and adequate for treating persons with alcohol withdrawal symptoms.

The alcohol withdrawal syndrome has three stages. Each stage, more severe than the last, is reached by a smaller percentage of those withdrawing from alcohol. The literature showed that the majority of alcoholics can be detoxified safely in social model programs. These programs presented two main benefits, program cost efficiency and the patients' increased commitment to treatment compared with those treated at medical model programs. Medically operated detoxification programs appeared necessary for patients with a severe withdrawal condition at intake (abnormal blood pressure and pulse) and those with a history of severe withdrawal symptomatology.

The results of the review reiterated the importance of screening clients at intake to ensure the safety of the patient and the appropriateness of the detoxification program.

THE CONCEPT OF DETOXIFICATION as part of a comprehensive system for alcohol related services has been established over the years. Detoxification occupies a central position in the overall management of alcoholic patients.

There has been increasing emphasis on containing

health care costs, including alcohol-related services. Detoxification programs in social settings provide a cost-saving alternative to the medical model. When the nonmedical model is considered, however, two questions emerge.

1. Is the social detoxification setting as safe for the client as the medical detoxification?
2. Can alcohol withdrawal symptoms be treated in a nonmedical environment?

In this paper I attempt to answer these questions and provide conclusions in relation to rendering detoxification services.

Alcohol Withdrawal Syndrome

The alcohol withdrawal syndrome (AWS) is usually considered to have three stages. The first stage (approximately 24–48 hours after cessation of drinking) is characterized by tremulousness, weakness, perspiration, anxiety, restlessness, nausea, irritability, low startle threshold, headache, anorexia, and, in some cases, seizures, and auditory or visual hallucinosis. The second stage (around 48–60 hours) is reflected by global confusion. The third stage (about 72–96 hours) is characterized by agitated delirium often referred to as delirium tremens (*1–6*). Each successive stage of withdrawal is reached by a smaller percentage of those withdrawing from alcohol (*5, 7*). Various drugs are used to treat withdrawal symptoms (*1, 4, 8–11*). Reports of clinical trials of new withdrawal medications and summaries of preferred drug treatments are common in the treatment literature (*12–20*).

Severity of Withdrawal Syndrome

Researchers have developed scales for assessing severity of the alcohol withdrawal syndrome. Gross and associates (*21*) developed the Total Severity Assessment (TSA). The instrument was designed for research purposes and consisted of 30 clinical variables. They also used 11 of these variables to compose a subscale called Selected Severity Assessment (SSA). The subscale was designed for routine clinical use employing variables that were relatively specific and were generally accepted as part of the clinical picture associated with withdrawal.

In 1981, Shaw and coworkers modified the SSA so that it could be used to follow the clinical course of the withdrawal reaction (*22*). The modified scale was referred to as the Clinical Institute Withdrawal Assessment for Alcohol (CIWA-A). The researchers indicated that their modification of the SSA was reliable and valid as an assessment instrument and for following the clinical course of a patient in withdrawal.

Knott and associates (*23*) modified and simplified the original Total Severity Assessment (TSA) scale developed by Gross. The modified instrument was termed Abstinence Symptom Evaluation (ASE) scale. Consisting of 30 items, the point score method was designed to assess the variable phenomena of the syndromes of acute alcohol intoxication and abstinence and to determine the extent and severity in a particular case as a basis for treatment. The scale developers encouraged continued development and standardization of the instrument which ultimately could become widely accepted.

In 1988, Foy and associates used a modified version of the Clinical Institute Withdrawal Assessment Scale (CIWA) in the management of alcohol withdrawal in a general hospital (*24*). Patients who developed seizures or confusion were noted to score higher on the scale, even before experiencing complications, than patients who remained uncomplicated. It was concluded that the use of an objective clinical scale of alcohol withdrawal is valuable in a general hospital to identify patients at risk for severe alcohol withdrawal.

Adinoff and coworkers (*25*) described the CIWA-A scale as offering a quick and reliable method of evaluating the severity of ethanol withdrawal. They further stated that patients in minimal to mild ethanol withdrawal (CIWA-A less than 20) and without a prior history of withdrawal seizures can be treated with supportive care only. Patients in moderate withdrawal (CIWA-A 20 to 25) frequently need only minimal pharmacological intervention. Patients in severe withdrawal (CIWA-A over 25) can be safely and effectively treated according to a diazepam loading procedure.

Although the use of CIWA and other clinical scales for measuring severity of the withdrawal syndrome has been encouraged, it was suggested that withdrawal severity scales be used to complement, not replace, a thorough clinical evaluation of the patient's medical status (*26*).

Essence of Detoxification Services

The objectives of alcoholic detoxification involve the relief of subjective symptoms, prevention, and treatment of more serious medical complications, and the preparation for long-term rehabilitation (*27*).

Detoxification is seen as a three-part process. The first stage is simply drying out, limited to the acute physical withdrawal syndrome. The second stage is full assessment of the patient's problems and building up a detailed picture of his or her lifestyle and attitudes. The third stage, which encapsulates the other two, is the

development of a rehabilitation relationship, the confrontation of defenses, and the motivation of insight (*28*). Intervention at the time of withdrawal provides detoxification programs with the opportunity to help the person develop insight and motivation to continue in the rehabilitation process (*29-31*).

Methods of Detoxification Services

Four methods of detoxification have been identified: (*a*) medical model which involves hospitalization, (*b*) nonmedical model of detoxification that is not hospital-based but has medical backup, (*c*) ambulatory detoxification where persons attend an outpatient clinic or private practitioner's office where they may receive medication, and (*d*) social or nonchemical detoxification that entails the provision of a supportive environment (*32*).

The major differences between social model detoxification programs and most medical model programs are the frequency and duration of client-staff interaction. Staff members of social model programs, not having the option of administering a tranquilizer, must use interpersonal techniques to reduce client anxiety and fear. This requires frequent contact involving feedback and building of trust (*5*).

Appropriate Detoxification Setting

Alcohol detoxification generally can be managed safely in nonmedical settings (*32–36*). A number of studies have shown that the majority of alcoholics can be safely detoxified in social model settings and outpatient treatments (*2, 36–39*). Whitfield in 1982 noted that only about 5 percent of the alcoholics require hospitalization or a medical setting for detoxification (*40*).

Kessel and coworkers (*30*) reported on the outcome of 235 police referrals made to the Manchester hospital-based alcohol detoxification center. They indicated that very little urgent medical attention was required. Severe withdrawal symptoms were infrequent, and routine prophylactic treatment was not necessary.

During fiscal year 1983–84, there were more than 2,500 admissions of people who abused alcohol to Ontario hospitals. They had no serious medical problems and received no treatments normally requiring hospitalization. The high proportion of admissions through emergency departments and the relatively short stays suggested that many of these patients were admitted for detoxification. The available evidence (treatment recorded) suggested that many could have been managed outside the hospital (*36*).

Whitfield reported on the detoxification of 1,024 consecutive program participants who entered a nonmedical detoxification program in 1978. A total of 90 persons (8 percent) were sent to a hospital emergency department for further examination. Of these, 28 people (2.4 percent of total) were admitted to the hospital for intensive treatment with drug therapy. The other 62 were returned to the originating unit for further rehabilitation. He concluded that these persons did as well in the nondrug detoxification as similar persons have done when given sedatives or mild tranquilizers (*41*).

Hayashida and coworkers (*39*) recruited 90 male alcoholic veterans from 280 requesting detoxification at the Philadelphia Veteran Administration Medical Center from March through September 1985 for a randomized controlled study . Subjects were randomly assigned either to inpatient or outpatient medical detoxification treatment. At 1-month followup, both groups reported considerable reduction in alcohol use, alcohol intoxication, and alcohol-related problems. Hayashida and coworkers concluded that patients receiving either inpatient or outpatient detoxification did not appear to differ significantly at the 1-month post treatment followup.

In another study, Hayashida and associates (*42*) compared the effectiveness, safety, and costs of outpatient and inpatient detoxification from alcohol in a randomized, prospective trial involving 164 male veterans of low socioeconomic status. The mean duration of treatment was significantly shorter for outpatients (6.5 days) than for inpatients (9.2 days). On the other hand, significantly more inpatients (95 percent) than outpatients (72 percent) completed detoxification.

Outcome evaluations completed at 1 and 6 months showed substantial improvement in both groups at both followup periods. No group differences were found at the 6-month followup. Costs were substantially greater for inpatients ($3,319 to $3,665 per patient) than for outpatients ($175 to $388). Hayashida and associates concluded that outpatient medical detoxification is an effective, safe, and low-cost treatment for patients with mild to moderate symptoms of alcohol withdrawal.

Outpatient detoxification has the major benefit of being cost efficient. It is not clear, however, to what extent serious comorbidities, which may be undetected outside a hospital setting, may lead to more severe and expensive problems later (*26*).

Medical Model Detoxification

Medical detoxification is characterized as involving extensive use of physician and nursing staff resources and medication as well as an essentially clinical orientation (*43*). This modality is recommended for chronic alcoholic patients who need adequate physical and psy-

chiatric examinations and medical care (*44*). It is also necessary when the person's detoxification is unmanageable (*33*).

Pharmacological assistance is to prevent the march to more serious complications such as epileptic seizures, delirium tremens, arrhythmias, and to replace fluids and electrolytes. The relief of subjective complaints such as anxiety and depression are additional benefits of using drugs (*1, 6, 31*).

Social Model Detoxification

The social model approach to alcohol detoxification relies on a supportive environment to ease the discomfort and reduce the symptoms associated with withdrawal (*32, 43*). The calm, anxiety-free, homelike milieu of these programs can produce effects that have identifiable medical benefits. In an effort to assess physiological changes occurring during the withdrawal process, O'Briant and associates (*45*) referred a random sample of 99 residents of a social model detoxification program for complete medical evaluations. They chose three groups of 33 persons each to undergo the medical examination, one group 24 hours after admission, another 48 hours after, and the third group 72 hours. Differences between the three groups were significant in the reporting of high blood pressure. Hypertension was experienced by 13 persons of the 24-hour group, 12 of the 48-hour group, and only 6 of the 72-hour group. This may have been the result of decreasing anxiety over the 3-day period, since the 72-hour group demonstrated the greatest stability in this area.

The design of the social setting detoxification programs calls for special emphasis on post detoxification referral to rehabilitation (*5, 43*). The general assumption is that these detoxification facilities would be the entry point into a continuum of care and thus would lead to rehabilitation (*30*).

Medical Model Versus Social Model

Two studies examined the differences between medical detoxification programs and social model detoxification programs. McGovern (*31*) compared medical and social setting detoxification treatments to test whether the different levels of motivation and actual referral to ongoing treatment occur as an effect of either model of detoxification.

A total of 200 males were selected randomly from the 2 detoxification models, 100 from the medical setting detoxification program and 100 from the social. All were there for treatment of alcohol withdrawal syndrome. They had been admitted by medical staff to either detoxification setting based on the observed intensity of the withdrawal and existing medical complications. In order to be admitted for alcohol withdrawal syndrome, a patient must have met the following criteria: past history of delirium tremens, liver, metabolic, cardiovascular, or gastrointestinal disease, nutritional, or sleep disturbance, and present indications of seizures, hallucinosis, tremors, nausea or vomiting, or bleeding. All patients admitted must be clearly dependent on alcohol. The characteristics of the subjects selected for the study were mean age: 38.7 years; race: black 71 percent, white 23 percent, and Hispanic and other 6 percent.

Physical Problem Inventory (PPI), Short Michigan Alcohol Screening Test (SMAST), and Assessment of Life Experience Scale (ALE) were completed within 48 hours of admission in order to obtain data on early dropouts. The patient's referral was recorded by his individual counselor and logged according to categories of no referrals, Alcoholics Anonymous (AA), and outpatient clinic or inpatient rehabilitation facility.

Through multivariate statistical techniques (analysis of covariance), McGovern attempted to control for preexisting differences between the groups treated in these two modalities. The covariates he employed were PPI, age, previous treatments, ALE, Motivation, and SMAST. The analysis of covariance with multiple covariates yielded a highly significant group difference in referral rate. None of the covariates was related significantly to the dependent variable. Half of the medical model's patients left treatment without a commitment to continue rehabilitation efforts in any of the categories delineated in the foregoing paragraph. Only 33 percent of those in the social model left without some referral. In addition, clients of the nonmedical component were twice as likely to be referred to inpatient rehabilitation (34 percent of the 67 percent referred to treatment) as were clients who received medical detoxification (11 percent of the 50 percent referred to rehabilitation).

McGovern concluded that his analyses of the literature supported clinical observations with regard to the differences in medical versus social setting detoxification programs. The two forms of treatment, seemingly comparable in all ways except for the pharmacological and physical setting variables, had different effects on a patient's willingness to continue rehabilitative efforts. Patients assisted by social model detoxification programs exhibited treatment referral rates that reflected a significantly greater commitment to treatment than those treated at medical model programs.

Young and Sadd (*35*) conducted a controlled study to compare the effects of medical and nonmedical detoxification on objective indicators of withdrawal severity. Four programs were employed for the study. A freestanding medical detoxification program (FMED), a

hospital medical program (HMED), and two nonmedical programs (NONM1) and (NONM2). The NONM2 program replaced NONM1 when the building in which NONM1 was housed was sold. Patients were screened at both nonmedical facilities. Persons with recent traumatic injuries, abnormal vital signs, history of heart disease, or any obvious psychiatric condition were referred to nearby medical facilities. The admissions policy of NONM2 also excluded persons who were 60 or older or had any history of alcohol-related seizures.

Persons who agreed to participate were randomly assigned to one of the four study sites (FMED, HMED, NONM1, or NONM2 after NONM1 closed). The sample of those who consented totalled 671 subjects. It was composed of 43 percent blacks, 41.8 percent whites, and 15.2 percent Hispanics. The average age was 41.9. Extensive drinking histories were the norm in this sample. On the average, subjects had been drinking heavily for 18 years, and more than half had not had at least a month-long period of sobriety in the past year.

Of the 671 who consented, 57 were randomly assigned to a study site that had no beds available at the time of assignment. Of the 614 remaining, 213 (34.7 percent) were denied admission to the assigned facility. The hospital-based medical program accounted for the great majority of these persons, because 77 percent of the persons assigned to HMED were not admitted for the lack of active medical insurance.

Analyses of treatment effects were conducted on the sample of people admitted and treated at the facilities to which they were assigned. The nonmedical programs referred nine persons (7.1 percent) to a local hospital because of concerns about the severity of the patients' withdrawal symptomatology. After being treated and monitored, six of them (4.7 percent) were able to return to their programs to complete detoxification. Alcohol-related seizures occurred in a small number of them. However, the effect of the use of withdrawal medication at HMED and FMED was apparent when the four sites were compared. No one at HMED, and only two men (0.9 percent) at FMED experienced seizures; the comparable figures at NONM1 were four (4.9 percent) and five (11.1 percent) at NONM2. While these proportions were too small to submit to statistical tests, the seizure data revealed clear and important differences between the medical and nonmedical sites.

A composite variable was created to assess the effect of multiple predictors on an index of withdrawal severity. Calculated for each subject, this composite variable was defined as the sum of the number of days that the subject experienced hallucinations, the number of days of abnormal pulse, the number of days of abnormal temperature, the number of days of abnormal blood pressure, and whether the subject had seizures during his stay in the detoxification program. The resulting variable had scores ranging from 0 to 15, with a mean of 1.35 and standard deviation of 1.69.

'Social model detoxification programs seemed to have two main benefits, the cost efficiency of the programs and the greater commitment to treatment that patients exhibited in comparison with others who were detoxified at medical model programs.'

Analyses of the composite withdrawal index indicated that patients detoxifying at the two nonmedical sites were no more likely to manifest severe symptomatology than were medical patients. The patient's withdrawal condition at intake (blood pressure and pulse) and a history of severe withdrawal symptomatology were the most predictive factors of withdrawal severity.

Young and Saad concluded that their data clearly showed that the great majority of alcoholics can safely experience alcohol withdrawal in a nonmedical environment. Their results suggested that some of the patient referrals made by NONM2 to a medical facility were unnecessary with regard to the management of alcohol withdrawal syndrome. However, they indicated that the benefits of withdrawal medication were evident in the area of alcohol-related seizures. Since the patient's withdrawal condition at intake (blood pressure and pulse) and a history of severe withdrawal symptomatology were the most predictive factors of withdrawal severity, they recommended that these be the cornerstone of screening and monitoring procedures, particularly in nonmedical settings that offer limited assessment.

Conclusions and Recommendations

The literature indicated that alcohol withdrawal symptoms can be safely treated in a nonmedical environment. The majority of alcoholics can be safely detoxified in social model programs. It was suggested that a calming and reassuring environment is an important factor in lessening the severity of withdrawal (*9, 29, 33, 34*). Social model detoxification programs seemed to have two main benefits, the cost efficiency of the programs and the greater commitment to treatment that its patients exhibited in comparison with others who were detoxified at medical model programs. The benefits of medical model detoxification were evi-

dent in markedly reducing or eliminating alcohol-related seizures.

The results reiterate the importance of client screening which should be conducted at all detoxification programs. The patient's withdrawal condition at intake (abnormal blood pressure and pulse), and a history of severe withdrawal symptomatology warrant referral to a medical facility, at least for temporary treatment. The intake of psychotropic drugs should be assessed since they increase the possibility of experiencing seizures (*46*). Current use of alcohol should be investigated because the relation of alcohol use to seizures is causal and dose dependent (*47*).

To ensure the safety of patients treated at social model programs, the staff members in these programs should have knowledge of medical problems and physical symptoms that signal the need for evaluation by a physician. In addition, social model detoxification programs should be closely linked with medical programs and hospitals so that medical services are readily available when they are necessary. Links between hospitals and detoxification programs also enable hospital emergency room personnel to find a place for persons for whom hospitalization is not warranted. It has been estimated that at least 60 percent of all emergency room admissions in New York City hospitals are alcohol-related (*48*). Use of social model programs to treat persons with an alcohol-related diagnosis frees hospital beds for those people whose medical needs are more urgent.

References

1. Elton, M.: Alcohol withdrawal: clinical symptoms and management of the syndrome. Acta Psychiatr Scand Suppl 73: 80–90 (1986).
2. Hamilton, J.: Management of alcohol withdrawal symptoms. Br Med J 282: 819–820 (1981).
3. Newsom, J.: Withdrawal seizures in an inpatient alcoholism program. Curr Alcohol 6: 11–14 (1979).
4. Sillanpaa, M.: Alcoholism treatment of alcohol withdrawal symptoms. Br J Hosp Med 343–350, April 1982.
5. Sparadeo, F., et al.: Evaluation of a social-setting detoxification program. J Stud Alcohol 43: 1124–1136 (1982).
6. Stough, D.: Alcohol detoxification: emergency room treatment and referral in Arkansas. J Arkansas Med Soc 81: 113–119 (1984).
7. Hore, B.: The Manchester detoxification center. Br J Addict 75: 197–205 (1980).
8. Chasse, M.: Treatment of acute detoxification and of alcohol withdrawal. Union Med Can 111: 233, March 1982.
9. Mukherjee, P.: A comparison of the efficacy and tolerability of clobazam and chlordiazepoxide in the treatment of acute withdrawal from alcohol in patients with primary alcoholism. J Int Med Res 11: 205–211 (1983).
10. Ritson, B., and Chick, J.: Comparison of two benzodiazepines in the treatment of alcohol withdrawal: effects on symptoms and cognitive recovery. Drug Alcohol Depend 18: 329–334 (1986).
11. Rosenbloom, A.: Emerging treatment options in the alcohol withdrawal syndrome. J Clin Psychiatry 49 (suppl): 28–31, December 1988.
12. Boechk, V.: The alcohol withdrawal syndrome and its therapy. Fortschr Therapie 98: 444–450 (1980).
13. Burroughs, A., Morgan, M., and Sherlock, S.: Double-blind controlled trial of bromocriptine, chlordiazepoxide and chlormethiazole for alcohol withdrawal symptoms. Alcohol Alcohol 20: 263–271 (1985).
14. Cadet, M., Doillois, B., Bernard, J., and Abitbol, A.: The prevention of alcohol withdrawal syndrome. Semaine Des Hospitaux De Paris 55: 891-896 (1979).
15. Cushman, P.: Clonidine and alcohol withdrawal. Adv Alcohol Subst Abuse 7: 17–28 (1987).
16. Evens, M.: Tiapridal and alcholic detoxification. Acta Psychiatr Scand 69: 398–408 (1980).
17. Flygenring, J., et al.: Treatment of alcohol withdrawal symptoms in hospitalized patients. Acta Psychiatr Scand 69: 398–408 (1984).
18. Glue, P., and Nutt, D.: Clonidine in alcohol withdrawal: a pilot study of differential symptom responses following I.V. clonidine. Alcohol Alcohol 22: 161–166 (1987).
19. Kolin, I., and Linet, O.: Double-blind comparison of alprazolam and diazepam for subchronic withdrawal from alcohol. J Clin Psychiatry 42: 169–173 (1981).
20. Nutt, D., Glue, P., Molyneux, S., and Clark, E.: A-2 adrenoceptor function in alcohol withdrawal: a pilot study of the effects of IV clonidine in alcoholics and normals. Alcoholism 12: 14–18 (1988).
21. Gross, M., Lewis, E., and Hastey, J.: Acute alcohol withdrawal syndrome. *In* The biology of alcoholism, edited by B. Kissin and H. Begleiter. Plenum Press, New York-London, 1974, pp. 191–263.
22. Shaw, J., et al.: Development of optimal treatment tactics for alcohol withdrawal. I. Assessment and effectiveness of supportive care. J Clin Psychopharmacol 1: 382–387 (1981).
23. Knott, D., Lerner, W., Davis-Knott, T., and Fink, R.: Decision for alcohol detoxification: A method to standardize patient evaluation. Postgrad Med 69: 65–75, 78, May 1981.
24. Foy, A., March, S., and Drinkwater, V.: Use of an objective clinical scale in the assessment and management of alcohol withdrawal in a large general hospital. Alcoholism 12: 360–364, May-June 1988.
25. Adinoff, B., Bone, G., and Linnoila, M.: Acute ethanol poisoning and the ethanol withdrawal syndrome. Med Toxicology 3: 172–196 (1988).
26. Gordis, E.: Alcohol withdrawal syndrome. Alcohol Alert. National Institute on Alcohol Abuse and Alcholism, August 1989.
27. McGovern, M., and Caputo, G.: Outcome prediction of inpatient alcohol detoxification. Addict Behav 8: 167–171 (1983)
28. Arroyave, F., McKeown, S., and Cooper, S.: Detoxification: an approach to developing a comprehensive alcoholism service. Br J Addict 75: 187–195 (1980).
29. Ansoms, S.: Detoxification cure: some points for discussion. Acta Psychiatr Belg 80: 183–190 (1980).
30. Kessel, N., et al.: The Manchester detoxification service. Lancet No. 8381: 839–842 Apr. 14, 1984.
31. McGovern, M.: Comparative evaluation of medical vs social treatment of alcohol withdrawal syndrome. J Clin Psychol 39: 791–803 (1983).
32. Richman, A., and Neumann, B.: Breaking the detox-loop for alcoholics with social detoxification. Drug Alcohol Depend 13: 65–73 (1984).
33. Whitfield, C.: Non-drug treatment of alcohol withdrawal. Curr

Psychiatric Ther 19: 101–109 (1980).
34. Sausser, G., Fishburne, S., and Everett, V.: Outpatient detoxification of the alcoholic. J Fam Pract 14: 863–867 (1982).
35. Young, D., and Sadd, S.: Medical vs. nonmedical alcohol detoxification: are they equally safe? Vera Institute of Justice, New York, 1986.
36. Ogborne, A., and Adrian, M.: The use of hospital beds for the treatment of excessive drinkers without serious medical complication. Br J Addict 82: 193–196 (1987).
37. Tennant, F.: Ambulatory alcohol withdrawal. J Fam Pract 8: 621-623 (1979).
38. Hore, B., and Rossall, C.: The incidence of alcohol withdrawal symptoms in admissions to the Withington hospital detoxification unit. Alcohol Alcohol 20: 53–56 (1985).
39. Hayashida, M., et al.: Is inpatient medical alcohol detoxification justified: results of a randomized controlled study. *In* Problems of drug dependence, edited by L. S. Harris. Research Monograph 81. National Institute of Drug Abuse, Rockville, MD, 1988.
40. Whitfield, C.: Outpatient management of alcoholic patient. Psychiatr Ann 12: 447–458 (1982).
41. Whitfield, C., et al.: Detoxification of 1,024 alcoholic patients without psychoactive drugs. JAMA 329: 1409–1410, (1978).
42. Hayashida, M., et al.: Comparative effectiveness and costs of inpatient and outpatient detoxification of patients with mild to moderate alcohol withdrawal syndrome. N Engl J Med 320: 358–365, Feb. 9, 1989.
43. Sadd, S., and Young, D.: Nonmedical treatment of indigent alcoholics. Alcohol Health Res World: 48–53, spring 1978.
44. Shen, W., Chavez, C. Fishburne, S., and Huang, T.: Which detoxified alcoholic keeps the first clinic appointment. Drug Alcohol Depend 11: 353–358 (1983).
45. O'Briant, R., Petersen, N., and Heacock, D.: How safe is social setting detoxification? Alcohol Health Res World: 22–27, winter 1976/1977.
46. Hillbom, M., and Hjelm-Jager, M.: Should alcohol withdrawal seizures be treated with anti-epileptic drugs? Acta Neurol Scand 69: 39–42 (1984).
47. Ng, S., Hanser, W., Brust, J., and Susser, M.: Alcohol consumption and withdrawal in new-onset seizures. N Engl J Med 319: 666-673, Sept. 15, 1988.
48. Bowen, O.: Raising public awareness about the extent of alcohol-related problems: An overview. Public Health Rep 103: 559–563 November-December 1988.

Health Practice Correlates in Three Adult Age Groups: Results from Two Community Surveys

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Synopsis

Independently done surveys of a target population can make an important contribution to knowledge about the determinants of personal health behavior by highlighting variables that consistently emerge as significant predictors. This investigation examined the correlates of four health practice and knowledge indices related to cardiovascular disease (CVD) in two baseline community surveys of the Pawtucket Heart Health Program (N=2,413; N=2,808). An additional dimension was the use of three adult age groups (18–29, 30–49, 50–64) in conducting the analyses.

Results of both surveys showed that sex was the strongest correlate of the four indices—knowledge of CVD, encouraging health practice changes in others, dietary intake, and exercise. The four indices related to CVD were also associated with years of education, primary language, and whether or not a recent cholesterol measurement had been obtained, although these relationships were not as consistent as the results for sex. Overall, about half of each survey's significant associations were also found in the other survey (survey 1, 30 of 62; survey 2, 30 of 56).

Consistency of significant results between surveys was best for the group ages 30–49. In either survey, it was rare for an association between a predictor and behavioral index to appear in each of the three age groups. This study supports the importance of the subjects' sex in research on personal health practices, suggests the potential for independence even among health-related indices pertinent to a single type of illness, and emphasizes the usefulness of utilizing independent samples to identify important correlates of health behavior.