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Appendix A: Assessment Feedback Procedures

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Preface

The instructions contained in appendix A refer to the assessment feedback components of Motivational Enhancement Therapy, as practiced in Project MATCH. It is not necessary, however, to use exactly the same assessment instruments as were employed in Project MATCH. The basic idea is to assess a range of dimensions, with particular emphasis on those likely to reflect early problems or risk. If you wish to replicate the exact procedures used in MATCH, information is provided at the end of this appendix for obtaining the needed instruments. You may, however, construct your own assessment battery and design a corresponding Personal Feedback Report (PFR) based on normative data for the instruments you have chosen. The PFR used in Project MATCH is reproduced following page 89.

In general, your assessment battery should sample a variety of potential problem and risk domains. Here is a brief list of pertinent domains, with examples of appropriate assessment approaches for each.

Alcohol Consumption

The volume of alcohol consumption is a primary dimension for assessment, because all other risk and problem domains are related to the quantity and frequency of use. There are four basic approaches for quantifying alcohol consumption.

Quantity/ Frequency Questionnaire

The simplest approach is to ask a few structured questions regarding the frequency (e.g., how many days per month does the person drink) and quantity of consumption (e.g., on a drinking day, how many drinks does the person have on average). Such questions can be aided by describing a standard drink unit (see Miller et al. 1991 for alternatives) or asking separately about different kinds of beverages (beer, wine, spirits, etc.). An advantage of this approach is that, unlike the others, it can be administered by paper and pencil questionnaire. This method appears to underestimate actual consumption, however, and reliability and validity parameters have not been established.

Grid Averaging

A second approach is to reconstruct, by structured interview, a typical drinking week and then account for episodes of drinking that deviate from this pattern. This approach was introduced by Miller and Marlatt (1984) and has been employed in a variety of studies.

Timeline Followback

A third and still more detailed approach is to reconstruct drinking by filling in an actual calendar for the past few weeks or months. Day by day drinking data are obtained, taking advantage of the memory-prompting value of a calendar (Sobell et al. 1980). The Form 90 approach used in Project MATCH (see below) represents a hybrid of the timeline and grid averaging methods.

Drinking Diary

Finally, individuals can be asked to keep a daily diary of alcohol consumption. These records can than be converted into quantitative data. A freeware computer program for this purpose has been developed by Markham, Miller, and Arciniega (see resource list at the end of this appendix).

Alcohol-Related Problems

As heavy drinking continues, life problems tend to accumulate. Some counting of such accumulation is a common measure of problem severity. Measures such as the Michigan Alcoholism Screening Test (MAST; Selzer 1971) combine life problems with other factors such as alcohol dependence symptoms and help seeking. Miller and Marlatt (1984) attempted to differentiate between common problematic consequences of heavy drinking and other life problems, which may or may not be alcohol related. The DRINC questionnaire (see below), developed for Project MATCH, is intended as a purer measure of negative consequences of drinking, apart from alcohol dependence signs.

Alcohol Dependence

The alcohol dependence syndrome is currently a central diagnostic concept. Severity of dependence represents a third dimension to be tapped in comprehensive assessment. A variety of alcohol dependence scales have been published. Skinner's Alcohol Dependence Scale (Skiller and Horn 1984) has been a popular instrument in North America, with strong pyschometric characteristics.

Physical Health

Heavy drinking also has predictable effects on physical health. The most common evaluation approach in this domain has been a serum chemistry profile, screening for elevations on variables commonly affected by excessive drinking. These include liver enzymes (SGOT, SGPT, GGT), mean corpuscular volume (MCV), and high-density lipoprotein (HDL). Blood pressure can also be screened, because heavy drinking contributes to hypertension.

Neuro-psychological Functioning

Knowledge of all of the above domains provides relatively little information about a person's cognitive functioning. Problem drinkers have been found to be impaired on a variety of neuropsychological tests (Miller and Saucedo 1983). Both Project MATCH and other checkup

and feedback interventions have included neuropsychological test results (see Miller and Sovereign 1989; Miller et al. 1988), although interventions can also be effective without the inclusion of neuropsychological testing (Bien and Miller submitted; Brown and Miller submitted). Tests that commonly show impairment include the Block Design and Digit/Symbol subtests of the Wechsler Adult Intelligence Scale, the Wisconsin Card Sorting Task, and Halstead-Reitan subtests including the Tactual Performance Test, the Trail-Making Test, and the Categories Test.

Risk Factors

Markers of high risk for alcohol problems can also be measured, apart from the individual's current level of use and its consequences. Family history of alcohol/drug problems can be obtained by a variety of methods (e.g., Cacciola et al. 1987; Miller and Marlatt 1984). Of personality scales designed to detect correlates of risk for substance abuse, the MacAndrew scale has fared best in research, though others are available (Jacobson 1989; Miller 1976). Beliefs about alcohol, as assessed by Brown's Alcohol Expectancy Questionnaire, have also been found to be predictive of risk (Brown 1985).

Motivation for Change

Various approaches are available for measuring the extent of an individual's motivation for changing drinking. Some consist of simple Likert scales assessing commitment to abstinence or other change goals (e.g., Hall et al. 1990). Self-efficacy scales can be constructed to ask about confidence in one's ability to change. Respondents can be asked to rate the extent to which alcohol is helping or harming them on a range of life dimensions (Appel and Miller 1984). Stages of change derived from the Prochaska and DiClemente (1984) theoretical perspective were used as the basis for construction of the University of Rhode Island Change Assessment (Prochaska and DiClemente 1992; DiClemente and Hughes 1990) and the alcohol-specific Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES; Miller).

Comprehensive Assessment Approaches

Several questionnaires and structured interview protocols provide a range of quantitative scores that can be compared with normative or diagnostic standards. None of these taps all of the above dimensions, but each provides a basis for judging status on several domains. The Alcohol Use Inventory (AUI; Horn et al. 1987) is a widely used and well-developed self-administered questionnaire that permits comparison of individual with normatived scores. The materials necessary to administer, score, and interpret the AUI are available from National Computer Systems, P.O. Box 1416, Minneapolis, MN 55440. The kit includes the AUI manual, forms, client test book, hand-scored answer key templates, and the AUI profile sheet, which summarizes the scores and can be given to the client. Structured interviews include the Addiction Severity Index (ASI; Cacciola et al. 1987), the Comprehen-

sive Drinker Profile (CDP; Miller and Marlatt 1984, 1987), and the Form 90 interview developed for Project MATCH (see below).

The crucial point is that the battery of assessment procedures to be used as a basis for feedback can be tailored to the needs, time demands, and client characteristics of a program. What follows is but one example—from Project MATCH—of how assessment feedback can be done within the context of Motivational Enhancement Therapy.

The Project MATCH Assessment Feedback Protocol and Procedures for Completing The PFR

Prior to the first session with an MET client, the Personal Feedback Report is prepared by obtaining the pertinent data from the client's file. The following information from the Project MATCH assessment battery is used:

- AUDIT score from the Quickscreen
- Form 90–I (Initial Intake)
- ASI family history section
- MacAndrew scale score
- DRINC questionnaire
- Serum chemistry profile
- Neuropsychological test results
- Alcohol Use Inventory

BACCuS, an IBM–PC software program, is used for converting alcohol consumption data into standardized measures (Markham et al. submitted).

Alcohol Consumption

The first datum to be presented to the client is the number of standard drinks consumed during a week of drinking. This calculation is available from Form 90–I, the Project MATCH interview protocol for quantifying alcohol consumption. Some degree of judgment is needed here, but remember that the goal is to provide clients with a fair picture of their alcohol consumption during a typical drinking week. If the Steady Pattern Chart has been completed (page 6), use line 38 as the number of standard drinks per week. If no Steady Pattern Chart has been completed, the client's drinking was too variable to provide a consistent weekly pattern. In this case, consult the Summary Statistics sheet. If the client abstained on fewer than 10 percent of days *during the 90-day window,* multiply the "Average SECs per drinking

day" by 7 to obtain the number of standard drinks per week. Be sure you are examining the 90-day window and not the whole current period. If abstinent days exceed 10 percent, examine the calendar to determine whether these abstinent days mostly occurred within drinking weeks (e.g., no drinking on Monday through Wednesday) or whether they occurred in blocks in between periods of drinking (i.e., periodic drinker). In the former case, determine the typical number of drinking days in an average week and multiply this number of days by the Average SECs per drinking day (from the Summary Sheet) to obtain the number of standard drinks per week. In the latter case—a purely periodic drinker—determine from the calendar whether drinking episodes are normally at least 7 days in length. If so, use the same procedure as for the Steady Pattern Chart: multiply the Average SECs per drinking day by 7 to describe the number of standard drinks consumed during a typical week of drinking. If drinking episodes are typically shorter than 1 week (e.g., 3 days), multiply the average number of days in an episode by the Average SECs per drinking day (from the Summary Statistics). Again, remember that the guiding principle is to describe the number of standard drinks that the client consumed, on average, in a drinking week.

When you have obtained the client's average number of drinks per drinking week, use table 3 to obtain the client's percentile among American adults. Note the separate norms for men and women.

Estimated Blood Alcohol Concentration Peaks

The second set of data presented to Project MATCH clients consists of computer-projected blood alcohol concentration (BAC) peaks, based on alcohol consumption patterns reported on Form 90–I. These projections are computed by BACCuS and will normally have been completed by the research assistant who conducted the Form 90–I interview. Nevertheless, you should check these calculations using BACCuS. Any projected peak over 600 mg% should be reported as 600 mg%. The reasoning here is that projections above this level are likely to be overestimates, because actual BAC peaks above 600 mg%, though possible, are relatively rare.

The BAC peak for a typical drinking week is obtained from line 39 of Form 90–I. This is the highest intoxication peak from the typical drinking week grid. Note that it may be necessary to use the BACCuS program (Menu #3, BAC Peak for an Episode) to estimate BAC peaks for several different days in order to determine which yielded the highest BAC. It is not always obvious, from visual inspection, which period will produce the highest BAC peak. Where a day contains at least two periods of drinking separated by several hours (e.g., 6 drinks from noon until 2:00 pm and then 8 drinks from 7:00–11:00 pm), it is wise to try the BAC level for each period within the day, as well as for the whole day. (In the above example, you would run 6 drinks in 2 hours, 8 drinks in 4 hours, and 14 drinks in 11 hours. The resulting BAC projections for a 160-pound male would be 109, 124, and 152,

Table 3. Alcohol consumption norms for U.S. adults, in percents

Drinks per week	Total	Men	Women
0	35	29	41
1	58	46	68
2	66	54	77
3	68	57	78
4	71	61	82
5	77	67	86
6	78	68	87
7	80	70	89
8	81	71	89
9	82	73	90
10	83	75	91
11	84	75	91
12	85	77	92
13	86	77	93
14	87	79	94
15	87	80	94
16	88	81	94
17	89	82	95
18	90	84	96
19	91	85	96
20	91	86	96
21	92	88	96
22	92	88	97
23–24	93	88	97
25	93	89	98
26–27	94	89	98
28	94	90	98
29	95	91	98
30–33	95	92	98
34–35	95	93	98
36	96	93	98
37–39	96	94	98
40	96	94	99
41–46	97	95	99
47–48	97	96	99
49–50	98	97	99
51–62	98	97	99
63–64	99	97	>99.5
65–84	99	98	>99.6
85–101	99	99	>99.9
102–159	>99.5	99	>99.9
160+	>99.8	>99.5	>99.9

Source: 1990 National Alcohol Survey, Alcohol Research Group, Berkeley. Courtesy of Dr. Robin Room

respectively. In this case, the BAC of 152, from 14 drinks in 11 hours, would be used.) If the Steady Pattern Chart was not completed on 90–I, leave this line blank.

The BAC peak for a heavier day of drinking is obtained from the Highest Peak BAC line of the Summary Statistics sheet. This represents the *highest* BAC peak reached during the 90-day period. This will never be lower than line 39 but may be the same as line 39. In this case, the number on both lines of section 2 would be the same.

Risk Factors

The third feedback panel on the PFR reflects five risk factors. Higher scores on these scales are associated with greater risk and severity of alcohol-related problems.

Tolerance Level

Tolerance level is inferred from the BAC peaks reached during the 90-day window. The rationale is that the higher the projected BAC peak, the higher the individual's tolerance. Use the higher of the two numbers in Section 2 to arrive at the classification:

0–60 mg%	Low tolerance
61–120 mg%	Medium tolerance
121–180 mg%	High tolerance
181 mg% +	Very high tolerance

Other Drug Risk

Other drug risk is judged from the lifetime use of other drugs, as reported on page 10 of Form 90–I. The rationale is that more frequent use of other drugs, or any use of drugs with higher dependence potential, is associated with greater risk for serious consequences and complications. Use the following classification system:

HIGH RISK	Any use of cocaine or crack
or	Any use of heroin, methadone, or other opiates
or	Frequent use (more than 3 months of at least once per week) of any other drug class except tobacco: Marijuana, Hash, THC Amphetamines, Stimulants, Diet Pills Tranquilizers Barbiturates
MEDIUM RISK	Any lifetime nonprescription use, but not frequent use (i.e., 3 months or less of weekly use) of any drug class except tobacco, opiates or cocaine: Marijuana, Hash, THC Amphetamines, Stimulants, Diet Pills Tranquilizers Barbiturates
LOW RISK	No use of other drugs (Code = 0 for all 10 drug classes except tobacco)

Family Risk

Family risk is judged from the family history of alcohol and other drug problems obtained in the ASI interview. The following weighting

system is used to arrive at a total Family Risk score. Assign the designated number of points for *each* blood relative indicated to be positive for alcohol/drug problems:

If father positive	add 2 points
If mother positive	add 2 points
For each brother positive	add 2 points
For each sister positive	add 2 points
For each grandparent positive	add 1 point
For each uncle or aunt positive	add 1 point

Risk levels are judged according to the following classification system:

Family Risk Classifications

0–1	Low risk
2–3	Medium risk
4–6	High risk
7+	Very high risk

MacAndrew Scale

The MacAndrew Scale score can be obtained directly from this scale. The following classification system is used for risk:

MacAndrew Scale Risk Levels

0–23	Normal range; lower risk
24–29	Medium risk
30+	High risk

Age at Onset

Age at onset is the fifth risk factor in this panel. The rationale is that younger onset of problems is associated with a more severe course and symptomatology. Age at onset is calculated by the following procedure, using three items obtained from the DRINC (Drinker Inventory of Consequences) scale.

Calculating Age at Onset

1. Record these three numbers, if applicable, and sum them (from page 7 of Drinker Inventory of Consequences)

   Age of first regular intoxication (item 17): _____

   Age of first loss-of-control (item 18): + _____

   Age of first alcohol problems (item 19): + _____

   TOTAL _____

2. Divide by the number of ages used in step 1:

   Age at onset = _____

NOTE: If an age item was not recorded for the client (e.g., the client had never experienced loss of control), the average is based on the other two age items (divide by 2). If only one age item was completed, this constitutes the age at onset.

Risk level is judged according to this classification system:

Under 25.0	Higher risk
25.0–39.9	Medium risk
40.0 +	Lower risk

Problem Severity

The *AUDIT* score is recorded directly from this scale within the Quickscreen. The *DRINC* alcohol severity score is recorded directly from this questionnaire and is the sum of scores for the 55 *lifetime* consequences. Print the client's raw score for each of these two scales under the corresponding severity range (e.g., a 19 on the AUDIT would be printed under the HIGH descriptor, below the 16–25 range designation.)

The other information reviewed in the fourth panel is the profile of results from the AUI. Use the AUI Profile form, published by National Computer Systems, for this purpose. Circle the client's raw scores for all scales and connect the circles with straight lines. Do not cross the solid lines that divide categories.

Serum Chemistry

Obtain the client's serum chemistry scores on SGOT, GGTP, SGPT, uric acid, and bilirubin (total) from the lab report. Record these lab scores on the corresponding lines of the PFR. Interpretive ranges are shown on the PFR.

Neuro-psychological Test Results

A 5-point performance scale is used to interpret neuropsychological test results:

1	Well above average
2	Above average
3	Average
4	Below average
5	Well below average

The scoring systems below attempt to correct for effects of age and/or education level, based on available norms. The Shipley-Hartford Vocabulary test is used as a "hold" test that is less likely to be affected by alcohol, thus providing an estimate of the level of performance that would ordinarily be expected from an individual.

Shipley-Hartford Vocabulary Test (SV)

Use the *age-adjusted* score to obtain a normalized T-score, as specified in the revised Shipley-Hartford manual. Then use the following table to convert the T-score into our 1–5 scale:

≥ 63	1	Well above average
57–62	2	Above average
44–56	3	Average
38–43	4	Below average
≤37	5	Well below average

Shipley-Hartford Abstraction Test (SHVA)

Use the *age-adjusted* score to obtain a normalized T-score, as specified in the revised Shipley-Hartford manual. Then use the following table to convert the T-score into our 1–5 scale:

≥ 63	1	Well above average
57–62	2	Above average
44–56	3	Average
38–43	4	Below average
≤ 37	5	Well below average

Trail-Making Test, Form A (TMTA)

The score is the number of seconds to complete Form A.

	Age			
	20–39	**40–49**	**50–59**	**60–69**
1	≤ 21	≤ 22	≤ 25	≤ 29
2	22–26	23–28	26–29	30–35
3	27–41	29–44	30–48	36–66
4	42–49	45–58	49–66	67–103
5	≥ 50	≥ 59	≥ 67	≥ 104

Based on Lezak 1976, Table 17–6, page 558. Cutting points represent the 10th, 25th, 75th, and 90th percentiles.

Trail-Making Test, Form B (TMTB)

The score is the number of seconds to complete Form B.

	Age			
	20–39	**40–49**	**50–59**	**60–69**
1	≤ 45	≤ 49	≤ 55	≤ 64
2	46–55	50–57	56–75	65–89
3	56–93	58–99	76–134	90–171
4	94–128	100–150	135–176	172–281
5	≥ 129	≥ 151	≥ 177	≥ 282

Based on Lezak, 1976, Table 17–6, page 558. Cutting points represent the 10th, 25th, 75th, and 90th percentiles.

Symbol Digit Modalities Test (SYDM)

The score for the Symbol Digit Modalities Test is the number of correct digits associated with their respective symbols within the 90-second written testing period.

Use this table if client has 12 years or less of education.

Age	**1**	**2**	**3**	**4**	**5**
18–24	≥ 67	63–66	47–62	42–46	≤ 41
25–34	≥ 65	61–64	46–60	41–45	≤ 40
35–44	≥ 64	60–63	44–59	39–43	≤ 38
45–54	≥ 62	57–61	39–56	33–38	≤ 32
55–64	≥ 55	51–54	36–53	31–35	≤ 30
65+	≥ 47	42–46	25–41	20–24	≤ 19

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).

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