Use this table if client has 13 years or more of education.

Age	1	2	3	4	5
18–24	≥ 72	67–71	53–66	47–52	≤ 46
25–34	≥ 67	62–66	50–61	44–49	≤ 43
35–44	≥ 65	60–64	44–59	37–43	≤ 36
45–54	≥ 61	57–60	45–56	40–44	≤ 39
55–64	≥ 56	52–55	40–51	35–39	≤ 34
65+	≥ 55	49–54	33–48	27–32	≤ 26

Interpreting the PFR to Clients

Project MATCH therapists follow a systematic approach in discussing the Personal Feedback Report with clients. The general therapeutic style in giving MET feedback is illustrated in Dr. Miller's "Motivational Interviewing" videotape.

The original copy of the PFR is given to the client and a copy is retained for the therapist's file. The PFR consists of two pages of data from interviews and questionnaires plus the client's Alcohol Use Inventory Profile sheet. When the therapist has finished presenting the feedback, the client may take home the PFR plus a copy of "Understanding Your Personal Feedback Report." If a session ends partway through the feedback process, however, the therapist retains the original PFR, sending it home with the client only after the review of feedback is completed. Clients are given a copy of *Alcohol and You* at the end of the first session (a copy is included at the end of appendix A).

Therapists need to be thoroughly familiar with each of the scales included on the PFR. "Understanding Your Personal Feedback Report" provides basic information for the client. Here are some additional points helpful in reviewing the PFR with clients.

Alcohol Consumption

The idea of a standard drink is an important concept. Explain that all alcohol beverages—beer, wine, spirits—contain the same kind of alcohol, ethyl alcohol. They just contain different amounts of this drug. Use the "Standard Drink" graphic depicted in the client handout "Understanding Your Personal Feedback Report" to explain this. We are using, as a standard drink, any beverage that contains half an ounce of ethyl alco- hol. Thus, the following beverages are each equal to one standard drink:

Beverage	Usual %	x	Ounces	=	Alcohol content
Beer	.05	x	10 oz	=	0.5 oz
Table wine	.12	x	4 oz	=	0.5 oz
Fortified wine	.20	x	2.5 oz	=	0.5 oz
Spirits					
80 proof	.40	x	1.25 oz	=	0.5 oz
100 proof	.50	x	1 oz	=	0.5 oz

Explain that the number of standard drinks per week is calculated from the client's own report of regular and periodic drinking patterns, converted into standard units as shown in the graphic.

The normative table provides an estimate of the client's standing among American adults of the same sex with regard to alcohol consumption. The conversion table provides percentile levels for various numbers of standard drinks per week, based on data from the 1990 National Alcohol Survey, provided by Dr. Robin Room of the Alcohol Research Group at Berkeley. A good explanation of this percentile figure is that, "This means you drink more than__percent of American [men/women] do, or that (100–X) percent of American (men/women) drink as much or more than you do."

Estimated BAC Peaks

The number of drinks consumed is only part of the picture. A certain number of drinks will have different effects on people, depending on factors like their weight and sex. The *pattern* of drinking also makes a difference: having 21 drinks within 4 hours on a Saturday is different from having 21 drinks over the course of a week (3 a day).

Another way to look at a person's drinking, then, is to estimate how intoxicated he or she becomes during periods of drinking. Be clear here that we are discussing "intoxicated" in terms of the level of alcohol (a toxin) in the body and *not* the person's subjective sense of being drunk. It is common for alcoholics to be quite intoxicated (high BAC) but not to look or feel impaired.

The unit used here is milligrams of alcohol per 100 ml of blood, abbreviated "mg%." This is the unit commonly used by pharmacologists and has the additional convenience of being a whole number rather than a decimal (less confusing for some clients). If you or your client wish to compare this with the usual decimal expressions of BAC, simply move the decimal point three places to the left. Thus:

80 mg% = .08
100 mg% = .10
256 mg% = .256 and so on

Note that the "normal social drinking" range is defined as from 20–60 mg% in peak intoxication. In fact, the vast majority of American drinkers do not exceed 60 mg% when drinking.

Risk Factors

Introduce this section by explaining "risk." Elevated scores on risk factors are not predestination. A person with a family history of heart disease is not doomed to die of heart disease—*but* such a person needs to be extra careful about diet and exercise, for example, and to keep a careful eye for warning signs. The five scores in this section are markers of higher risk for serious problems with alcohol. They indicate a greater susceptibility to alcohol problems.

Tolerance

The behavioral effects as shown in "Understanding Your Personal Feedback Form" can be understood as the ordinary effects of various BAC levels. Because of tolerance, people may reach these BAC levels without feeling or showing the specific effects listed.

The presence of a high BAC level, especially if accompanied by a reported absence of apparent or subjective intoxication signs, is an indication of alcohol tolerance. This should be discussed with the client as a *risk factor*. That is, people with a high tolerance for alcohol have a *greater* risk of developing serious problems because of drinking! A few points to cover are—

- Tolerance is partly inherited, partly learned.
- For the most part, tolerance does *not* mean being able to get rid of alcohol at a faster rate (although this occurs to a small extent). Rather it means reaching high levels of alcohol in the body without feeling or showing the usual effects.
- Normal drinkers are sensitive to low doses of alcohol. They feel the effects of 1–2 drinks, and this tells them they have had enough. Other people seem to lack this warning system.
- A result of tolerance is that the person tends to take in large quantities of alcohol—enough to damage the brain and other organs of the body over time—without realizing it. Thus you damage yourself without feeling it. An analogy would be a person who loses all sensations of pain. While at first this might seem a blessing, in fact, it is a curse, because such a person can be severely injured without feeling it. The first sign that your hand is on a hot stove is the smell of the smoke. Similarly, for tolerant drinkers, the first signs of intoxication are felt at rather high BAC levels.

Other Drug Risk

A second risk factor to consider is other drug use. In essence, the more drugs the client is using, the greater the risk for problems, cross-tolerance, dependence, drug substitution (decreasing one but increasing another), and so forth. Discuss these risks with your client.

Family Risk

Evidence is now strong that alcohol problems run in families and are genetically influenced. Of course, many people develop alcohol problems without having a family history, but your risk is higher if you have blood relatives with alcohol problems. Any family history should be discussed with the client.

MacAndrew Score

Higher scores on the MacAndrew scale, a subscale of the MMPI, have been found for alcoholics than for normals or people with other psychological problems. Elevations on this scale have also been found to be predictive, in young people, of *later* development of alcohol prob-

lems. This personality scale taps a variety of personal characteristics that are associated with higher risk of serious alcohol problems.

Age at Onset

Alcohol problems tend to be more severe when they begin at a younger age. Three items from the Drinker Inventory of Consequences are averaged to obtain an "age of onset" for alcohol difficulties. The younger this age, the greater the risk for developing severe problems if drinking continues. Young emergence of "loss of control" (difficulty stopping once started or in keeping one's drinking within planned limits), for example, may be an indicator of high risk for severe alcohol problems.

Problem Severity

Two measures from Project MATCH screening are used here to reflect overall alcohol problem severity. One is the AUDIT scale, developed by the World Health Organization and used in the Quickscreen. The other is the Drinker Inventory of Consequences. Explain that these scores are very broad, general measures of negative effects of drinking in an individual's life. Notice that the AUDIT focuses on recent patterns, whereas the DRINC measures lifetime effects.

Your larger task here is to review with the client his or her scores from the Alcohol Use Inventory. To do this, you should be thoroughly familiar with the manual (Horn et al. 1987), particularly chapter 6. It is helpful, in understanding and interpreting scales, to be familiar with the items that constitute each scale (see page 71 of the manual). Refer to (and provide the client with a copy of) the AUI Profile Sheet, available from National Computer Systems, Minneapolis, MN. Remember when interpreting elevations on the AUI that the reference population is *people already seeking treatment for alcohol problems.* Thus, a "low" score in the white (decile 1–3) range is low relative to people entering treatment for alcohol problems. Scores in the middle deciles (4–7; light grey) are by no means average for the general population. General population norms on most scales would be expected to fall in deciles 1–2. A possible exception is GREGARIOUS, where high scores reflect drinking in social settings—a common style for young American men.

Serum Chemistry

These five serum assays can be elevated by excessive drinking and thereby reflect the physical impact of alcohol on the body. It is noteworthy that many heavy and problematic drinkers have normal scores on serum assays. The physical damage reflected by elevations on these scales may emerge much later than other types of problems. Also, normal scores on these tests *cannot* be interpreted as the absence of physical damage from drinking. The destruction of liver cells near the portal vein where blood enters, for example, can occur before liver enzymes reflect a warning. When these scales *are* elevated, then, it is information to be taken seriously.

Therapists should clarify that, as a nonmedical professional, you are not qualified to interpret these findings in detail. Clients who are concerned and want more information should be advised to discuss their results with a physician. If possible, referral should be made to a physician who is knowledgeable about alcohol abuse. A physician in general practice who is not familiar with alcohol abuse may advise a patient that their elevations are "nothing to worry about," undermining the feedback process.

The following information will help explain to clients the basic processes underlying these assays and what they may mean.

SGOT/SGPT

Serum glutamic oxalcetic transaminase (SGOT; newer name: AST—aspartate animotransferase) and serum glutamic pyruvate transaminase (SGPT; newer name: ALT—alanine transferase) are enzymes that reflect the health of the liver. The liver is important in metabolism of food and energy and also filters and neutralizes poisons and impurities in the blood. When the liver is damaged, as happens from heavy drinking, it becomes less efficient in these tasks and begins to leak enzymes into the bloodstream. These two are general indicators, reflecting overall health of the liver.

GGTP

Serum gamma glutamyl transpeptidase is an enzyme found in liver, blood, and brain, which is more specifically sensitive to alcohol's effects. Elevations of this enzyme have been shown to be predictive of later serious medical problems related to drinking, including injuries, illnesses, hospitalizations, and deaths. This enzyme is often elevated first, with SGOT and SGPT rising into the abnormal range as heavy drinking continues.

Bilirubin (Total)

The liver is also importantly involved in the recycling of hemoglobin, the molecule which makes the blood red. Bilirubin is one breakdown product of hemoglobin. When the liver is not working properly, it cannot recycle hemoglobin efficiently, and the byproducts back up into the bloodstream and eventually into the brain. High bilirubin levels over time result in jaundice—yellowing of the skin. Elevations of bilirubin are not common, even among heavy drinkers, and are indicative of severe physical impact from alcohol.

Uric Acid

Uric acid is a waste product that results from the breakdown of RNA. Alcohol's damage to the liver reduces the kidney's ability to excrete uric acid, which then builds up in the bloodstream. High levels of uric acid result in gout, the painful inflammation of joints, particularly fingers and toes. Uric acid is also an important component of a certain type of kidney stones.

If your site is including other relevant assays in your serum chemistry package (e.g., HDL, MCV), these could be included on your feedback form.

Enzyme elevations can occur for reasons other than heavy drinking. GGTP, for example, can be elevated by cancer or hormonal changes. In this population, however, the most likely cause of an elevation is heavy drinking. In this case, these assays tend to return toward normal if the person ceases heavy drinking. Reductions in GGTP (by changed drinking) have been shown to be associated with dramatically reduced risk of serious medical problems.

Neuropsychological Test Results

The last panel of assessment results in the Project MATCH MET feedback is from the brief neuropsychological testing. Scores on these tests range from 1 (well above average) to 5 (well below average). Scores of 4 are often interpreted as "suggestive" of cognitive impairment, and scores of 5 as "indicative" of cognitive impairment.

The first (SV) result is from the Shipley-Hartford Vocabulary test. It is included as a "hold" test to indicate the approximate level of cognitive functioning that would be *expected* for a particular individual. Performance on this test is not commonly affected by alcohol use. This score, then, gives you an approximate reference point with which to compare other performances.

The other four tests appear to be sensitive to the effects of alcohol on the brain. They tend to be impaired in heavy drinkers and often show substantial improvement over the first weeks and months of sobriety. No judgment can be made about a client's general neuropsychological functioning or "brain damage" from this brief set of tests. Rather, they are *indicators* of the types of cognitive impairment commonly related to heavy drinking.

The Trail-Making Test has two forms. Trails A is a follow-the-dot format that mainly tests psychomotor speed. Alcoholics tend to be impaired (slow) on this test, though normal scores are more common than on Trails B. Trails B requires not only test psychomotor speed but also a mental switching back and forth between two cognitive sets—numbers and letters. As a group, alcoholics are rather consistently impaired (slow) on this test.

The Symbol Digit Modalities test is a reversal of the more familiar Digit/Symbol subtest of the WAIS. It is a timed test requiring the copying of numbers that correspond to symbols. It is influenced not only by psychomotor speed but also by memory. Alcoholics tend to perform more poorly (complete fewer correct digits) than others on this scale.

Finally, the Abstraction scale of the Shipley-Hartford taps a cognitive capacity—verbal abstraction ability—that is commonly impaired in heavy drinkers. Lower scores are associated with more concrete thinking styles. The common observation in alcoholics is a poorer performance on Abstraction than on the Vocabulary scale of the Shipley.

Be aware of other factors that may have influenced performance. Speed on Trails and Symbol/Digit, for example, will be slowed by an injury to the writing hand or arm. Visual impairments will also slow performance on these tests.

The PFR form and the handout explaining the data on the PFR form as used in Project MATCH are provided as examples. These can be modified to suit the needs of other research studies.

Assessment Instruments Used in Project MATCH Feedback

Both published and newly developed assessment instruments were employed in Project MATCH as a basis for providing client feedback in Motivational Enhancement Therapy. The sources from which these instruments can be obtained are provided below.

Form 90

Form 90 is a family of assessment interview instruments designed to provide primary dependent measures of alcohol consumption and related variables. It is a structured interview procedure that yields quantitative indices of alcohol consumption, other drug use, and related variables during a specified period of time. These instruments were developed for use in Project MATCH, with the collaboration of all principal investigators in that project. A Form-90 manual and forms will be published when final protocols and initial psychometric data are available. While the instrument remains under development, a research citation should be in this form:

> Miller, W.R. "Form 90: Structured Assessment Interview for Drinking and Related Behavior." Unpublished manual for Project MATCH, National Institute on Alcohol Abuse and Alcoholism.

Until publication, requests for use should be addressed to William R. Miller, Ph.D., Department of Psychology, University of New Mexico, Albuquerque, NM 87131.

DRINC

The alcohol research field has lacked a consensus instrument for assessing negative consequences of drinking. The DRINC was designed as a survey schedule for evaluating the occurrence of negative consequences related to drinking during a particular period of time. Items that are typically recognized as components of alcohol dependence syndrome (e.g., craving, blackouts) are intentionally omitted from this scale in an attempt to disaggregate dependence symptoms and negative life consequences. The DRINC also avoids the confounding, apparent in prior questionnaires (e.g., MAST), of recent consequences with lifetime ("ever") consequences or treatment experiences. The DRINC is therefore meant to be useful for parallel assessment of pretreatment and posttreatment consequences of drink-

ing. It yields problem scores for "ever" (lifetime) and for a specific timeframe (past 3 months), which can be adjusted.

The DRINC should be regarded as an experimental instrument, currently in development. An initial psychometric study with 299 drinkers found good internal consistency (Cronbach alpha = .92 for "ever" and .90 for past 3 months). Initial analyses further indicate the negative consequences as a construct is related to but not identical with alcohol dependence and alcohol consumption. Correlations with Skinner's Alcohol Dependence Scale were .58 for Ever and .56 for Past 3 Months. DRINC scores were correlated with recent quantity/frequency of drinking at .37 for Ever and .47 for Past 3 Months. Based on initial studies using this instrument (including NIAAA's Project MATCH), it will be modified to improve its reliability, validity, and utility.

A proper current citation, pending formal publication of the instrument, is:

> Miller, W.R. "The Drinker Inventory of Consequences." Unpublished manuscript, University of New Mexico.

The DRINC is available for use and can be obtained from William R. Miller, Ph.D., Department of Psychology, University of New Mexico, Albuquerque, NM 87131.

MacAndrew Scale

The MacAndrew Scale is a subscale of the original Minnesota Multiphasic Personality Inventory. It is described in the following article:

> MacAndrew, C. The differentiation of male alcoholic outpatients from nonalcoholic psychiatric outpatients by means of the MMPI. *Quarterly Journal of Studies on Alcohol* 26:238–246, 1965.

Addiction Severity Index

The Addiction Severity Index is a research instrument under ongoing development. For information regarding the current version, contact Dr. A. Thomas McLellan, VA Medical Center (116), Philadelphia, PA 19104.

AUDIT

The Alcohol Use Disorders Identification Test was developed for a large collaborative study of brief intervention conducted by the World Health Organization (Babor and Grant 1989; Saunders et al. in press).

References

Appel, C.-P., and Miller, W.R. "The Self-Evaluation of Drinking." Unpublished assessment instrument, University of New Mexico, 1984.

Handouts for Clients

Personal Feedback Report Form

This form is used in Project MATCH to summarize information obtained from the pretreatment assessment battery and is discussed with and given to the client in the early sessions of MET. It is an example of the type of form that may be adapted for use in other reseach studies involving MET.

Understanding Your Personal Feedback Report

Project MATCH clients receive a copy of this material to take home with them to read in conjunction with their PFR. It summarizes important information that helps the client understand the implications of their scores on the assessment instruments. Again, it is an example of the Project MATCH material that may be adapted for use in other research studies involving MET.

"Alcohol and You"

This pamplet was developed by Dr. William R. Miller and is suitable for duplication and distribution to clients.