

Regular article

Alcohol Education Inventory—Revised: What every mental health professional should know about alcohol

Brown University Center for Alcohol and Addiction Studies Postdoctoral Fellows¹

Brown University, Providence, RI 02912

Received 19 August 2008; accepted 19 September 2008

Abstract

In 1995, Miller and C’de Baca created a 50-item measure, the Alcohol Education Inventory (AEI), to assess mental health professionals’ basic knowledge of alcohol and alcohol problems. The purpose of this study was to update the AEI based on advances in the field since its publication. The AEI-Revised (AEI-R) consists of 13 of the original AEI items, 30 items that were revised and updated, and 7 new items. The AEI-R was administered to 90 mental health trainees with percentage correct ranging from 60% (psychology postdoctoral fellows) to 70% (psychiatry residents). The percent correct is very similar to that found on the original AEI (64%–70%). Survey results suggest that alcohol-related knowledge by mental health professionals in general training is less than adequate. The AEI-R may be useful as a tool to assess basic knowledge of alcohol among mental health professionals. © 2009 Elsevier Inc. All rights reserved.

Keywords: Alcohol Education Inventory; Alcohol Education Inventory—Revised

1. Introduction

Alcohol use disorders (AUDs) are prevalent among people seeking treatment for mental health problems, even when

alcohol is not the presenting problem (Babor, Sciamanna, & Pronk, 2004). Therefore, mental health practitioners frequently encounter clients with AUDs in addition to their psychiatric problems. In addition, alcohol screening has been increasingly advocated in primary health care settings (e.g., Babor et al., 2004). Thus, mental health and health care professionals should at least be conversant with the clinical literature regarding alcohol and AUDs. However, many clinical training programs in psychiatry and psychology do not require or offer specialized coursework in the assessment and treatment of AUDs (Carey, Bradizza, Stasiewicz, & Maisto, 1999; Chiert, Gold, & Taylor, 1994). Moreover, there is often a communication gap between the research community and practitioners, such that empirical findings related to alcohol use are often not disseminated to substance use treatment providers let alone mental health professionals. Therefore, there is a very basic need to accurately assess the alcohol knowledge base of mental health practitioners to identify and address gaps in their areas of clinical knowledge (Institute of Medicine, 1998; Miller & Brown, 1997).

Given the lack of formal training in this area, mental health professionals may benefit from the opportunity to

* Corresponding author. Anthony Spirito, Ph.D., Center for Alcohol and Addiction Studies, Brown University, Box G-S121-4, Providence, RI 02912, USA. Tel.: +1 401 863 6623; fax: +1 401 863 6647.

E-mail address: anthony_spirito@brown.edu.

¹ Sara L. Dolan, Ph.D., is now at Baylor University; Alicia Justus, Ph.D., Brown University Center for Alcohol and Addiction Studies; Heather R. LaChance, Ph.D., is now at National Jewish Hospital, Denver, CO; James MacKillop, Ph.D., is now at the University of Georgia; Laura MacPherson, Ph.D., is now at the University of Maryland; John McGeary, Ph.D., Providence Veterans Affairs Medical Center and Brown University Center for Alcohol and Addiction Studies; George Kenna, RPh, Ph.D., Brown University Center for Alcohol and Addiction Studies; Jeffrey Meehan, Ph.D., Brown University Center for Alcohol and Addiction Studies; Jane Metrik, Ph.D., Brown University Center for Alcohol and Addiction Studies; James Murphy, Ph.D., and Meghan McDevitt-Murphy, Ph.D., are now at the University of Memphis, Memphis, TN; C. Teal Pedlow, Ph.D., is now at University of Massachusetts—Dartmouth, Dartmouth, MA; and Anthony Spirito, Ph.D., is Director of Training at the Brown University Center for Alcohol and Addiction Studies. Note: Authors are listed in alphabetical order, not in order of contribution to the manuscript.

assess their knowledge of alcohol and AUD treatment in an effort to improve their overall clinical competence. In an effort to facilitate such a self-assessment, Miller and C'de Baca (1995) developed the Alcohol Education Inventory (AEI), a 50-item self-assessment survey for mental health professionals to test their knowledge of etiology, diagnosis, and treatment for AUDs. The AEI assesses an array of domains relating to alcohol use and misuse, and expanded answers were provided for each item to provide additional education for mental health professionals. Normative data from a sample of clinical psychology students and Ph.D. alumni from the University of New Mexico were also provided, which allows the reader to compare their performance relative to other mental health providers.

Significant advances have been made in alcohol research since the original publication of the AEI, raising the possibility that some of the information has changed or is no longer accurate. The purpose of this study was to update the original AEI based on more recent empirical findings, with the larger goal of providing mental health practitioners a more current means of assessing their knowledge of alcohol and AUDs. The postdoctoral fellows from a T32 alcohol and drug research training program funded by the National Institute on Alcohol Abuse and Alcoholism and National Institute on Drug Abuse at the Center for Alcohol and Addiction at Brown University revisited all of the items to investigate their continued validity. In addition, using a consensus-based approach, new items reflecting important advances in alcohol research were generated and integrated into the revised measure.

2. Materials and methods

2.1. Procedure

Eleven postdoctoral fellows at the Brown University Center for Alcohol and Addiction Studies participated in the project. Dr. Miller, the developer of the original measure, was contacted and gave his permission for the AEI to be updated (personal communication, 2005). Items were divided among the fellows in accordance with their expertise and general interest in a given specialized subject matter (e.g., alcohol withdrawal). Fellows reviewed recent relevant empirical literature and/or contacted experts on their selected items for the most up-to-date status for the selected topic. Each fellow made a recommendation to the group as to whether to retain the item in its original form, update and revise the item, or eliminate and replace the item with a new question. New items focusing on the same specialized subject matter as the previous items were proposed, discussed, and approved by general consensus of the fellows.

Based on the preceding, the revised AEI (AEI-R) was administered to a group of clinical psychology predoctoral and postdoctoral fellows as well as psychiatry residents. The AEI was administered anonymously in an individual

questionnaire format. All procedures were approved by the Brown University Institutional Review Board.

2.2. Participants

Participants were 90 trainees in the Brown Medical School Department of Psychiatry and Human Behavior who were asked to complete the AEI-R about their knowledge of the etiology, diagnosis, and treatment of AUDs. After providing informed consent, participants completed this questionnaire during a break in an annual research colloquium sponsored by the Department that was not focused on substance use disorders, and they were compensated \$10 upon completion of the measure. As shown in Table 1, 37 predoctoral psychology interns, 34 postdoctoral psychology fellows, and 19 psychiatry residents who completed the study.

Although specific previous training in AUDs was not assessed, the training programs from which these individuals were drawn were not focused on AUDs. The predoctoral training program provides training in four tracks: (a) Adult Clinical, (b) Child Clinical, (c) Health Psychology/Behavioral Medicine, and (d) Neuropsychology. The postdoctoral training program provides training in five areas: (a) Child Mental Health Research; (b) Child and Adolescent Biobehavioral HIV Research, (c) Treatment Research, (d) Dementia Research, and (e) Cardiovascular Behavioral Medicine Research. The exception to this is the NIAAA and NIDA T32 training programs, composed of investigators, none of whom were participants. The psychiatry training program includes the following residencies: (a) Child Psychiatry, (b) General Psychiatry, (c) Geriatric Psychiatry Residency, and (d) a combined Neurology–Psychiatry Residency.

2.3. Measures

2.3.1. Alcohol Education Inventory

The original AEI was published in 1995 by Miller and C'de Baca. The AEI is a 50-item self-assessment measure designed to examine basic knowledge regarding alcohol that all mental health professionals treating alcohol problems should be cognizant (Miller & C'de Baca, 1995). The instructions are as follows: "For each item, choose what is, in your opinion, the one best and most accurate answer." The scale was administered to 54 graduate students and 57 alumni of the University of New Mexico clinical psychology graduate program. Most of the program graduates (77%) did not have a course specifically on alcohol use and disorders, and only some (43%) of the graduate students had taken such a course. The graduate students averaged a 70% correct answer rate, whereas graduates of the program averaged 64%. Based on the percentage of correct answers to each item for the 111 respondents, Miller and C'de Baca (1995) presented the difficulty ratings on 47 items of the AEI (3 items are

Table 1
Percentage of correct responses to original AEI and AEI-R items

Item	AEI		Percent correct on AEI-R by education level			AEI-R	
	Total % correct	Difficulty	Predoctoral (n = 37)	Ph.D./Psy.D (n = 34)	M.D. (n = 19)	Total % correct	Difficulty
1	95.5	Easy	89.2	94.1	100	92.5	Easy
2	85.6	Easy	75.7	67.6	73.7	72.0	Challenging
3	62.2	Difficult	35.1	50.0	63.2	46.2	Difficult
4	83.3	Challenging	73.0	64.7	94.4	72.8	Challenging
5	73.9	Challenging	94.6	88.2	84.2	90.3	Easy
6	55.0	Difficult	32.4	32.4	52.6	36.6	Difficult
7	29.7	Difficult	43.2	33.3	10.5	32.6	Difficult
8	88.3	Easy	86.5	91.2	94.7	90.3	Easy
9	86.5	Easy	89.2	82.4	89.5	86.0	Easy
<u>10</u>	69.4	Difficult	70.3	55.9	47.4	60.2	Difficult
<i>11</i>	88.3	Easy	75.7	52.9	78.9	66.7	Difficult
<i>12</i>	15.3	Difficult	89.2	66.7	94.7	81.7	Challenging
<i>13</i>	^a		27.0	26.5	31.6	29.0	Difficult
14	92.8	Easy	91.9	88.2	94.7	89.2	Easy
15	83.8	Challenging	89.2	79.4	78.9	81.7	Challenging
16	75.7	Challenging	51.4	61.8	68.4	59.1	Difficult
17	83.8	Challenging	43.2	29.4	27.8	34.8	Difficult
18	81.1	Challenging	78.4	85.3	100	84.9	Easy
19	65.8	Difficult	43.2	38.2	84.2	50.5	Difficult
20	28.8	Difficult	29.7	29.4	42.1	31.2	Difficult
21	89.2	Easy	91.9	94.1	94.7	93.5	Easy
22	49.5	Difficult	64.9	47.1	63.2	58.1	Difficult
23	66.7	Difficult	45.9	61.8	68.4	57.0	Difficult
24	54.1	Difficult	59.5	58.8	42.1	54.8	Difficult
25	72.1	Challenging	24.3	3.6	10.5	15.2	Difficult
26	73.1	Challenging	32.4	54.5	52.6	43.5	Difficult
27	68.4	Difficult	63.9	55.9	47.5	56.5	Difficult
28	61.3	Difficult	48.6	47.1	94.7	57.0	Difficult
29	67.6	Difficult	35.1	30.3	84.2	43.5	Difficult
30	26.3	Difficult	16.2	20.6	31.6	21.5	Difficult
31	^a		29.7	52.9	38.9	40.2	Difficult
32	^a		64.9	81.8	78.9	72.8	Challenging
33	63.1	Difficult	56.8	42.4	63.2	53.3	Difficult
34	52.3	Difficult	59.5	51.5	63.2	55.4	Difficult
35	50.5	Difficult	75.7	62.5	89.5	74.7	Challenging
36	74.8	Challenging	59.5	79.4	89.5	72.0	Challenging
37	70.3	Challenging	73.0	61.8	57.9	66.7	Challenging
38	35.1	Difficult	54.1	69.7	52.6	17.2	Difficult
39	84.7	Challenging	78.4	73.5	100	80.6	Challenging
40	91.0	Easy	59.5	70.6	73.7	65.6	Difficult
41	80.2	Challenging	75.7	73.5	100	86	Easy
42	91.9	Easy	97.3	91.7	94.7	94.6	Easy
43	62.2	Difficult	62.2	27.3	94.7	57	Difficult
44	95.5	Easy	35.1	50.0	36.8	39.8	Difficult
45	67.6	Difficult	86.5	88.2	78.9	84.9	Challenging
46	74.8	Challenging	62.2	44.1	52.6	53.8	Difficult
47	62.2	Difficult	56.8	58.8	63.2	58.1	Difficult
48	42.3	Difficult	45.9	44.1	52.6	46.2	Difficult
49	67.6	Difficult	54.1	60.6	63.2	57.6	Difficult
50	72.1	Challenging	73.0	82.4	73.7	75.3	Challenging

Note. Percentage answering correctly breakdown according to the original article: 85% to 100%, easy; 70% to 84.9%, challenging; less than 70%, difficult. Italics = revision; underline = new item.

^a Data for Items 13, 31, and 32 were omitted in the original article.

missing from the original table). Of the 47 items, 10 items were classified as easy (85% of sample or higher answered correctly), 14 items as challenging (70%–84.9% correct), and 23 as difficult (less than 70% correct).

2.3.2. Alcohol Education Inventory—Revised

The AEI-R scale length remained at 50 items like its predecessor. Of the 50 items, 13 were retained in their original form, 7 were eliminated and replaced by new

items, and 30 were revised. Revisions typically targeted the four multiple-choice answers and involved updating the phrasing, expanding answers to provide better definitions, and replacing debatable answer options with more clear choices. The 7 items that were eliminated included items related to hangovers, treatment matching, childhood predictors of adult AUDs, the Jellinek's disease concept of alcoholism, and supply-side prevention. In each case, the items were replaced by items reflecting more recent advances in treatment concepts including the most effective types of psychosocial treatments, medications used in the treatment of AUDs, combined medication/psychosocial treatment, craving, the relationship between AUDs and domestic violence, and the role of neurotransmitters in alcohol's effects. Based on the percentage of correct responses by the participants, each item was classified according to the original Miller and C'de Baca (1995) criteria as "easy," "challenging," or "difficult."

3. Results

The mean number of correct answers on the 50-item AEI-R was 31.22 ($SD = 5.23$), and the range was 18 to 47. Predoctoral psychology interns answered 30.97 ($SD = 5.4$), postdoctoral psychology fellows answered 30.06 ($SD = 4.73$), and psychiatry medical residents answered 34.89 ($SD = 3.38$) items correctly, with psychiatry residents answering significantly more items correctly than either group of psychology trainees, $F(2, 88) = 6.53, p < .002$.

On the AEI-R, 9 (18%) of the items were classified as easy compared to 10 of 47 (21%) on the AEI, 11 (22%) were classified as challenging on the AEI-R compared to 14 (30%) on the AEI, and 30 (60%) were classified as difficult on the AEI-R compared to 23 (49%) on the AEI. Of the 30 items revised on the AEI-R, 10 (33%) changed classifications from the AEI to AEI-R, 9 (90%) were rated as more difficult, and 1 (10%) was rated as easier.

4. Discussion

This study was primarily intended to examine the current relevance of the items on the AEI and to update the items as indicated. Since its original development, the AEI remains a viable instrument to assess general knowledge about alcohol use and misuse. Of the original 50 items, only 7 (14%) were eliminated in the AEI-R and replaced with new items, 13 (26%) were retained in their original form, and 30 (60%) were revised somewhat. The revisions were typically minor, for example, replacing a potentially disputable incorrect answer choice with a more clear incorrect option.

The second goal of the study was to examine the utility of the AEI-R in assessing alcohol knowledge among mental health professionals. We chose a group of professionals in training to maximize the similarity of our sample to those used in the original study. Miller and C'de Baca (1995)

found that Ph.D.-level graduates averaged 64% on the original scale. Our findings were consistent, with averages ranging from 60% to 62% for predoctoral and postdoctoral clinical psychology fellows. Furthermore, psychiatry residents had a greater knowledge base about alcohol use (70%) than psychology trainees at either the pre- and postdoctoral levels. Their percentage correct was identical to that of the graduate students in the original study. Perhaps the recent call for increased screening for AUDs in the medical professions contributed to their higher knowledge level (Babor et al., 2004). However, it is important for all mental health professionals to increase their knowledge of AUDs, as the prevalence of alcohol abuse and dependence is around 8% (Grant et al., 2004).

The comparability of the findings regarding percent correct on the AEI and AEI-R suggests that the revised measure performs similarly to the original. With its updated information, the AEI-R would appear to be a more appropriate updated tool for current use. Nonetheless, this low rate of correct responding is concerning. It seems that in the last 10 years, knowledge about AUD etiology, diagnosis, and treatment remains relatively similar and, from an absolute standpoint, at 60% to 70%. In this study, mental health professionals who were actively in training at a well-respected training program exhibited what can be described, at best, as only an adequate knowledge base with respect to alcohol. Thus, the challenge of how to adequately train mental health professionals in issues related to alcohol abuse and treatment remains as persistent today as it was over 10 years ago when the AEI was first developed.

Appendix A. Alcohol Education Inventory—Revised (AEI-R)

The following questions are related to various aspects of alcohol, risk factors for alcohol dependency and interventions. Please circle the response that you feel most appropriately answers the statement or question.

1. The type of alcohol that is contained in vodka is exactly the same drug that is the active ingredient in:
 - a. Beer
 - b. Wine
 - c. Whiskey
 - d. All of the above
2. A "blackout" refers to an alcohol-induced state of:
 - a. Permanent amnesia for events that occurred when intoxicated
 - b. State-dependent learning
 - c. Unconsciousness
 - d. Temporary blindness
3. U.S. survey data for the past three decades have consistently found that about one in _____ American adults currently reports problem drinking, as defined

- by significant negative consequences related to their own use of alcohol.
- a. Three
 - b. Five
 - c. Ten
 - d. Twenty-five
4. A heavy drinker notices his tolerance for alcohol has *decreased* substantially over the past year even though his drinking has not changed. The most likely explanation of this drop in tolerance is:
 - a. Normal aging
 - b. Acquired tolerance by conditioning
 - c. Use of potentiating drugs such as stimulants
 - d. Liver disease
 5. Alcohol withdrawal may include:
 - a. Visual hallucinations
 - b. Auditory hallucinations
 - c. Tactile hallucinations
 - d. All of the above
 6. The major type of danger to the cardiovascular system that results from chronic heavy drinking is:
 - a. Weakening of the heart muscle
 - b. Production of blood clots that precipitate heart attack
 - c. Thinning of the blood and dropping blood pressure
 - d. Clogging and hardening of the arteries around the heart
 7. When women and men drink the same amount of alcohol, women may reach substantially higher intoxication levels because:
 - a. Women tend to have proportionally less body water
 - b. Blood alcohol concentration varies with menstrual cycle
 - c. Men metabolize alcohol more rapidly in the stomach
 - d. All of the above
 8. Which of the following is common in fetal alcohol syndrome?
 - a. Small body and head size
 - b. Mental retardation
 - c. Facial and limb abnormalities
 - d. All of the above
 9. Which cognitive performance tasks are *least* likely to be impaired among alcohol dependent individuals?
 - a. Psychomotor speed
 - b. Verbal intelligence
 - c. Visuospatial abilities
 - d. Abstract thinking and problem-solving
 10. Which of the following intervention strategies has not demonstrated efficacy in reducing college student drinking:
 - a. Education about the effects of heavy drinking
 - b. Brief interventions that include motivational interviewing
 - c. Group administered cognitive behavioral skill training
 - d. Personalized drinking feedback
 11. Heavy alcohol users usually develop cross-tolerance to other CNS depressants, meaning that they are often resistant to the effects of:
 - a. Barbiturates
 - b. Benzodiazepines
 - c. Anesthetics
 - d. All of the above
 12. Research on families of people with alcohol problems suggest that:
 - a. They are no different from normal families
 - b. They experience more difficulties in adjustment and psychosocial functioning than do families without a member with alcohol problems, but only when that family member is drinking
 - c. They experience more problems than do families without a member with significant problems, even when that member is sober
 - d. They experience an elevation in problems when the family member stops drinking
 13. Which of the following U.S. racial/ethnic groups consistently has the highest percentage of abstainers?
 - a. Native Americans
 - b. African-American women
 - c. Hispanic men
 - d. Jewish women
 14. “Psychological dependence” refers to:
 - a. Irrational fear of withdrawal
 - b. Bodily discomfort when not drinking
 - c. Relying on alcohol as a means of coping
 - d. A pathological need to control others
 15. Physiologically, the drug effect of alcohol on sexual arousal is
 - a. To heighten arousal
 - b. To suppress arousal
 - c. To suppress arousal at low doses, but increase it at higher doses
 - d. Negligible—no real drug effect on arousal
 16. Research has shown a clear influence of genetic risk for alcohol use disorders on:
 - a. Stimulant response to alcohol
 - b. Alcohol metabolism rate
 - c. Effect of alcohol on behavioral and cognitive performance
 - d. All of the above
 17. Biomedical studies have generally supported which of the following as a risk marker for alcohol use disorders?
 - a. Event-related EEG activity
 - b. Resting (non-event related) EEG activity
 - c. Variation in the DRD2 dopamine receptor gene (Bob also disagrees with this interpretation of the Young et al meta-analysis)
 - d. All of the above
 18. Which of the following is not a proper diagnosis in the *DSM-IV-TR* system?
 - a. Alcohol Dependence
 - b. Alcoholism

- c. Alcohol Abuse
 - d. Alcohol Intoxication
19. Pharmacotherapy of alcohol dependence is:
 - a. Successful a majority of time by itself.
 - b. Most effective with cognitive behavioral therapy (CBT).
 - c. Best utilized with some type of psychosocial treatment.
 - d. Not effective unless the dose is adjusted by body mass index (BMI).
 20. Longitudinal research typically shows that a majority of young adults with alcohol-related problems, if untreated, are most likely to be in which of the following categories 5-10 years later?
 - a. Abstinent
 - b. Still drinking, but without significant alcohol-related problems
 - c. Still drinking, with roughly the same amount of alcohol problems
 - d. More severely alcohol dependent
 21. Which of the following characteristics is associated with a decreased risk of alcohol problems in adults?
 - a. Early age of onset for alcohol use
 - b. Having friends who do not drink
 - c. Depression
 - d. Low sensitivity to the sedative properties of alcohol (being able to “hold your liquor”)
 22. Which of the following best describes what research has consistently shown to be characteristic of therapists who are most successful in treating alcohol problems?
 - a. They are skeptical, aggressively confronting and challenging their clients’ denial
 - b. They are recovering from addiction problems themselves
 - c. They are empathic, actively listening and trying to understand their clients
 - d. They give advice and clear instruction on what clients need to do to recover
 23. The “twelve steps” of Alcoholics Anonymous describe:
 - a. How AA is to be organized at the local and national level
 - b. How to confront alcoholics about their disease
 - c. A spiritual approach to living
 - d. All of the above
 24. Which of the following treatment approaches is least strongly supported by controlled trials as effective for alcohol use disorders?
 - a. Motivational Enhancement
 - b. Alcohol Education
 - c. The Community Reinforcement Approach
 - d. Brief Interventions
 25. Which of the following statements is generally supported by alcohol treatment outcome research?
 - a. Counselors who themselves are in recovery are more effective in treating alcohol problems.
 - b. Residential treatment is more effective than outpatient treatment.
 - c. Brief intervention of 1-3 sessions is more effective than outpatient treatment.
 - d. No psychiatric drugs are beneficial in the treatment of alcohol problems.
 26. Moderate or controlled drinking outcomes
 - a. Have been reported in only a few treatment studies
 - b. Inevitably lead to relapse
 - c. Are more likely to occur among less dependent individuals
 - d. All of the above
 27. Al-Anon would most likely recommend to the spouse of an alcoholic:
 - a. Keep doing exactly what you are doing
 - b. You are powerless over the alcoholic, so take care of yourself
 - c. Get divorced or otherwise separate yourself from the alcoholic
 - d. Recognize your own responsibility in the alcoholic’s problem, and learn how you can help to change the alcoholic
 28. Which neurotransmitters are primarily responsible for the depressant effect of alcohol?
 - a. GABA & Glutamate
 - b. Dopamine and Serotonin
 - c. Norepinephrine & Adenosine
 - d. All of the above
 29. Acamprosate is Food and Drug Administration (FDA) approved:
 - a. To treat alcohol withdrawal syndrome.
 - b. To reduce relapse to heavy drinking (5 or more drinks at one time).
 - c. For maintaining continuous abstinence after alcohol detoxification.
 - d. To block the acute effects of alcohol overdose.
 30. Oral naltrexone is an FDA approved drug best used:
 - a. To treat alcohol withdrawal syndrome.
 - b. To reduce relapse to heavy drinking (5 or more drinks at one time).
 - c. For maintaining continuous abstinence after alcohol detoxification.
 - d. To block the acute effects of alcohol overdose.
 31. “Craving” for alcohol
 - a. Is the most common cause of compulsive alcohol use and relapse
 - b. Is commonly reported by alcoholics but is ambiguously related to alcohol use
 - c. Has little relevance to alcohol use
 - d. May be relevant to alcohol use, but is subjective and cannot be studied rigorously
 32. Which of the following is not a symptom of alcohol dependence?
 - a. Unsuccessful attempts to cut down or quit drinking
 - b. Giving up important social, occupational, or recreational activities
 - c. Denial or lack of insight into the severity of one’s drinking

- d. Continued drinking despite recurrent alcohol-related problems
33. The consensus among U.S. health professionals regarding “safe” limits for alcohol consumption is generally that people should not drink every day, and on drinking days should limit their consumption to not more than:
- Three standard drinks
 - Six standard drinks
 - Ten standard drinks
 - None of these
34. Which of the following occurs more commonly as a dual diagnosis with alcoholism than in the general population?
- Antisocial personality
 - Anxiety disorders
 - Bipolar disorders
 - All of the above
35. Which of the following has been clearly shown to be a potential marker for the presence of an alcohol use disorder?
- Physiological under-responsiveness to stress
 - Disadvantageous decision making
 - Family history of an alcohol use disorder
 - All of the above
36. A common physical complication of alcohol dependence, which contributes to memory impairment is:
- Elevated high-density lipoprotein levels
 - Increased dopamine levels
 - B vitamin deficiencies
 - All of the above
37. Which of the following is commonly observed in the brains of chronic heavy drinkers, sometimes even after long periods of abstinence?
- Cortical atrophy
 - Enlarged ventricles
 - Decreased cerebral blood flow and metabolism
 - All of the above
38. In which of the following racial/ethnic groups is the most consistent evidence for a demonstrated genetic trait that influences the risk of alcohol-related problems?
- Asian
 - Caucasian
 - Latino
 - All of the above
39. What effects would you expect to observe at a blood alcohol concentration of .08 (80%)?
- No noticeable intoxication
 - Judgment and fine motor coordination impairment
 - Amnesic syndrome
 - Unconsciousness and possible lethal overdose
40. Korsakoff’s syndrome is fundamentally an impairment of
- Liver function
 - Balance and coordination
 - Transfer to long-term memory
 - Perceptual acuity
41. Antabuse (disulfiram) is a drug which:
- Blocks the intoxicating and euphoric effects of alcohol.
 - Reduces craving for alcohol.
 - Should be started during alcohol withdrawal in order to maximize treatment outcome.
 - When combined with alcohol is intended to cause headache, nausea and vomiting.
42. In adolescents, alcohol abuse is more likely to occur
- Alone, without other significant diagnoses or problems
 - When onset of alcohol use is delayed
 - As part of a cluster of problem behaviors
 - In children of parents who abstain from alcohol
43. Delirium tremens (DTs) typically occur
- Within a few hours of stopping drinking
 - In a majority of those with alcohol dependence
 - About 1-3 days after stopping drinking
 - Before the onset of convulsions
44. Research following men in either alcohol or domestic violence treatment programs has shown that acute alcohol use has what effect on their domestic violence perpetration?
- It has no substantial effect on domestic violence rates
 - It only increases violence risk in alcohol dependent men
 - It increases the risk of domestic violence by 25 to 50%
 - It makes domestic violence 5 to 10 times more likely
45. Alcohol is called a “gateway” drug because:
- It disinhibits antisocial behavior
 - It affects neurotransmitters in a cascading fashion
 - Drinking is an adolescent rite of passage
 - The use of other drugs is developmentally preceded by drinking
46. Relative to the general population of women in the United States, first- or second- generation Mexican-American women are more likely to be:
- Abstainers
 - Drinkers
 - Heavy drinkers
 - Alcohol dependent
47. The diagnosis of alcohol abuse, in the *DSM* system, is characterized by:
- Recurrent drinking in risky situations
 - Continued drinking despite persistent adverse consequences
 - Never having met criteria for alcohol dependence in lifetime
 - All of the above
48. Current research evidence suggests that the neuropsychological deficits commonly observed among individuals in treatment for alcohol problems

- a. Are the result of toxic effects of long-term alcohol exposure
 - b. Usually show partial reversal over the first year of abstinence
 - c. May have been present, at least in part, before the person developed alcohol problems
 - d. All of the above
49. Research clearly indicates that the children of alcoholics, more than other adults, show:
- a. A generalized addictive personality
 - b. A higher risk of alcohol problems
 - c. A high level of response to alcohol
 - d. All of the above
50. With regard to cancer, heavy drinkers (relative to abstainers and light drinkers) have:
- a. Lower rates of cancer in general
 - b. About the same rates of cancer in general
 - c. About twice the risk of cancers in general
 - d. About fifty times the risk of cancer in general

Appendix B. Item explanations

Example: Formatted as (*Revised*. Challenging. Correct answer: C)

Terms: *Not revised*. *Revised*. *New*. *AUDs*.

Not revised = exactly the same as original article

Revised = text has been changed and explanation updated

New = original item has been eliminated and a new item has replaced it.

AUDs = alcohol use disorders

1. (*Not Revised*. Easy. Correct Answer: D). All alcoholic beverages contain the same kind of alcohol—ethyl alcohol or ethanol. Although some people have the impression that “hard liquor” contains a stronger form of alcohol, in fact beverages differ only in their concentration. Beer averages 5% ethanol in the U.S. Table wine runs around 12%. Liquors go by “proof,” which in the U.S. is just twice the concentration. Thus, 86 proof = 43% ethanol; 100 proof = 50% ethanol, etc.
2. (*Revised*. Easy. Correct Answer: A). Blackouts are holes in the fabric of memory. A good analogy is that a person in blackout is like a tape recorder with the record button up. There is nothing on the tape to be played back. Blackouts tend to occur at blood alcohol concentrations (BACs) over .20 (200 mg%), whereas state dependent retrieval is usually observed between 80 and 120 mg%. A person in a blackout does not behave differently, except as expected from intoxication itself. Only an astute observer will be able to tell that the person is in a blackout at the time, usually form noticing that there is no recall for things that happened just half an hour before. Risks for alcohol-induced blackouts include: frequency of intoxication, drinking on an empty stomach, speed of alcohol

consumption, drinking while fatigued, genetic factors and brain injury.

3. (*Not Revised*. Difficult. Correct answer: C). “Problem drinkers” consistently number around one in every 9, 10, or 11 adults in U.S. surveys. That’s not 1 in 10 drinkers, but 10% of the general adult population. In health care delivery settings, of course, the percentage is much higher. A reasonable estimate for a general psychological practice is that 20-25% of adults being seen for psychological problems also show alcohol abuse or dependence. In emergency rooms the percentage runs as high as 50-60%.
4. (*Not Revised*. Challenging. Correct answer: D) The normal course with increased drinking is for tolerance also to increase. When tolerance decreases, something has changed, and usually that’s the status of the liver. Because the liver performs the vast majority of alcohol metabolism, liver damage is reflected in slower rates of clearance, and thus the same dose results in higher BAC for a longer period of time. A drop in tolerance is serious reason for concern and warrant a medical examination. Note that it is normal for tolerance to decrease if a person has not been drinking for a period of time. During abstinence the body tends to readjust, with the result that some tolerance is lost. Thus, when an abstainer resumes drinking, a fixed dose of alcohol may well have a greater effect than it did when the person was drinking heavily on a regular basis. This is one reason for the popular belief that alcoholism continues to “progress” even when an alcoholic is not drinking.
5. (*Not Revised*. Challenging. Correct answer: D) Visual hallucinations are particularly though not exclusively associated with drug states. Auditory and tactile hallucinations are less frequent but do occur during alcohol withdrawal. Reports of hallucinations warrant a good alcohol/drug history.
6. (*Not Revised*. Difficult. Correct answer: A) There has been quite a bit of publicity about the beneficial effects of drinking on the heart. There is, in fact, a lowered mortality from cardiovascular disease associated with moderate drinking. At higher levels of consumption, however, alcohol damages the heart muscles (and other muscles of the body as well), resulting in alcoholic cardiomyopathy and congestive heart failure, a common cause of death among those with alcohol dependence. Any protective effects of alcohol on the heart are quickly offset in heavier drinkers by alcohol’s other detrimental effects on health.
7. (*Revised*. Difficult. Correct answer: D) Alcohol is a water soluble substance. Because women’s bodies tend to both have higher % fat content and be physically smaller, there is less body water to dilute ingested alcohol. Thusly if a man and woman who weigh the same amount consume the same amount of alcohol, the woman will have a greater BAC. BAC

also varies with the menstrual cycle, so that the same dose of ethanol normally has a greater effect at certain points (often premenstrually) than at others. Finally, the difference between male and female metabolism of alcohol, given the same body mass, disappears if alcohol is injected directly into the bloodstream. The apparent reason for this is a higher presence of alcohol-metabolizing enzyme in the male stomach, so that more ethanol is cleared before it hits the blood stream. On all three counts, then, women are at a disadvantage if they try to keep pace with men drink for drink.

8. (*Not revised*. Easy. Correct Answer: D) Babies exposed to alcohol in utero tend to have small body and head size, mental retardation, and facial and limb abnormalities. In addition, fetal alcohol syndrome is associated with sleep and feeding disturbances in infancy, hyperactivity, poor coordination, learning disabilities, speech, and language delays, problems in daily living, and poor reasoning and judgment.
9. (*Revised*. Easy. Correct Answer: B) Alcohol dependent people tend to test normal on verbal IQ, whereas performance IQ scores are relatively impaired. Psychomotor speed (e.g., Trailmaking Test, tapping speed), visuospatial analysis (e.g., Block Design, Tactual Performance Test), and abstraction and concept learning (e.g., Wisconsin Card Sorting Task, Categories test) all show consistent impairment in alcohol-dependent individuals as a group.
10. (*New*. Challenging. Correct Answer: A) A recent review found little evidence for the efficacy of programs that are designed to increase knowledge about alcohol and awareness of the risks associated with heavy drinking. In contrast, a number of controlled clinical trials conducted over the past 15 years suggest that motivational interviewing, personalized drinking feedback, and cognitive behavioral skills training are associated with reductions in drinking and related problems that exceed assessment-only or educational control groups.
11. (*Revised*. Easy. Correct answer: D) Barbiturates, benzodiazepines, and anesthetics act, like alcohol, by depressing the central nervous system (CNS), and heavy drinkers develop a tolerance to the effect of CNS depressants. An unfortunate feature of this alcohol cross-tolerance is that it is not accrued equally across all of alcohol's effects. While alcohol abusers often need higher doses of CNS depressants to achieve a comparable sedative effect, there is far less, if any, tolerance to other effects of alcohol, such as respiratory depression and hypothermia. This narrowing of the window between a subjectively effective dose and a fatal dose means that individuals who increase their intake of CNS depressants to obtain a similar drug effect put themselves at increased risk for a potentially fatal overdose.
12. (*Revised*. Difficult. Correct Answer: C). Previous work has demonstrated that problematic drinking is associated with a number of different types of impairments in family functioning, including increased marital conflict, chronic familial stress, ineffective parenting, and poorer child adjustment. While family functioning has consistently been shown to improve following treatment and/or onset of sobriety, research has suggested that family functioning in families with a member with a history of alcohol problems remains significantly poorer than in families without a history of alcohol problems.
13. (*Revised*. Difficult. Correct answer: B) The majority of African-American women are estimated to be abstainers with abstinence rates increasing with age and relatively few African-American women over age 40 consuming alcohol. Although some reports have indicated high rates of abstinence among Native Americans, there is substantial tribal variability in alcohol use and the vast number and diversity of groups of Native Americans make it difficult to adequately characterize the entire population. Jewish women have one of the lowest rates of abstinence, but also one of the lowest rates of problem drinking, which has been hypothesized to be due to incorporation of alcohol into religious practices and potentially greater prevalence of ADH2*2, an allele of an alcohol dehydrogenase gene that protects against heavy drinking.
14. (*Not Revised*. Easy. Correct Answer: C) Psychological dependence is distinct from physical dependence. Psychological dependence refers to a subjective belief that alcohol is necessary in a given situation. Psychological dependence may exist in the presence or absence of physical dependence.
15. (*Revised*. Challenging, Correct Answer: B) There is an inverse relationship between the amount of alcohol consumed and the level of physiological sexual arousal; that is, as the concentration of alcohol in the blood increases, arousal diminishes for both men and women. On the other hand, beliefs about the effects of alcohol, or alcohol expectancies, enhance both physical and subjective signs of arousal in men and to a lesser extent in women. Expectancies have a stronger effect on arousal at lower doses of alcohol; conversely, the pharmacological effect of alcohol plays a bigger role at higher doses.
16. (*Revised*. Challenging. Correct Answer: D). There is clear evidence that heightened genetic risk for AUDs is related to an increased response to the stimulating effects of alcohol, increased metabolism rates of alcohol, and decreased effects of alcohol on behavioral and cognitive performance. Specifically, men who are at heightened genetic risk for AUDs show significantly higher frequencies of alleles responsible for metabolism of alcohol, report greater positive subjective effects and fewer adverse subjective effects, and

show greater impairment in performance of a variety of measures of behavioral and executive cognitive performance. Risk for AUDs is influenced by a number of genetic characteristics, but also by many environmental/learning factors.

17. (*Revised*. Challenging. Correct Answer: D). A highly robust biomedical research finding is the link between familial risk for AUDs and decreased intermediate processing of novel stimuli. Additionally, familial risk for alcohol dependence has been linked to decreased resting EEG alpha power and increased resting EEG beta power in both male and female children of alcoholics. While evidence for the role of the DRD2 dopamine receptor gene as a risk marker for AUD historically has been mixed, recent meta-analyses (e.g., Young et al., 2004) have reported a significant association between the A1 allele of the DRD2 receptor and severe AUDs across a variety of participant populations.
18. (*Not Revised*. Challenging. Correct answer: B). “Alcoholism” was listed as a personality disorder in *DSM-II* and is still catalogued in Medline. With *DSM-III*, the diagnostic term “alcoholism” disappeared in favor of more specific syndrome descriptions.
19. (*New*. Easy. Correct answer: C) Practitioners from every area of treatment should agree that medications and psychotherapy are important components of treatment for alcohol dependence. While some may argue about the relative importance of each, prescribing and non-prescribing health care professionals should also recognize that psychosocial therapy can help patients with the social components contributing to their consumption as well as facilitate medication adherence (Swift, 1999).
20. (*Revised*. Difficult. Correct answer: B) Although most people who have alcohol problems in adulthood show a pattern of heavy drinking with adverse consequences in adolescence or young adulthood, most young adults who drink heavily do not go on to develop alcohol dependence. Longitudinal and cross-sectional studies reflect a maturing out, with decreased alcohol use and fewer adverse consequences over time. “Problem drinkers” identified through survey research of community samples tend, when found 5-10 years later, still to be drinking, but more moderately and without significant alcohol-related problems.
21. (*Revised*. Easy. Correct answer: B) Social influences are some of the more powerful predictors of alcohol use and development of AUDs. Having a circle of close friends that does not use alcohol is associated with a lower rate of alcohol use and alcohol problems. Initiation of alcohol use at an early age is a consistent risk factor for later alcohol problems. Depression, like many psychological disorders, heightens individual risk for problem drinking, possibly because depressed individuals self-medicate to seek relief from their negative emotions. Contrary to popular belief, low sensitivity/high tolerance to the sedative properties of alcohol (being able to “hold your liquor”) is a risk factor for alcohol problems. The high-tolerant person drinks without feeling or showing apparent effects, but is still experiencing alcohol-induced damage.
22. (*Revised*. Difficult. Correct answer: C) Research on therapist characteristics consistently points to empathy as a predictor of success in treating alcohol problems. Empathy here means what Carl Rogers meant – the ability to listen reflectively, to develop and reflect an accurate understanding of what the client is saying. Although an in-your-face confrontational style is a popular conception of effective addiction counseling, research suggests that this approach leads to poor outcomes, eliciting client resistance, which in turn predicts lack of change. In this sense, denial is not a client problem, but a therapist problem. A therapist’s personal recovery history appears unrelated to treatment outcomes (e.g., alcohol abstinence), though clients may report feeling better understood by recovering counselors.
23. (*Not revised*. Difficult. Answer: C) The twelve steps represent a general program for living, with a heavy emphasis on spiritual aspects. The AA’s Twelve Traditions instead outline how the fellowship is to be organized. Contrary to stereotypes, AA’s founders directly advised against confrontational approaches in working with alcoholics.
24. (*Revised*. Difficult. Correct Answer: B) Of the choices provided, motivational enhancement, the community reinforcement approach, and brief interventions have all accumulated substantial support from controlled trials supporting their efficacy. In contrast, substantial evidence indicates that education about the negative effects of alcohol is an ineffective intervention approach. Unfortunately, this approach is also a very common component to standard care.
25. (*Revised*. Challenging. Correct answer: C). There is no evidence that counselors who are themselves in recovery are more effective in treating alcohol problems. Similarly, controlled trials consistently show no overall efficacy differences between residential and non-residential treatment programs. Psychiatric drugs such as antidepressants, and the 3 FDA drug currently approved for treating alcohol problems (Naltrexone, Acamprosate, and Antabuse), have been shown to be effective as an adjunct to psychosocial treatments. More than 40 controlled trials of brief interventions (BI) have been published, most of which show BI to yield better outcomes than a waiting list or no intervention. The most common BIs include motivational interviewing and or personalized feedback on drinking patterns and risk factors.
26. (*Revised*. Challenging. Correct answer: C). Although moderation-oriented (“controlled drinking”) treatment

has been controversial, researchers have extensively studied its effectiveness and found that stable outcomes are equally as likely with this goal as with abstinence-oriented treatments. Moderate drinking may be the most common and preferred goal for adults who resolve their alcohol problems without formal treatment. Consistent with a harm reduction approach, a number of intervention programs have demonstrated the effectiveness in the reduction of drinking and drinking-related consequences among adults and youth. These approaches, including Behavioral Self-Control Training, are most successful with clients who, at the beginning of treatment, experience less severe alcohol problems and dependence.

27. (*Not Revised*. Difficult. Correct Answer: B). Al-Anon, like AA, uses a 12-step approach, the first step of which is to admit personal powerlessness. Al-Anon groups are unlikely to advocate either status quo or alienation, and clearly discourage taking on responsibility for another's alcohol problems. Self-care is strongly emphasized.
28. (*New*. Challenging. Correct Answer: A) Alcohol uses two neurochemical pathways to elicit a depressant response to alcohol: first gamma-amino butyric acid (GABA) is the main inhibitory neurotransmitter and alcohol acts as an agonist at these receptors which causes reduced anxiety such as those experienced by taking benzodiazepines (e.g., diazepam or lorazepam); second, glutamate is the main excitatory neurotransmitter in the brain. Alcohol blocks glutamate also contributing to the depressant effects seen with consumption. Alternatively, when administered chronically, alcohol causes neuroadaptive changes that attempt to counter these depressant effects which is responsible for the development of tolerance and alcohol withdrawal syndrome in some.
29. (*New*. Difficult. Correct Answer: C) Acamprosate modulates glutamate transmission that is hyperactive during alcohol withdrawal and abstinence, and is best used to relieve negative affect. A number of studies found that acamprosate is best used to maintain abstinence once a person has been detoxified. Any other use for this medication is not currently approved.
30. (*New*. Difficult. Correct Answer: B) Naltrexone attenuates the positive reinforcement for alcohol and has been shown to be most effective to reduce or attenuate relapse to heavy drinking. Early work also suggested that patients reporting the strongest cravings for alcohol at baseline responded best to naltrexone. Additional evidence suggests that a positive response to naltrexone treatment involves a family history of alcoholism, an early age at onset of drinking problems, and comorbid use of other drugs of abuse.
31. (*New*. Difficulty Unknown. Correct Answer: B) The notion of craving as a cardinal feature of alcoholism reflects folk wisdom and early nonscientific notions of the disorder. Subsequent systematic research over the last fifty years has revealed that although alcoholics commonly report experiencing craving for alcohol, the relationship between craving and actual alcohol use or post-treatment relapse is ambiguous. One previous criticism that has now been addressed, however, is the lack of validated measures for assessing craving, and scales such as including the Obsessive Compulsive Drinking Scale, the Penn Alcohol Craving Scale, and the Alcohol Urge Questionnaire have demonstrated psychometric properties. In addition, craving has been studied using behavioral schedule-based approaches, methods from cognitive psychology, animal models, and neuroimaging techniques.
32. (*Revised*. Difficult. Correct Answer: C) While blackouts are not listed as one of the 7 criterion for substance dependence, they are consistent with a "maladaptive pattern of use" noted in the overall description of substance dependence. A better "incorrect" symptom would be "denial or lack of insight into the severity of one's drinking." This taps into the antiquated disease model concept that denial is a key feature of alcoholism. Although denial was once seen as a primary feature of alcoholism, it is no longer considered part of the alcohol dependence syndrome.
33. (*Revised*. Difficult. Correct answer: D) According to the National Institute on Alcohol Abuse and Alcoholism (NIAAA), safe drinking levels vary by gender. The NIAAA recommends that women consume no more than 1 standard drink per day and that men consume no more than 2 standard drinks per day.
34. (*Revised*. Difficult. Correct Answer: D) Persons with AUDs are at higher risk for other psychiatric disorders. Mood, anxiety, and personality disorders all occur at higher rates among those diagnosed with an alcohol use disorder than in the general population.
35. (*Revised*. Difficult. Correct Answer: C). As discussed above, antisocial personality, anxiety, and affective disorders all are highly comorbid with AUD. Studies have only recently begun to tease apart the independent associations between potential markers of AUD and the development of the disorder, and recent work has suggested that both physiological under-responsiveness to stress and disadvantageous decision strategies may be better accounted for by the association between AUD and antisocial personality disorder. In fact, there is evidence that *heightened* responsiveness to stress may itself be a risk marker for individuals with comorbid AUD and anxiety symptoms.
36. (*Not Revised*. Challenging. Correct Answer: C) Excess alcohol consumption is associated with vitamin B deficiencies. Alcohol interferes with the body's ability to absorb vitamins from food. Additionally, heavy drinking is associated with poor diet, and thus inadequate intake of foods containing vitamin B.

Deficiencies of several B vitamins have been linked to increased risk of cognitive impairment.

37. (*Revised*. Challenging. Correct Answer: D) Heavy drinking has profound effects on the structure and function of the brain. In residential alcohol treatment populations, over 50% of patients will show significant cortical atrophy on CT scans, also reflected in ventricular enlargement. Other research clearly documents acutely and chronically cerebral blood flow and metabolism in heavy drinkers: PET studies of the brain have revealed decreased cerebral blood flow to frontal regions, ranging from a 75% to 86% reduction in chronic alcoholics. Functional MRI studies have similarly demonstrated decreased prefrontal cortical function in chronic alcoholics, even during prolonged abstinence.
 38. (*Revised*. Difficult. Correct Answer: A) A number of studies have demonstrated a link between polymorphisms in alcoholism candidate genes and AUDs in a number of different ethnic groups. One of the most consistent findings is deficiencies in ALDH, an enzyme needed to metabolize acetaldehyde, the first metabolic product of alcohol, with the result being an unpleasant physical reaction to drinking (e.g., headache, flushing, sweating, racing heart) which tends to discourage excess drinking, thus decreasing risk of alcohol-related problems. Moreover, a deficiency in ALDH appears to be most prevalent in Asian populations.
 39. (*Revised*. Challenging. Correct Answer: B) A BAC level of 80 % (.08) is the legal intoxication level in many parts of the United States. At this level there is clearly observable impairment of judgment and motor coordination. Amnestic syndrome refers to Korsakoff's syndrome, which occurs after chronic alcohol consumption. Alcohol is metabolized at the rate of approximately 1 standard drink every 2 hours, and the estimated BAC of a 160 lb individual equals 20% for each standard unit consumed per hour. It is important to note that even at BACs of 40%, a person's judgment is affected. Unconsciousness normally occurs around .300 mg, and the LD-50 (lethal dose for 50% of the population) is around 450%. However, tolerance to the effects of chronic alcohol ingestion can result in these effects occurring only at higher BACs.
 40. (*Revised*. Easy. Correct Answer: C) In Korsakoff's syndrome, there is chronic impairment (even in sobriety) of the ability to transfer information from short-term to long-term memory. The effect is that little or no new learning occurs – like a permanent blackout state. The balance and coordination syndrome (involving cerebellar disruption) sometimes associated with this is acute Wernicke's encephalopathy, also characterized by oculomotor disturbances and mental confusion. Liver impairment such as cirrhosis may accelerate the problem, but does not appear to be necessary for chronic Korsakoff's syndrome to occur.
- However, recent evidence reveals that a deficiency in Vitamin B1 (i.e., thiamine) is strongly related to Wernicke–Korsakoff syndrome.
41. (*Revised*. Easy. Correct Answer: D) Disulfiram affects the metabolism of alcohol by blocking the enzyme (acetaldehyde dehydrogenase) responsible for breaking down acetaldehyde (Swift, 1999). The increase of acetaldehyde is responsible for the aversive effects resulting in headache, nausea and vomiting. Disulfiram has no known effects on craving for alcohol (though there is some evidence that as a dopamine beta-hydroxylase inhibitor it does modulate cocaine craving), does not block the intoxicating or euphoric effects of alcohol, and should never be initiated for at least 12 to 24 hrs after alcohol is completely eliminated from the blood of a patient.
 42. (*Revised*. Easy. Correct Answer: C) Genetic and environmental factors jointly influence an adolescent's risk for an AUD. Inherited vulnerability for alcoholism may be further compromised by poor parental monitoring, which, in turn, increases the risk of affiliation with deviant peers and eventually adolescent substance use. Early onset of alcohol use increases this risk for the development of AUDs. Furthermore, alcohol abuse is commonly associated in adolescents with a larger cluster of problem behaviors; approximately 60% of adolescent substance users have an additional comorbid disorder, including both externalizing (e.g., conduct disorder, attention deficit/hyperactivity disorder, oppositional defiant disorder) and internalizing (e.g., depression, anxiety) disorders.
 43. (*Revised*. Difficult. Correct Answer: C) The classic pattern of delirium tremens (DTs) normally has its onset around 24 - 72 hours after the cessation of drinking. It is preceded by minor withdrawal signs during the first 24-hrs and – if they occur – progresses to a more severe syndrome that includes agitation, confusion, tremors, seizures and hallucinations. Potentially a life-threatening condition, DTs involve major autonomic arousal, and they amount to a massive return of the withdrawal symptoms experienced during the first 1 - 2 days. Most people (approximately 95%) who experience minor withdrawal in the first day, however, do not go on to DTs.
 44. (*New*. Correct Answer: D) Researchers have consistently found that problematic alcohol use is strongly associated with domestic violence (as well as relationship dysfunction generally). A prospective daily diary study found that men's alcohol use on a particular day was associated with a nearly 10-fold increase in domestic violence perpetration on the day, and that heavy drinking (6 or more drinks) was associated with a nearly 20-fold increase in violence perpetration.
 45. (*Not Revised*. Difficult. Correct Answer: D) The “gateway” theory of drug abuse is that people progress developmentally through a predictable sequence of

drugs, usually in the following order: alcohol, tobacco, marijuana, pills, (uppers, downers, hallucinogens), narcotics. The hope is that by preventing use earlier in the chain, progression “harder” drugs can be averted.

46. (*Revised*. Challenging. Correct Answer: A) Women living in Mexico and those recently immigrated to the U.S. from Mexico consume alcohol at very low rates. The longer (more generations) Mexican-American women have been in the U.S., the lower the rates of abstinence, with consequent increases in rates of drinking and related problems. Still, rates of alcohol problems among Mexican-American women are characteristically low.
47. (*Not Revised*. Difficult. Correct Answer: D) The symptoms described in alternatives A, B, and C are all directly stated as diagnostic criteria for alcohol abuse in the *DSM* system.
48. (*Revised*. Difficult. Correct Answer: D) Neuropsychological impairment has been directly linked to alcohol exposure. Even within moderate, non-problem-drinking populations, neuropsychological functioning is negatively correlated with recent and lifetime alcohol consumption. This impairment typically recovers, at least to some extent, during the first year, and sometimes over a longer period of time, though often never returns to normal levels. Similar, milder deficits may be observed in the children of alcoholics prior to the onset of alcohol use, suggesting that these deficits may be precursors to problematic drinking.
49. (*Revised*. Difficult. Correct Answer: B) Children of alcoholics are at increased risk for developing an alcohol use disorder (3- to 4-fold higher prevalence). Strong evidence from twin and adoption studies suggests that approximately half of the alcoholism risk is explained by genetic factors. Low level of response to alcohol (i.e., consuming large amounts of alcohol with relatively little effect) is one of the genetically influenced phenotypes that is a powerful predictor of the subsequent development of alcohol dependence. As indicated above, there is no consistent addictive personality to be found even among those

with alcohol problems themselves, let alone among their first- and second-degree relatives. However, some heritable dimensions of personality such as behavioral disinhibition distinguish the offspring of alcoholics from the offspring of non-alcoholics.

50. (*Revised*. Challenging. Correct Answer: C) Heavy drinking has been associated with increased risk for upper digestive tract (oral cavity, pharynx, larynx, esophagus), lung, liver, colorectal, and breast cancers. Overall, heavy drinkers are at approximately twice the risk of cancer relative to nondrinkers. The increase in risk is both independent of and synergistic with smoking, and is dose-dependent, with greater consumption associated with greater risk. Alcohol itself is not a direct carcinogen, however.

References

- Babor, T., Sciamanna, C., & Pronk, N. (2004). Assessing multiple risk behaviors in primary care: Screening issues and related concepts. *American Journal of Preventive Medicine*, *27*, 42–53.
- Carey, K. B., Bradizza, C. M., Stasiewicz, P. R., & Maisto, S. A. (1999). The case for enhanced addictions training in graduate programs. *Behavior Therapist*, *22*, 27–31.
- Chielt, T., Gold, S. N., & Taylor, J. (1994). Substance abuse training in APA-accredited doctoral programs in clinical psychology: A survey. *Professional Psychology: Research and Practice*, *25*, 80–84.
- Grant, B. F., Dawson, D. A., Stinson, F. S., Chou, S. P., Dufour, M. C., & Pickering, R. P. (2004). The 12-month prevalence and trends in *DSM-IV* alcohol abuse and dependence: United States, 1991–1992 and 2001–2002. *Drug and Alcohol Dependence*, *74*, 223–234.
- Institute of Medicine. (1998). *Bridging the gap between practice and research: Forging partnerships with community-based drug and alcohol treatment*. Washington, DC: National Academy Press.
- Miller, W. R., & Brown, S. A. (1997). Why psychologists should treat alcohol and drug problems. *American Psychologist*, *52*, 1269–1279.
- Miller, W. R., & C’de Baca, J. (1995). What every mental health professional should know about alcohol. *Journal of Substance Abuse Treatment*, *12*, 355–365.
- Swift, R. (1999). Drug therapy for alcohol dependence. *New England Journal of Medicine*, *340*, 1482–1490.
- Young, M. R., Lawford, B. R., Nutting, A., & Noble, E. P. (2004). Advances in molecular genetics and the prevention and treatment of substance misuse: Implications of association studies of the A1 allele of the D2 dopamine receptor gene. *Addictive Behaviors*, *29*, 1275–1294.