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A U D I T

The Alcohol Use Disorders Identification Test

Guidelines for Use in Primary Care

Second Edition

World Health Organization
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Abstract

This manual introduces the AUDIT, the Alcohol Use Disorders Identification Test, and describes how to use it to identify persons with hazardous and harmful patterns of alcohol consumption. The AUDIT was developed by the World Health Organization (WHO) as a simple method of screening for excessive drinking and to assist in brief assessment. It can help in identifying excessive drinking as the cause of the presenting illness. It also provides a framework for intervention to help hazardous and harmful drinkers reduce or cease alcohol consumption and thereby avoid the harmful consequences of their drinking. The first edition of this manual was published in 1989 (Document No. WHO/MNH/DAT/89.4) and was subsequently updated in 1992 (WHO/PSA/92.4). Since that time it has enjoyed widespread use by both health workers and alcohol researchers. With the growing use of alcohol screening and the international popularity of the AUDIT, there is a need to revise the manual to take into account advances in research and clinical experience.

This manual is written primarily for health care practitioners, but other professionals who encounter persons with alcohol-related problems may also find it useful. It is designed to be used in conjunction with a companion document that provides complementary information about early intervention procedures, entitled "Brief Intervention for Hazardous and Harmful Drinking: A Manual for Primary Care". Together these manuals describe a comprehensive approach to screening and brief intervention (SBI) for alcohol-related problems in primary health care.

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Table of Contents

4	Purpose of this Manual
5	Why Screen for Alcohol Use?
8	The Context of Alcohol Screening
10	Development and Validation of the AUDIT
14	Administration Guidelines
19	Scoring and Interpretation
21	How to help Patients
25	Programme Implementation
	Appendix
28	A. Research Guidelines for the AUDIT
30	B. Suggested Format for AUDIT Self-report Questionnaire
32	C. Translation and Adaptation to Specific Languages, Cultures and Standards
33	D. Clinical Screening Procedures
34	E. Training Materials for AUDIT
35	References

Purpose of this Manual

This manual introduces the AUDIT, the Alcohol Use Disorders Identification Test, and describes how to use it to identify persons with hazardous and harmful patterns of alcohol consumption. The AUDIT was developed by the World Health Organization (WHO) as a simple method of screening for excessive drinking and to assist in brief assessment.^{1,2} It can help identify excessive drinking as the cause of the presenting illness. It also provides a framework for intervention to help risky drinkers reduce or cease alcohol consumption and thereby avoid the harmful consequences of their drinking. The AUDIT also helps to identify alcohol dependence and some specific consequences of harmful drinking. It is particularly designed for health care practitioners and a range of health settings, but with suitable instructions it can be self-administered or used by non-health professionals.

To this end, the manual will describe:

- Reasons to ask about alcohol consumption
- The context of alcohol screening
- Development and validation of the AUDIT
- The AUDIT questions and how to use them
- Scoring and interpretation
- How to conduct a clinical screening examination
- How to help patients who screen positive
- How to implement a screening programme

The appendices to this manual contain additional information useful to practitioners and researchers. Further research on the reliability, validity, and implementation of screening with the AUDIT is suggested using guidelines outlined in Appendix A. Appendix B contains an example of the AUDIT in a self-report questionnaire format. Appendix C provides guidelines for the translation and adaptation of the AUDIT. Appendix D describes clinical screening procedures using a physical exam, laboratory tests and medical history data. Appendix E lists information about available training materials.

Why Screen for Alcohol Use?

There are many forms of excessive drinking, that cause substantial risk or harm to the individual. They include high level drinking each day, repeated episodes of drinking to intoxication, drinking that is actually causing physical or mental harm, and drinking that has resulted in the person becoming dependent or addicted to alcohol. Excessive drinking causes illness and distress to the drinker and his or her family and friends. It is a major cause of breakdown in relationships, trauma, hospitalization, prolonged disability and early death. Alcohol-related problems represent an immense economic loss to many communities around the world.

AUDIT was developed to screen for excessive drinking and in particular to help practitioners identify people who would benefit from reducing or ceasing drinking. The majority of excessive drinkers are undiagnosed. Often they present with symptoms or problems that would not normally be linked to their drinking. The AUDIT will help the practitioner identify whether the person has hazardous (or risky) drinking, harmful drinking, and alcohol dependence.

*Hazardous drinking*³ is a pattern of alcohol consumption that increases the risk of harmful consequences for the user or others. Hazardous drinking patterns are of public health significance despite the absence of any current disorder in the individual user.

Harmful use refers to alcohol consumption that results in consequences to physical and mental health. Some would also consider social consequences among the harms caused by alcohol^{3, 4}.

Alcohol dependence is a cluster of behavioural, cognitive, and physiological phenomena that may develop after repeated alcohol use⁴. Typically, these phenomena include a strong desire to consume alcohol, impaired control over its use, persistent drinking despite harmful consequences, a higher priority given to drinking than to other activities and obligations, increased alcohol tolerance, and a physical withdrawal reaction when alcohol use is discontinued.

Alcohol is implicated in a wide variety of diseases, disorders, and injuries, as well as many social and legal problems^{5,6,7}. It is a major cause cancer of the mouth, esophagus, and larynx. Liver cirrhosis and pancreatitis often result from long-term, excessive consumption. Alcohol causes harm to fetuses in women who are pregnant. Moreover, much more common medical conditions, such as hypertension, gastritis, diabetes, and some forms of stroke are likely to be aggravated even by occasional and short-term alcohol consumption, as are mental disorders such as depression. Automobile and pedestrian injuries, falls, and work-related harm frequently result from excessive alcohol consumption. The risks related to alcohol are linked to the pattern of drinking and the amount of consumption⁵. While persons with alcohol

dependence are most likely to incur high levels of harm, the bulk of harm associated with alcohol occurs among people who are *not* dependent, if only because there are so many of them⁸. Therefore, the identification of drinkers with various types and degrees of at-risk alcohol consumption has great potential to reduce all types of alcohol-related harm.

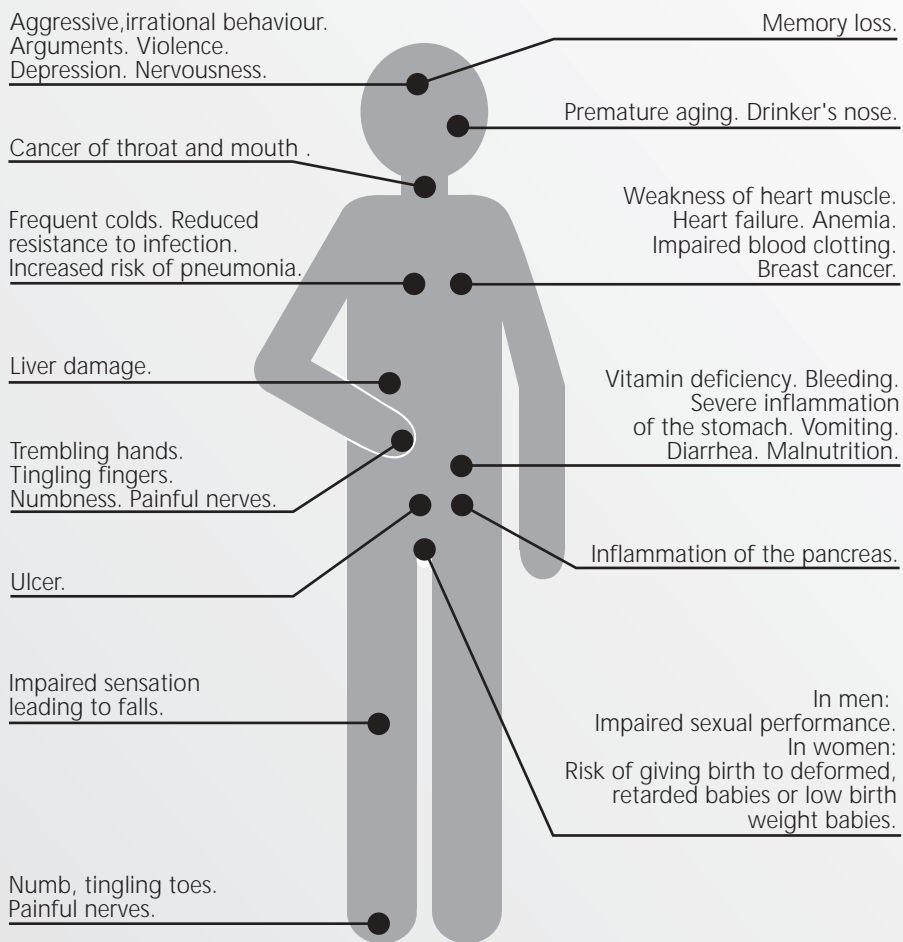
Figure 1 illustrates the large variety of health problems associated with alcohol use. Although many of these medical consequences tend to be concentrated in persons with severe alcohol dependence, even the use of alcohol in the range of 20-40 grams absolute alcohol per day is a risk factor for accidents, injuries, and many social problems^{5, 6}.

Many factors contribute to the development of alcohol-related problems. Ignorance of drinking limits and of the risks associated with excessive alcohol consumption are major factors. Social and environmental influences, such as customs and attitudes that favor heavy drinking, also play important roles. Of utmost importance for screening, however, is the fact that people who are *not* dependent on alcohol may stop or reduce their alcohol consumption with appropriate assistance and effort. Once dependence has developed, cessation of alcohol consumption is more difficult and often requires specialized treatment. Although not all hazardous drinkers become dependent, no one develops alcohol dependence without having engaged for some time

in hazardous alcohol use. Given these factors, the need for screening becomes apparent.

Screening for alcohol consumption among patients in primary care carries many potential benefits. It provides an opportunity to educate patients about low-risk consumption levels and the risks of excessive alcohol use. Information about the amount and frequency of alcohol consumption may inform the diagnosis of the patient's presenting condition, and it may alert clinicians to the need to advise patients whose alcohol consumption might adversely affect their use of medications and other aspects of their treatment. Screening also offers the opportunity for practitioners to take preventative measures that have proven effective in reducing alcohol-related risks.

Figure 1



Continued Risky Drinking may lead to social, legal, medical, domestic, job and financial problems. It may also cut your lifespan and lead to accidents and death from drunken driving.

The Context of Alcohol Screening

While this manual focuses on using the AUDIT to screen for alcohol consumption and related risks in primary care medical settings, the AUDIT can be effectively applied in many other contexts as well. In many cases procedures have already been developed and used in these settings. Box 1 summarizes information about the settings, screening personnel, and target groups considered appropriate for a screening programme using the AUDIT. Murray⁹ has argued that screening might be conducted profitably with:

- general hospital patients, especially those with disorders known to be associated with alcohol dependence (e.g., pancreatitis, cirrhosis, gastritis, tuberculosis, neurological disorders, cardiomyopathy);
- persons who are depressed or who attempt suicide;
- other psychiatric patients;
- patients attending casualty and emergency services;
- patients attending general practitioners;
- vagrants;
- prisoners; and
- those cited for legal offences connected with drinking (e.g., driving while intoxicated, public intoxication).

To these should be added groups considered by a WHO Expert Committee⁷ to be at high risk of developing alcohol-related problems: middle-aged males, adolescents, migrant workers, and certain occupational groups (such as business executives, entertainers, sex workers, publicans, and seamen). The nature of the risk differs by age, gender, drinking context, and drinking pattern, with sociocultural factors playing an important role in the definition and expression of alcohol-related problems⁶.

Box 1**Personnel, settings and groups considered appropriate for a screening programme using the AUDIT**

Setting	Target Group	Screening Personnel
Primary care clinic	Medical patients	Nurse, social workers
Emergency room	Accident victims, Intoxicated patients, trauma victims	Physician, nurse, or staff
Physician's Room Surgery	Medical patients	General practitioner family physician or staff
General Hospital wards Out-patient clinic	Patients with hypertension heart disease, gastrointestinal or neurological disorders	Internist, staff
Psychiatric hospital	Psychiatrist patients, particularly those who are suicidal	Psychiatrist, staff
Court, jail, prison	DWI offenders violent criminals	Officers, Counsellors
Other health-related facilities	Persons demonstrating impaired social <i>occupational</i> functioning (e.g. marital discord, child neglect, etc.)	Health and human service workers,
Military Services	Enlisted men and officers	Medics
Work place Employee assistance Programme	Workers, especially those having problems with productivity, absenteeism or accidents	Employee assistance staff

Development and Validation of the AUDIT

The AUDIT was developed and evaluated over a period of two decades, and it has been found to provide an accurate measure of risk across gender, age, and cultures^{1, 2, 10}. Box 2 describes the conceptual domains and item content of the AUDIT, which consists of 10 questions about recent alcohol use, alcohol dependence symptoms, and alcohol-related problems. As the first screening test designed specifically for use in primary care settings, the AUDIT has the following advantages:

- Cross-national standardization: the AUDIT was validated on primary health care patients in six countries^{1, 2}. It is the only screening test specifically designed for international use;
- Identifies hazardous and harmful alcohol use, as well as possible dependence;
- Brief, rapid, and flexible;
- Designed for primary health care workers;
- Consistent with ICD-10 definitions of alcohol dependence and harmful alcohol use^{3, 4};
- Focuses on recent alcohol use.

In 1982 the World Health Organization asked an international group of investigators to develop a simple screening instrument². Its purpose was to identify persons with early alcohol problems using procedures that were suitable for health systems in both developing and developed countries. The investigators reviewed a variety of self-report, laboratory, and clinical procedures that had been used for this purpose in different countries. They then initiated a cross-national study to select the best features of these various national approaches to screening¹.

This comparative field study was conducted in six countries (Norway, Australia, Kenya, Bulgaria, Mexico, and the United States of America).

The method consisted of selecting items that best distinguished low-risk drinkers from those with harmful drinking. Unlike previous screening tests, the new instrument was intended for the early identification of hazardous and harmful drinking as well as alcohol dependence (alcoholism). Nearly 2000 patients were recruited from a variety of health care facilities, including specialized alcohol treatment centers. Sixty-four percent were current drinkers, 25% of whom were diagnosed as alcoholics.

Participants were given a physical examination, including a blood test for standard blood markers of alcoholism, as well as an extensive interview assessing demographic characteristics, medical history, health complaints, use of alcohol and drugs, psychological reactions to alcohol, problems associated with drinking, and family history of alcohol problems. Items were selected for the AUDIT from this pool of questions primarily on the basis of correlations with daily alcohol intake, frequency of consuming six or more drinks per drinking episode, and their ability to discriminate hazardous and harmful drinkers. Items were also chosen on the basis of face validity, clinical relevance, and coverage of relevant conceptual domains (i.e., alcohol use, alcohol dependence, and adverse consequences of drinking). Finally, special attention in item selection was given to gender appropriateness and cross-national generalizability.

Box 2**Domains and Item Content of the AUDIT**

Domains	Question Number	Item Content
Hazardous Alcohol Use	1	Frequency of drinking
	2	Typical quantity
	3	Frequency of heavy drinking
Dependence Symptoms	4	Impaired control over drinking
	5	Increased salience of drinking
	6	Morning drinking
Harmful Alcohol Use	7	Guilt after drinking
	8	Blackouts
	9	Alcohol-related injuries
	10	Others concerned about drinking

Sensitivities and specificities of the selected test items were computed for multiple criteria (i.e., average daily alcohol consumption, recurrent intoxication, presence of at least one dependence symptom, diagnosis of alcohol abuse or dependence, and self-perception of a drinking problem). Various cut-off points in total scores were considered to identify the value with optimal sensitivity (percentage of positive cases that the test correctly identified) and specificity (percentage of negative cases that the test correctly identified) to distinguish hazardous and harmful alcohol use. In addition, validity was also computed against a composite diagnosis of harmful use and dependence. In the test develop-

ment samples¹, a cut-off value of 8 points yielded sensitivities for the AUDIT for various indices of problematic drinking that were generally in the mid 0.90's. Specificities across countries and across criteria averaged in the 0.80's.

The AUDIT differs from other self-report screening tests in that it was based on data collected from a large multinational sample, used an explicit conceptual-statistical rationale for item selection, emphasizes identification of hazardous drinking rather than long-term dependence and adverse drinking consequences, and focuses primarily on symptoms occurring during the recent past rather than "ever."

Once the AUDIT had been published, the developers recommended additional validation research. In response to this request, a large number of studies have been conducted to evaluate its validity and reliability in different clinical and community samples throughout the world¹⁰. At the recommended cut-off of 8, most studies have found very favorable sensitivity and usually lower, but still acceptable, specificity, for current ICD-10 alcohol use disorders^{10,11,12} as well as the risk of future harm¹². Nevertheless, improvements in detection have been achieved in some cases by lowering or raising the cut-off score by one or two points, depending on the population and the purpose of the screening programme^{11,12}.

A variety of subpopulations have been studied, including primary care patients^{13, 14, 15}, emergency room cases¹¹, drug users¹⁶, the unemployed¹⁷, university students¹⁸, elderly hospital patients¹⁹, and persons of low socio-economic status²⁰. The AUDIT has been found to provide good discrimination in a variety of settings where these populations are encountered. A recent systematic review²¹ of the literature has concluded that the AUDIT is the best screening instrument for the whole range of alcohol problems in primary care, as compared to other questionnaires such as the CAGE and the MAST.

Cultural appropriateness and cross-national applicability were important considerations in the development of the AUDIT^{1, 2}. Research has been conducted in a wide variety of countries and

cultures^{11, 12, 13, 15, 19, 22, 23, 24}, suggesting that the AUDIT has fulfilled its promise as an international screening test.

Although evidence on women is somewhat limited^{11, 12, 24}, the AUDIT seems equally appropriate for males and females. The effect of age has not been systematically analyzed as a possible influence on the AUDIT, but one study¹⁹ found low sensitivity but high specificity in patients above age 65. The AUDIT has proven to be accurate in detecting alcohol dependence in university students¹⁸.

In comparison to other screening tests, the AUDIT has been found to perform equally well or at a higher degree of accuracy^{10, 11, 25, 26} across a wide variety of criterion measures. Bohn, et al.²⁷ found a strong correlation between the AUDIT and the MAST ($r=.88$) for both males and females, and correlations of .47 and .46 for males and females, respectively, on a covert content alcoholism screening test. A high correlation coefficient (.78) was also found between the AUDIT and the CAGE in ambulatory care patients²⁶. AUDIT scores were found to correlate well with measures of drinking consequences, attitudes toward drinking, vulnerability to alcohol dependence, negative mood states after drinking, and reasons for drinking²⁷. It appears that the total score on the AUDIT reflects the extent of alcohol involvement along a broad continuum of severity.

Two studies have considered the relation between AUDIT scores and future indicators of alcohol-related problems and more

global life functioning. In one study¹⁷, the likelihood of remaining unemployed over a two year period was 1.6 times higher for individuals with scores of 8 or more on the AUDIT than for comparable persons with lower scores. In another study²⁸, AUDIT scores of ambulatory care patients predicted future occurrence of a physical disorder, as well as social problems related to drinking. AUDIT scores also predicted health care utilization and future risk of engaging in hazardous drinking²⁸.

Several studies have reported on the reliability of the AUDIT^{18, 26, 29}. The results indicate high internal consistency, suggesting that the AUDIT is measuring a single construct in a reliable fashion. A test-retest reliability study²⁹ indicated high reliability ($r = .86$) in a sample consisting of non-hazardous drinkers, cocaine abusers, and alcoholics. Another methodological study was conducted in part to investigate the effect of question ordering and wording changes on prevalence estimates and internal consistency reliability²². Changes in question ordering and wording did not affect the AUDIT scores, suggesting that within limits, researchers can exercise some flexibility in modifying the order and wording of the AUDIT items.

With increasing evidence of the reliability and validity of the AUDIT, studies have been conducted using the test as a prevalence measure. Lapham, et al.²³ used it to estimate prevalence of alcohol use disorders in emergency rooms (ERs) of three regional hospitals in Thailand.

It was concluded that the ER is an ideal setting for implementing alcohol screening with the AUDIT. Similarly, Piccinelli, et al.¹⁵ evaluated the AUDIT as a screening tool for hazardous alcohol intake in primary care clinics in Italy. AUDIT performed well in identifying alcohol-related disorders as well as hazardous use. Ivis, et al.²² incorporated the AUDIT into a general population telephone survey in Ontario, Canada.

Since the AUDIT User's Manual was first published in 1989³⁰, the test has fulfilled many of the expectations that inspired its development. Its reliability and validity have been established in research conducted in a variety of settings and in many different nations. It has been translated into many languages, including Turkish, Greek, Hindi, German, Dutch, Polish, Japanese, French, Portuguese, Spanish, Danish, Flemish, Bulgarian, Chinese, Italian, and Nigerian dialects. Training programmes have been developed to facilitate its use by physicians and other health care providers^{31, 32} (see Appendix E). It has been used in primary care research and in epidemiological studies for the estimation of prevalence in the general population as well as specific institutional groups (e.g., hospital patients, primary care patients). Despite the high level of research activity on the AUDIT, further research is needed, especially in the less developed countries. Appendix A provides guidelines for continued research on the AUDIT.

Administration Guidelines

The AUDIT can be used in a variety of ways to assess patients' alcohol use, but programmes to implement it should first set guidelines that consider the patient's circumstances and capacities. Additionally, care must be taken to tell patients why questions about alcohol use are being asked and to provide information they need to make appropriate responses. A decision must be made whether to administer the AUDIT orally or as a written, self-report questionnaire. Finally, consideration must be given to using skip-outs to shorten the screening for greater efficiency. This section recommends guidelines on such issues of administration.

Considering the Patient

All patients should be screened for alcohol use, preferably annually. The AUDIT can be administered separately or combined with other questions as part of a general health interview, a lifestyle questionnaire, or medical history. If health workers screen only those they consider most likely to have a "drinking problem", the majority of patients who drink excessively will be missed. However, it is important to consider the condition of the patients when asking them to answer questions about alcohol use. To increase the patient's receptivity to the questions and the accuracy of responding, it is important that:

- The interviewer (or presenter of the survey) be friendly and non-threatening;

- The patient is not intoxicated or in need of emergency care at the time;
- The purpose of the screening be clearly stated in terms of its relevance to the patient's health status;
- The information patients need to understand the questions and respond accurately be provided; and
- Assurance is given that the information will remain confidential.

Health workers should try to establish these conditions before the AUDIT is given. When these conditions are not present or when a patient is resistant, the Clinical Screening Procedures (discussed below) may provide an alternative course of action.

Choose the best possible circumstance for administering the AUDIT. For patients requiring emergency treatment or in great pain, it is best to wait until their medical condition has stabilized and they have become accustomed to the health setting where administration of the AUDIT is to take place. Look for signs of alcohol or drug intoxication. Patients who have alcohol on their breath or who appear intoxicated may be unreliable respondents. Consider screening at a later time. If this is not possible, make note of these findings on the patient's record.

When presented in a medical context with genuine concern for the patient's well being, patients are almost always open and responsive to the AUDIT questions. Moreover, most patients answer the questions honestly. Even when excessive

drinkers underestimate their consumption, they often qualify on the AUDIT scoring system as positive for alcohol risk.

Introducing the AUDIT

Whether the AUDIT is used as an oral interview or a written questionnaire, it is recommended that an explanation be given to patients of the content of the questions, the purpose for asking them, and the need for accurate answers. The following are illustrative introductions for oral delivery and written questionnaires:

“Now I am going to ask you some questions about your use of alcoholic beverages during the past year. Because alcohol use can affect many areas of health (and may interfere with certain medications), it is important for us to know how much you usually drink and whether you have experienced any problems with your drinking. Please try to be as honest and as accurate as you can be.”

“As part of our health service it is important to examine lifestyle issues likely to affect the health of our patients. This information will assist in giving you the best treatment and highest possible standard of care. Therefore, we ask that you complete this questionnaire that asks about your use of alcoholic beverages during the past year. Please answer as accurately and honestly as possible. Your health worker will discuss this issue with you. All information will be treated in strict confidence.”

This statement should be followed by a description of the types of alcoholic beverages typically consumed in the country or region where the patient lives (e.g., *“By alcoholic beverages we mean your use of wine, beer, vodka, sherry, etc.”*) If necessary, include a description of beverages that may not be considered alcoholic, (e.g. cider, low alcohol beer, etc.). With patients whose alcohol consumption is prohibited by law, culture, or religion (e.g., youths, observant Muslims), acknowledgment of such prohibition and encouragement of candor may be needed. For example, *“I understand others may think you should not drink alcohol at all, but it is important in assessing your health to know what you actually do.”*

Patient instructions should also clarify the meaning of a standard drink. Questions 2 and 3 of AUDIT ask about “drinks consumed”. The meaning of this word differs from one nation and culture to another. It is important therefore to mention the most common alcoholic beverages likely to be consumed and how much of each constitutes a drink (approximately 10 grams of pure ethanol). For example, one bottle of beer (330 ml at 5% ethanol), a glass of wine (140 ml at 12% ethanol), and a shot of spirits (40 ml at 40% ethanol) represent a standard drink of about 13 g of ethanol. Since the types and amounts of alcoholic drinks will vary according to culture and custom, the alcohol content of typical servings of beer, wine and spirits must be determined to adapt the AUDIT to particular settings. See Appendix C.

Oral Administration vs. Self-report Questionnaire

The AUDIT may be administered either as an oral interview or as a self-report questionnaire. Each method carries its own advantages and disadvantages that must be weighed in light of time and cost constraints. The relative merits of using the AUDIT as an interview vs. the self-report questionnaire are summarized in Box 3. The cognitive capacities (literacy, forgetfulness) and level of cooperation (defensiveness) of the patient should be considered. If the expectation is that primary care providers will manage all the care that patients will receive for their alcohol problems, an interview may have advantages. However, if the provider's responsibility will be limited to offering brief advice to patients who screen positive and referring more severe cases to other services, the questionnaire method may be preferable.

Whatever decision is made, it must be consistent with implementation plans to establish a comprehensive screening programme.

The AUDIT questions and responses are presented in Box 4 in a format suggested for an oral interview. Appendix B gives an example of the self-report questionnaire. Adaptation should be made to needs of the particular screening programme as well as the alcoholic beverages most commonly consumed in that society. Appendix C provides guidelines for translation and adaptation to national and local conditions.

If the AUDIT is administered as an interview, it is important to read the questions as written and in the order indicated. By following the exact wording, better comparability will be obtained between your results and those obtained by other interviewers. Most of the questions in the AUDIT are phrased in terms of "how

Box 3

Advantages of Different Approaches to AUDIT Administration

Questionnaire	Interview
Takes less time	Allows clarification of ambiguous answers
Easy to administer	Can be administered to patients with poor reading skills
Suitable for computer administration and scoring	
May produce more accurate answers	Allows seamless feedback to patient and initiation of brief advice

Box 4

The Alcohol Use Disorders Identification Test

Read questions as written. Record answers carefully. Begin the AUDIT by saying "Now I am going to ask you some questions about your use of alcoholic beverages during this past year." Explain what is meant by "alcoholic beverages" by using local examples of beer, wine, vodka, etc. Code answers in terms of "standard drinks". Place the correct answer number in the box at the right.

<p>1. How often do you have a drink containing alcohol?</p> <p>(0) Never [Skip to Qs 9-10] (1) Monthly or less (2) 2 to 4 times a month (3) 2 to 3 times a week (4) 4 or more times a week</p> <p style="text-align: right;"><input type="text"/></p>	<p>6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?</p> <p>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</p> <p style="text-align: right;"><input type="text"/></p>
<p>2. How many drinks containing alcohol do you have on a typical day when you are drinking?</p> <p>(0) 1 or 2 (1) 3 or 4 (2) 5 or 6 (3) 7, 8, or 9 (4) 10 or more</p> <p style="text-align: right;"><input type="text"/></p>	<p>7. How often during the last year have you had a feeling of guilt or remorse after drinking?</p> <p>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</p> <p style="text-align: right;"><input type="text"/></p>
<p>3. How often do you have six or more drinks on one occasion?</p> <p>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</p> <p><i>Skip to Questions 9 and 10 if Total Score for Questions 2 and 3 = 0</i></p> <p style="text-align: right;"><input type="text"/></p>	<p>8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?</p> <p>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</p> <p style="text-align: right;"><input type="text"/></p>
<p>4. How often during the last year have you found that you were not able to stop drinking once you had started?</p> <p>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</p> <p style="text-align: right;"><input type="text"/></p>	<p>9. Have you or someone else been injured as a result of your drinking?</p> <p>(0) No (2) Yes, but not in the last year (4) Yes, during the last year</p> <p style="text-align: right;"><input type="text"/></p>
<p>5. How often during the last year have you failed to do what was normally expected from you because of drinking?</p> <p>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</p> <p style="text-align: right;"><input type="text"/></p>	<p>10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?</p> <p>(0) No (2) Yes, but not in the last year (4) Yes, during the last year</p> <p style="text-align: right;"><input type="text"/></p>

Record total of specific items here

If total is greater than recommended cut-off, consult User's Manual.

often" symptoms occur. Provide the patient with the response categories given for each question (for example, "Never," "Several times a month," "Daily"). When a response option has been chosen, it is useful to probe during the initial questions to be sure that the patient has selected the most accurate response (for example, "You say you drink several times a week. Is this just on weekends or do you drink more or less every day?").

If responses are ambiguous or evasive, continue asking for clarification by repeating the question and the response options, asking the patient to choose the best one. At times answers are difficult to record because the patient may not drink on a regular basis. For example, if the patient was drinking excessively during the month before an accident, but not prior to that time, then it will be difficult to characterize the "typical" drinking sought by the question. In these cases it is best to record the amount of drinking and related symptoms for the heaviest drinking period in the past year, making note of the fact that this may be atypical or transitory for that individual.

Record answers carefully, making note of any special circumstances, additional information, and clinical observations. Often patients will provide the interviewer with useful comments about their drinking that can be valuable in the interpretation of the AUDIT total score.

Administering the AUDIT as a written questionnaire or by computer eliminates many of the uncertainties of patient responses by allowing only specific choices.

However, it eliminates the information obtained from the interview format. Moreover, it presumes literacy and ability of the patient to perform the required actions. It may also require less time on the part of health workers, if patients can complete the process alone. With time at a premium for both health workers and patients, ways of shortening the screening process merit consideration.

Shortening the Screening Process

Administered either orally or as a questionnaire, the AUDIT can usually be completed in two to four minutes and scored in a few seconds. However, for many patients it is unnecessary to administer the complete AUDIT because they drink infrequently, moderately, or abstain entirely from alcohol. The interview version of the AUDIT (Box 4) provides two opportunities to skip questions for such patients. If the patient answers in response to Question 1 that no drinking has occurred during the last year, the interviewer may skip to Questions 9-10, responses to which may indicate past problems with alcohol. Patients who score points on these questions may be considered at risk if they begin to drink again, and should be advised to avoid alcohol. It is recommended that this skip out instruction only be used with the interview or computer-assisted formats of the AUDIT.

A second opportunity to shorten AUDIT screening occurs after Question 3 has been answered. If the patient scored 0 on Questions 2 and 3, the interviewer may skip to Questions 9-10 because the patient's drinking has not exceeded the low risk drinking limits.

Scoring and Interpretation

The AUDIT is easy to score. Each of the questions has a set of responses to choose from, and each response has a score ranging from 0 to 4. In the interview format (Box 4) the interviewer enters the score (the number within parentheses) corresponding to the patient's response into the box beside each question. In the self-report questionnaire format (Appendix B), the number in the column of each response checked by the patient should be entered by the scorer in the extreme right-hand column. All the response scores should then be added and recorded in the box labeled "Total".

Total scores of 8 or more are recommended as indicators of hazardous and harmful alcohol use, as well as possible alcohol dependence. (A cut-off score of 10 will provide greater specificity but at the expense of sensitivity.) Since the effects of alcohol vary with average body weight and differences in metabolism, establishing the cut off point for all women and men over age 65 one point lower at a score of 7 will increase sensitivity for these population groups. Selection of the cut-off point should be influenced by national and cultural standards and by clinician judgment, which also determine recommended maximum consumption allowances. Technically speaking, higher scores simply indicate greater likelihood of hazardous and harmful drinking. However, such scores may also reflect greater severity of alcohol problems and dependence, as well as a greater need for more intensive treatment.

More detailed interpretation of a patient's total score may be obtained by determining on which questions points were scored. In general, a score of 1 or more on Question 2 or Question 3 indicates consumption at a hazardous level. Points scored above 0 on questions 4-6 (especially weekly or daily symptoms) imply the presence or incipience of alcohol dependence. Points scored on questions 7-10 indicate that alcohol-related harm is already being experienced. The total score, consumption level, signs of dependence, and present harm all should play a role in determining how to manage a patient. The final two questions should also be reviewed to determine whether patients give evidence of a past problem (i.e., "yes, but not in the past year"). Even in the absence of current hazardous drinking, positive responses on these items should be used to discuss the need for vigilance by the patient.

In most cases the total AUDIT score will reflect the patient's level of risk related to alcohol. In general health care settings and in community surveys, most patients will score under the cut-offs and may be considered to have low risk of alcohol-related problems. A smaller, but still significant, portion of the population is likely to score above the cut-offs but record most of their points on the first three questions. A much smaller proportion can be expected to score very high, with points recorded on the dependence-related questions as well as exhibiting alcohol-related problems. As yet there has been insufficient research to establish

precisely a cut-off point to distinguish hazardous and harmful drinkers (who would benefit from a brief intervention) from alcohol dependent drinkers (who should be referred for diagnostic evaluation and more intensive treatment). This is an important question because screening programmes designed to identify cases of alcohol dependence are likely to find a large number of hazardous and harmful drinkers if the cut-off of 8 is used. These patients need to be managed with less intensive interventions. In general, the higher the total score on the AUDIT, the greater the specificity in finding persons with alcohol dependence.

Based on experience gained in a study of treatment matching with persons who had a wide range of alcohol problem severity, AUDIT scores were compared with diagnostic data reflecting low, medium and high degrees of alcohol dependence. It was found that AUDIT scores in the range of 8-15 represented a medium level of alcohol problems whereas scores of 16 and above represented a high level of alcohol problems³³. On the basis of experience gained from the use of the AUDIT in this and other research, it is suggested that the following interpretation be given to AUDIT scores:

- Scores between 8 and 15 are most appropriate for simple advice focused on the reduction of hazardous drinking.
- Scores between 16 and 19 suggest brief counseling and continued monitoring.

- AUDIT scores of 20 or above clearly warrant further diagnostic evaluation for alcohol dependence.

In the absence of better research these guidelines should be considered tentative, subject to clinical judgment that takes into account the patient's medical condition, family history of alcohol problems and perceived honesty in responding to the AUDIT questions.

While use of the 10-question AUDIT questionnaire will be sufficient for the vast majority of patients, special circumstances may require a clinical screening procedure. For example, a patient may be resistant, uncooperative, or unable to respond to the AUDIT questions. If further confirmation of possible dependence is warranted, a physical examination procedure and laboratory tests may be used, as described in Appendix D.

How to Help Patients

Using the AUDIT to screen patients is only the first step in a process of helping reduce alcohol-related problems and risks.

Health care workers must decide what services they can provide to patients who score positive. Once a positive case has been identified, the next step is to provide an appropriate intervention that meets the needs of each patient. Typically, alcohol screening has been used primarily to find “cases” of alcohol dependence, who are then referred to specialized treatment. In recent years, however, advances in screening procedures have made it possible to screen for risk factors, such as hazardous drinking and harmful alcohol use. Using the AUDIT Total Score, there is a simple way to provide each patient with an appropriate intervention, based on the level of risk. Four levels of risk are shown in Box 6.

Box 5

Advise patients *not to drink*

- When operating a vehicle or machinery
- When pregnant or considering pregnancy
- If a contraindicated medical condition is present
- After using certain medications, such as sedatives, analgesics, and selected antihypertensives

While this discussion will focus on helping those patients who score positive on the AUDIT, sound preventative practice also calls for reporting screening results to those who score negative. These patients should be reminded about the benefits of low risk drinking or abstinence and told not to drink in certain circumstances, such as those mentioned in Box 5.

Zone I refers to low risk drinking or abstinence. The second level, Zone II, consists of alcohol use in excess of low-risk guidelines⁵, and is generally indicated when the AUDIT score is between 8 and 15. A brief intervention using simple advice and patient education materials is the most appropriate course of action for these patients. The third level, Zone III, is suggested by AUDIT scores in the range of 16 to 19. Harmful and hazardous drinking can be managed by a combination of simple advice, brief counseling and continued monitoring, with further diagnostic evaluation indicated if the patient fails to respond or is suspected of possible alcohol dependence. The fourth risk level is suggested by AUDIT scores in excess of 20. These patients should be referred to a specialist for diagnostic evaluation and possible treatment for alcohol dependence. If these services are not available, these patients can be managed in primary care, especially when mutual help organizations are able to provide community-based support. Using a stepped-care approach, patients can be managed first at the lowest level of intervention suggested by their AUDIT score. If they do not respond to the initial intervention, they should be referred to the next level of care.

Box 6

Risk Level	Intervention	AUDIT score*
Zone I	Alcohol Education	0-7
Zone II	Simple Advice	8-15
Zone III	Simple Advice plus Brief Counseling and Continued Monitoring	16-19
Zone IV	Referral to Specialist for Diagnostic Evaluation and Treatment	20-40

*The AUDIT cut-off score may vary slightly depending on the country's drinking patterns, the alcohol contents of standard drinks, and the nature of the screening program. Clinical judgment should be exercised in cases where the patient's score is not consistent with other evidence, or if the patient has a prior history of alcohol dependence. It may also be instructive to review the patient's responses to individual questions dealing with dependence symptoms (Questions 4, 5 and 6) and alcohol-related problems (Questions 9 and 10). Provide the next highest level of intervention to patients who score 2 or more on Questions 4, 5 and 6, or 4 on Questions 9 or 10.

Brief interventions for hazardous and harmful drinking constitute a variety of activities characterized by their low intensity and short duration. They range from 5 minutes of simple advice about how to reduce hazardous drinking to several sessions of brief counseling to address more complicated conditions³⁶. Intended to provide early intervention, before or soon after the onset of alcohol-related problems, brief interventions consist of feedback of screening data designed to increase motivation to change drinking behaviour, as well as simple advice, health education, skill building, and practical suggestions. Over the last 20 years procedures have been developed that primary care practitioners can readily learn and practice to address hazardous and harmful drinking. These procedures are summarized in Box 7.

A number of randomized controlled trials have evaluated the efficacy of this approach, showing consistently positive benefits for

Box 7**Elements of Brief Interventions**

- Present screening results
- Identify risks and discuss consequences
- Provide medical advice
- Solicit patient commitment
- Identify goal—reduced drinking or abstinence
- Give advice and encouragement

patients who are not dependent on alcohol^{36, 37, 38}. A companion WHO manual, *Brief Intervention for Hazardous and Harmful Drinking: A Manual for Primary Care*, provides more information on this approach.

Referral to alcohol specialty care is common among those primary care practitioners who do not have competency in treating alcohol use disorders and where specialty care is available. Consideration must be given to the willingness of patients to accept referral and treatment. Many patients underestimate the risks associated with drinking; others may not be prepared to admit and address their dependence. A brief intervention, adapted to the purpose of initiating a referral using data from a clinical examination and blood tests, may help to address patient resistance. Follow-up with the patient and the specialty provider may also assure that the referral is accepted and treatment is received.

Diagnosis is a necessary step following high positive scoring on the AUDIT, since the instrument does not provide sufficient basis for establishing a management or treatment plan. While persons associated with the screening programme should have a basic familiarity with the criteria for alcohol dependence, a qualified professional who is trained in the diagnosis of alcohol use disorders⁴ should conduct this assessment. The best method of establishing a diagnosis is through the use of a standardized, structured, psychiatric interview, such as the

CIDI³⁹ or the SCAN⁴⁰. The alcohol sections of these interviews require 5 to 10 minutes to complete.

The Tenth revision of the *International Classification of Diseases (ICD-10)*⁴ provides detailed guidelines for the diagnosis of acute alcohol intoxication, harmful use, alcohol dependence syndrome, withdrawal state, and related medical and neuropsychiatric conditions. The ICD-10 criteria for the alcohol dependence syndrome are described in Box 8.

Detoxification may be necessary for some patients. Special attention should be paid to patients whose AUDIT responses indicate daily consumption of large amounts of alcohol and/or positive responses to questions indicative of possible dependence (questions 4-6). Enquiry should be made as to how long a patient has gone since having an alcohol-free day and any prior experience of withdrawal symptoms. This information, a physical examination, and laboratory tests (see Clinical Screening Procedures, Appendix D) may inform a judgment of whether to recommend detoxification. Detoxification should be provided for patients likely to experience moderate to severe withdrawal not only to minimize symptoms, but also to prevent or manage seizures or delirium, and to facilitate acceptance of therapy to address dependence. While inpatient detoxification may be necessary in a small number of severe cases, ambulatory or home detoxification can be used successfully with the majority of less severe cases.

Box 8**ICD-10 Criteria for the Alcohol dependence syndrome**

Three or more of the following manifestations should have occurred together for at least 1 month or, if persisting for periods of less than 1 month, should have occurred together repeatedly within a 12-month period:

- a strong desire or sense of compulsion to consume alcohol;
- impaired capacity to control drinking in terms of its onset, termination, or levels of use, as evidenced by: alcohol being often taken in larger amounts or over a longer period than intended; or by a persistent desire to or unsuccessful efforts to reduce or control alcohol use;
- a physiological withdrawal state when alcohol use is reduced or ceased, as evidenced by the characteristic withdrawal syndrome for alcohol, or by use of the same (or closely related) substance with the intention of relieving or avoiding withdrawal symptoms;
- evidence of tolerance to the effects of alcohol, such that there is a need for significantly increased amounts of alcohol to achieve intoxication or the desired effect, or a markedly diminished effect with continued use of the same amount of alcohol;
- preoccupation with alcohol, as manifested by important alternative pleasures or interests being given up or reduced because of drinking; or a great deal of time being spent in activities necessary to obtain, take, or recover from the effects of alcohol;
- persistent alcohol use despite clear evidence of harmful consequences, as evidenced by continued use when the individual is actually aware, or may be expected to be aware, of the nature and extent of harm.

(p.57, WHO, 1993)

Medical management or treatment of alcohol dependence has been described in previous WHO publications⁴¹. A variety of treatments for alcohol dependence have been developed and found effective⁴². Significant advances have been made in pharmacotherapy, family and social support therapy, relapse prevention, and behaviour-oriented skills training interventions.

Because the diagnosis and treatment of alcohol dependence have developed as a specialty within the mainstream of medical care, in most countries primary care practitioners are not trained or experienced in its diagnosis or treatment. In such cases primary care screening programmes must establish protocols for referring patients suspected of being alcohol dependent who need further diagnosis and treatment.

Programme Implementation

Alcohol screening and appropriate patient care have been recognized widely as essential to good medical practice. Like many medical practices that achieve such recognition, there is often a failure to implement effective technologies within organized systems of health care. Implementation requires special efforts to assure compliance of individual practitioners, overcome obstacles, and adapt procedures to special circumstances. Research into implementation has begun to produce useful guidelines for effective implementation^{43, 44}. Four major elements have emerged as critical to success:

- planning;
- training;
- monitoring; and
- feedback.

Planning is necessary not only to design the alcohol screening programme but also to engage participants in the "ownership" of the programme. Every primary care practice is unique. Each has established special procedures suited to its physical setting, social and cultural environment, patient population, economics, staffing structure, and even individual personalities. Thus, adapting AUDIT screening to each practice situation must involve fitting its essential elements into this context in a way that is most likely to achieve sustained success. If screening for other health conditions and risk factors is already part of standard practice, those procedures may provide a useful starting

place. However, both policy and procedural decisions will be required.

It is generally helpful to involve in planning the staff who will participate in or be affected by the screening operation. Participation of persons with diverse perspectives, experience, and responsibilities is most likely to identify obstacles and create ways to remove or surmount them. In addition, the involvement of staff in planning yields a sense of ownership over the resulting implementation plan. This is likely to increase the commitment of individuals and the group to follow the plan and make improvements along the way that will assure success. A partial list of implementation issues on which planning is helpful are presented in Box 9. An implementation plan should receive formal approval at whatever level(s) required before training begins.

Training is essential to preparing a health care organization to implement its planning. However, training *without* a management decision to implement a screening programme is likely to be ineffective and even counter-productive. A training package has been developed³¹ to support implementation of AUDIT screening and brief intervention (See Appendix E). Training should address the critical issues of why screening is important, what conditions should be identified, how to use the AUDIT, and optimal procedures to assure success. Effective training should involve staff in a detailed discussion of their functions and responsibilities within the new programme plan. It should also

Box 9

Implementation Questions

Which patients will be screened?

How often will patients be screened?

How will screening be coordinated with other activities?

Who will administer the screen?

What provider and patient materials will be used?

Who will interpret results and help the patient?

How will medical records be maintained?

What follow-up actions will be taken?

How will patients needing screening be identified?

When during the patient's visit will screening be done?

What will be the sequence of actions?

How will instruments and materials be obtained, stored, and managed?

How will follow-up be scheduled?

provide supervised practice in administering the AUDIT instrument and any other procedures planned (e.g., brief interventions, referral, etc.).

In some countries many people, even medical staff, are accustomed to think only of alcohol dependence when other issues related to alcohol are raised. It is not uncommon for people to believe that people with alcohol problems cannot be helped unless they "hit bottom" and seek treatment, and that the only recourse is

total abstinence. Some people who hold these beliefs may find a programme of screening and brief intervention to be fruitless or threatening. It is critical that special care is taken to allow such issues to be addressed openly, frankly, and with attention to the best scientific evidence. With sound explanation and patience, most medical staff will either understand the value of screening or suspend judgment until experience allows a determination of its value.

Monitoring is an effective way to improve the quality of screening programme implementation. There are various ways of measuring the success of an alcohol screening programme. The number of screenings performed may be compared to the number of people presenting who should have been screened under the established policy, producing a percentage of screening success. Recording and totaling the percentage of patients who screen positive is also a useful measure that encourages staff by establishing the need for the service. Determining the percentage of patients who received the appropriate intervention (brief intervention, referral, diagnosis, etc.) for their AUDIT score is a further measure of programme performance. Finally, a small sample of patients who had screened positive six to twelve months before might be surveyed to provide at least anecdotal evidence of outcome success. Re-administration of the AUDIT can serve as the basis for measuring quantitative outcomes.

Whatever criteria of success are employed, frequent *feedback* to all participating staff is essential for results to contribute to enhanced programme performance in the early periods of implementation. Written reports and discussion at regular staff meetings will also provide occasions at which staff can address any problems that may be interfering with success.

Appendix A

Research Guidelines for the AUDIT

The AUDIT was developed on the basis of an extensive six-nation validation trial^{1, 2}. Additional research has been conducted to evaluate its accuracy and utility in different settings, populations, and cultural groups¹⁰. To provide further guidance to this process, it is recommended that health researchers use the AUDIT to answer some of the following questions:

- Does AUDIT predict future alcohol problems as well as the patient's response to brief intervention and more intensive treatment? This can be evaluated by conducting repeated AUDIT screening on the same individual. Total scores can be correlated with various indicators of future symptomatology. It would be desirable to know, for example, whether AUDIT assesses alcohol-related problems along a continuum of severity, whether severity scores increase progressively among individuals who continue to drink heavily, and whether scores diminish significantly following advice, counseling, and other types of intervention. A screening test should not be conceived in isolation from intervention and treatment. It must be evaluated in terms of its impact on the morbidity and mortality of the population at risk. Its contribution to secondary and primary prevention is therefore dependent on the availability of effective intervention strategies.
- What is the sensitivity, specificity and predictive power of the AUDIT in different risk groups using different validation criteria? In future evaluations of the AUDIT

screening procedures, careful attention should be given to the alcohol-related phenomena to be detected or predicted. Emphasis should be given to the assessment of initial risk levels, harmful use, and alcohol dependence. The demands of methodologically sound validation require the use of independent diagnostic criteria, which themselves have been validated. Two instruments that may be useful for this purpose are the Composite International Diagnostic Interview (CIDI) and the Schedules for Clinical Assessment in Neuropsychiatry (SCAN)^{39, 40}. Both of these interviews provide independent verification of a variety of alcohol use disorders according to ICD-10 and other diagnostic systems. Tests could be improved by focusing on more carefully defined risk groups and more specific alcohol-related problems. Specification of cut-off points is needed for target populations whose problems are to be the focus of screening with AUDIT, especially persons with harmful use and alcohol dependence.

- What are the practical barriers to screening with the AUDIT? Important constraints on screening tests are imposed by cost considerations and by the acceptability of screening to both health professionals and the intended target populations. When a screening test is expensive, the results of a screening programme may not justify its cost. This is also true when the procedure is time consuming, overly invasive, or otherwise offensive to the target group. This type of process evaluation should be conducted with AUDIT.

- Can the AUDIT be scored to produce separate assessments of hazardous use, harmful use, and alcohol dependence? If screening can be differentiated into these separate domains, it may prove useful for the purpose of evaluating different educational and treatment approaches to secondary prevention. Alternatively, the AUDIT Total Score provides a general measure of severity that may be useful for treatment matching and stepped-care approaches to clinical management (i.e., providing the lowest level of intervention that addresses the patient's immediate needs). If the patient does not respond, the next higher "step" is provided. Although AUDIT scores in the range of 8 to 19 seem appropriate to brief interventions, further research is needed to find the optimal cut-off points that are most appropriate for simple advice, brief counseling, and more intensive treatment.
- How can the AUDIT be used in epidemiological research? The AUDIT may have applications as an epidemiological tool in surveys of health clinics, health service systems, and general population samples. The AUDIT was developed as an international instrument but it could also be used to compare samples drawn from different national and cultural groups, with respect to the nature and prevalence of hazardous drinking, harmful drinking, and alcohol dependence. Before this is done it would be useful to develop norms for various risk levels so that individual and group scores can be compared to the distribution of scores within the general population.
- What is the concurrent validity of the AUDIT items and total scores when compared with different "objective" indicators of alcohol-related problems, such as blood alcohol level, biochemical markers of heavy drinking, public records of alcohol-related problems, and observational data obtained from persons knowledgeable about the patient's drinking behaviour. To the extent that verbal report procedures may have intrinsic limitations, it would be useful to evaluate under what circumstances AUDIT results are biased or otherwise invalid. Procedures to increase the accuracy of AUDIT should also be investigated.
- How acceptable is the AUDIT to primary care workers? How can screening procedures best be taught in the context of educating health professionals? How extensively are screening procedures using AUDIT applied once students or health workers are trained?

Appendix B

Suggested Format for AUDIT Self-report Questionnaire

In some settings there may be advantages to administering the AUDIT as a questionnaire completed by the patient rather than as an oral interview. Such an approach often saves time, costs less, and may produce more accurate answers by the patient. These advantages may also result from administration via computer. The AUDIT questionnaire format presented in Box 10 may be useful for such purposes.

Use of the skip outs provided in the oral interview (Box 4 on page 17) is likely to be too difficult for patients to follow in a paper administration. However, they are easily achieved automatically in computerized applications.

Administrators are encouraged to add illustrations of local, commonly available beverages in standard drink amounts. Question 3 may require modification (to 4 or 5 drinks), depending on the number of standard drinks required to total 60 grams of pure ethanol (See Appendix C).

Scoring instructions: Each response is scored using the numbers at the top of each response column. Write the appropriate number associated with each answer in the column at the right. Then add all numbers in that column to obtain the Total Score.

Space at the bottom of the form may be designated "For Office Use Only" to contain instructions or places to document actions taken by health workers who administer the AUDIT or provide brief

interventions. Such material, however, should be sufficiently coded so as not to compromise patients' honesty in answering AUDIT questions.

Box 10

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some more questions about your use of alcohol. If we find that you are drinking more than you or we feel is good for you, we have some services right here that can help you take better care of yourself. Your answers will remain confidential so please be honest.

Place an X in one box that best describes your answer to each question.

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
2. How many drinks containing alcohol do you have on a typical day you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
3. How often do you have more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. How often during the past year have you failed to do what was expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6. How often during the past year have you needed a first thing in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. How often during the past year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8. How often during the past year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the past year		Yes, during the past year	
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking and suggested you cut down?	No		Yes, but not in the past year		Yes, during the past year	
					Total	

Appendix C

Translation and Adaptation to Specific Languages, Cultures and Standards

In some cultural settings and linguistic groups, the AUDIT questions cannot be translated literally. There are a number of sociocultural factors that need to be taken into account in addition to semantic meaning. For example, the drinking customs and beverage preferences of certain countries may require adaptation of questions to conform to local conditions.

With regard to translation into other languages, it should be noted that the AUDIT questions have been translated into Spanish, Slavic, Norwegian, French, German, Russian, Japanese, Swahili, and several other languages. These translations are available by writing to the Department of Mental Health and Substance Abuse, Dependence World Health Organization, 1211 Geneva 27, Switzerland. Before attempting to translate AUDIT into other languages, interested individuals should consult with WHO Headquarters about the procedures to be followed and the availability of other translations.

What is a Standard Drink?

In different countries, health educators and researchers employ different definitions of a standard unit or drink because of differences in the typical serving sizes in that country. For example,

- 1 standard drink in Canada: 13.6 g of pure alcohol
- 1 s drink in the UK: 8 g
- 1 s drink in the USA: 12-14 g
- 1 s drink in Australia or New Zealand: 10 g
- 1 s drink in Japan: 19.75 g

In the AUDIT, Questions 2 and 3 assume that a standard drink equivalent is 10 grams of alcohol. You may need to adjust the number of drinks in the response categories

for these questions in order to fit the most common drink sizes and alcohol strength in your country.

The recommendation low-risk drinking level set in the brief intervention manual and used in the WHO study on brief interventions is no more than 20 grams of alcohol per day, 5 days a week (recommending 2 non-drinking days).

How to Calculate the Content of Alcohol in a Drink

The alcohol content of a drink depends on the strength of the beverage and the volume of the container. There are wide variations in the strengths of alcoholic beverages and the drink sizes commonly used in different countries. A WHO survey⁴⁵ indicated that beer contained between 2% and 5% volume by volume of pure alcohol, wines contained 10.5% to 18.9%, spirits varied from 24.3% to 90%, and cider from 1.1% to 17%. Therefore, it is essential to adapt drinking sizes to what is most common at the local level and to know roughly how much pure alcohol the person consumes per occasion and on average.

Another consideration in measuring the amount of alcohol contained in a standard drink is the conversion factor of ethanol. That allows you to convert any volume of alcohol into grammes. For each milliliter of ethanol, there are 0.79 grammes of pure ethanol. For example,

- 1 can beer (330 ml) at 5% x (strength)
0.79 (conversion factor) = 13 grammes of ethanol
- 1 glass wine (140 ml) at 12% x
0.79 = 13.3 grammes of ethanol
- 1 shot spirits (40 ml) at 40% x
0.79 = 12.6 grammes of ethanol

Appendix D

Clinical Screening Procedures

A clinical examination and laboratory tests can sometimes be helpful in the detection of chronic harmful alcohol use. Clinical screening procedures have been developed for this purpose³⁴. These include tremor of the hands, the appearance of blood vessels in the face, and changes observed in the mucous membranes (e.g., conjunctivitis) and oral cavity (e.g., glossitis), and elevated liver enzymes.

Only qualified health workers should conduct the examination. Several of the items require explanation in order to make a reliable diagnosis.

- **Conjunctival injection.** The condition of the conjunctival tissue is evaluated on the basis of the extent of capillary engorgement and scleral jaundice. Examination is best conducted in clear daylight by asking the patient to direct his gaze upward and then downward while pulling back the upper and lower eye-lids. Under normal conditions, the normal pearly whiteness is widely distributed. In contrast, capillary engorgement is reflected in the appearance of burgundy-coloured vascular elements and the appearance of a greenish-yellow tinge to the sclera.
- **Abnormal skin vascularization.** This is best evaluated by examination of the face and neck. These areas often give evidence of fine wiry arterioles that appear as a reddish blush. Other signs of chronic alcohol ingestion include the appearance of "goose-flesh" on the neck and yellowish blotches on the skin.

- **Hand tremor.** This should be estimated with the arms extended anteriorly, half bent at the elbows, with the hands rotated toward the midline.
- **Tongue tremor.** This should be evaluated with the tongue protruding a short distance beyond the lips, but not too excessively.
- **Hepatomegaly.** Hepatic changes should be evaluated both in terms of volume and consistency. Increased volume can be gaged in terms of finger breadths below the costal margin. Consistency can be rated as normal, firm, hard, or very hard.

Several laboratory tests are useful in the detection of alcohol misuse. Serum gamma-glutamyl transferase (GGT), carbohydrate deficient transferrin (CDT), mean corpuscular volume (MCV) of red blood cells and serum aspartate amino transferase (AST) are likely to provide, at relatively low cost, a possible indication of recent excessive alcohol consumption. It should be noted that false positives can occur when the individual uses drugs (such as barbiturates) that induce GGT, or has hand tremor because of nervousness, neurological disorder, or nicotine dependence.

Appendix E

Training Materials for AUDIT

Training materials and resources have been developed to teach AUDIT screening and brief intervention techniques. These include videos, instructor's manuals, and leaflets.

Resources that can be used to obtain training to use the AUDIT to screen for alcohol problems are listed below:

Anderson, P. Alcohol and primary health care. World Health Organization, Regional Publications, European Series no. 64, 1996.

Project NEADA (Nursing Education in Alcohol and Drug Abuse), consists of a 30 minute video entitled Alcohol Screening and Brief Intervention and an Instructor's Manual³¹ with lecture material, role playing exercises, guidelines for group discussions, and learner activity assignments. Available through the U.S. National Clearinghouse on Alcohol and Drug Information: www.health.org or call 1-800-729-6686.

Alcohol risk assessment and intervention (ARAI) package. Ontario, College of Family Physicians of Canada, 1994.

Sullivan, E., and Fleming, M. A Guide to Substance Abuse Services for Primary Care Clinicians, *Treatment Improvement Protocol Series*, U.S. Department of Health and Human Services, Rockville, MD 24; 1997.

References

1. Saunders, J.B., Aasland, O.G., Babor, T.F., de la Fuente, J.R., and Grant, M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption. II. *Addiction*, 88, 791-804, 1993.
2. Saunders, J.B., Aasland, O.G., Amundsen, A., and Grant, M. Alcohol consumption and related problems among primary health care patients: WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption I. *Addiction*, 88, 349-362, 1993.
3. Babor, T., Campbell, R., Room, R., and Saunders, J.(Eds.) *Lexicon of Alcohol and Drug Terms*, World Health Organization, Geneva, 1994.
4. World Health Organization. *The ICD-10 Classification of Mental and Behavioural Disorders: Diagnostic criteria for research*, World Health Organization, Geneva, 1993.
5. Anderson, P., Cremona, A., Paton, A., Turner, C. & Wallace, P. The risk of alcohol. *Addiction* 88, 1493-1508, 1993.
6. Edwards, G., Anderson, P., Babor, T.F., Casswell, S., Ferrence, R., Geisbrecht, N., Godfrey, C., Holder, H., Lemmens, P., Makela, K., Midanik, L., Norstrom, T., Osterberg, E., Romelsjo, A., Room, R., Simpura, J., Skog., O. *Alcohol Policy and the Public Good*. Oxford University Press, 1994.
7. World Health Organization. *Problems related to alcohol consumption, Report of a WHO Expert Committee*. Tech. Report Series 650, Geneva, WHO, 1980.
8. Kreitman, N. Alcohol consumption and the prevention paradox. *British Journal of Addiction* 81, 353-363, 1986
9. Murray, R.M. Screening and early detection instruments for disabilities related to alcohol consumption. In: Edwards, G., Gross, M.M., Keller, M., Moser, J. & Room, R. (Eds) *Alcohol-Related Disabilities*. WHO Offset Pub. No. 32. Geneva, World Health Organization, 89-105, 1977.
10. Allen, J.P., Litten, R.Z., Fertig, J.B. and Babor, T. A review of research on the Alcohol Use Disorders Identification Test (AUDIT). *Alcoholism: Clinical and Experimental Research* 21(4): 613-619, 1997.
11. Cherpitel CJ: Analysis of cut points for screening instruments for alcohol problems in the emergency room. *Journal of Studies on Alcohol* 56:695-700, 1995.
12. Conigrave, K.M., Hall, W.D., Saunders, J.B., The AUDIT questionnaire: choosing a cut-off score. *Addiction* 90:1349-1356, 1995.

13. Volk RJ, Steinbauer JR, Cantor SB, Holzer CE: The Alcohol Use Disorders Identification Test (AUDIT) as a screen for at-risk drinking in primary care patients of different racial/ethnic backgrounds. *Addiction* 92(2):197-206, 1997.
14. Rigmaiden RS, Pistorello J, Johnson J, Mar D, Veach TL: Addiction medicine in ambulatory care: Prevalence patterns in internal medicine. *Substance Abuse* 16:49-57, 1995.
15. Piccinelli, M., Tessari, E., Bortolomasi, M., Piasere, O., Semenzin, M. Garzotto, N., and Tansella, M. Efficacy of the alcohol use disorders identification test as a screening tool for hazardous alcohol intake and related disorders in primary care: a validity study. *British Medical Journal* 314(8) 420-424, 1997.
16. Skipsey, K., Burlison, J.A., Kranzler, H.R. Utility of the AUDIT for the identification of hazardous or harmful drinking in drug-dependent patients. *Drug and Alcohol Dependence* 45:157-163, 1997.
17. Claussen, B., Aasland OG: The Alcohol Use Disorders Identification Test (AUDIT) in a routine health examination of long-term unemployed. *Addiction* 88:363-368, 1993.
18. Fleming, M.F., Barry, K.L., MacDonald, R. The alcohol use disorders identification test (AUDIT) in a college sample. *International Journal of the Addictions* 26:1173-1185, 1991.
19. Powell JE, McInness E: Alcohol use among older hospital patients: Findings from an Australian study. *Drug and Alcohol Review* 13:5-12, 1994.
20. Isaacson JH, Butler R, Zacharek M, Tzelepis A: Screening with the Alcohol Use Disorders Identification Test (AUDIT) in an inner-city population. *Journal of General Internal Medicine* 9:550-553, 1994.
21. Fiellin, D.A., Carrington, R.M., O'Connor, P.G. Screening for alcohol problems in primary care: a systematic review. *Archives of Internal Medicine* 160: 1977-1989, 2000.
22. Ivis, F.J., Adlaf, E.M., Rehm, J. Incorporating the AUDIT into a general population telephone survey: a methodological experiment. *Drug & Alcohol Dependence* 60:97-104, 2000.
23. Lapham, S.C., Skipper, B.J., Brown, P., Chadbunchachai, W., Suriyawongpaisal, P., and Paisarnsilp, S. Prevalence of alcohol use disorders among emergency room patients in Thailand. *Addiction* 93(8), 1231-1239, 1998.
24. Steinbauer, J.R., Cantor, S.B., Holder, C.E. and Volk, R.J. Ethnic and sex bias in primary care screening tests for alcohol use disorders. *Annals of Internal Medicine* 129: 353-362, 1998.

25. Clements, R. A critical evaluation of several alcohol screening instruments using the CIDI-SAM as a criterion measure. *Alcoholism: Clinical and Experimental Research* 22(5):985-993, 1998.
26. Hays, RD, Merz JF, Nicholas R: Response burden, reliability, and validity of the CAGE, Short MAST, and AUDIT alcohol screening measures. *Behavioral Research Methods, Instruments & Computers* 27:277-280, 1995.
27. Bohn MJ, Babor TF, Kranzler HR: The Alcohol Use Disorders Identification Test (AUDIT): Validation of a screening instrument for use in medical settings. *Journal of Studies on Alcohol* 56:423-432, 1995.
28. Conigrave, K.M., Saunders JB, Reznik RB: Predictive capacity of the AUDIT questionnaire for alcohol-related harm. *Addiction* 90:1479-1485, 1995.
29. Sinclair, M., McRee, B., and Babor, T.F. Evaluation of the Reliability of AUDIT. University of Connecticut School of Medicine, Alcohol Research Center, (unpublished report), 1992.
30. Babor, T.F., de la Fuente, J.R., Saunders, J., Grant, M. *AUDIT The Alcohol Use Disorders Identification Test: Guidelines for Use in Primary Health Care*. WHO/MNH/DAT 89.4, World Health Organization, Geneva, 1989.
31. McRee, B., Babor TF, Church OM. *Instructor's Manual for Alcohol Screening and Brief Intervention*. Project NEADA, University of Connecticut School of Nursing, 1991.
32. Gomel, M. & Wutzke, S. Phase III World Health Organization Collaborative Study. Procedures Manual Strand III, Part 1. Dept. of Psychiatry, University of Sydney, New South Wales, 1995.
33. Miller, W.R., Zweben, A., DiClemente, C.C. & Rychtarik, R.G. (1992). *Motivational enhancement therapy manual: A clinical research guide for therapists treating individuals with alcohol abuse and dependence*. Project MATCH Monograph Series, Vol. 2. Rockville MD: NIAAA.
34. Babor TF, Weill J, Treffardier M, Benard JY. Detection and diagnosis of alcohol dependence using the Le Go grid method. In: Chang N (Ed.) *Early identification of alcohol abuse*. NIAAA Research Monograph 17, DHHS Pub. No. (ADM) 85-1258, Washington, D.C. USGPO, 1985; 321-338.
35. Saunders JB, Aasland OG. WHO Collaborative Project on Identification and Treatment of Persons with Harmful Alcohol Consumption. Geneva, Switzerland, World Health Organization (Unpublished Document WHO/MNH/DAT/86.3), 1987. *WHO Collaborative Project on Identification and Treatment of Persons with Harmful Alcohol Consumption*.

36. Bien, T.H., Miller, W.R., & Tonigan, S. Brief intervention for alcohol problems: a review. *Addiction* 88:315-336, 1993.
37. Kahan, M., Wilson, L., & Becker, L. Effectiveness of physician-based interventions with problem drinkers: A review. *Canadian Medical Association Journal*, 152(6):851-859, 1995.
38. Wilk, A.I., Jensen, N.M., & Havighurst, T.C. Meta-analysis of randomized control trials addressing brief interventions in heavy alcohol drinkers. *Journal of General Internal Medicine*, 12:274-283, 1997.
39. Robins LN, Wing J, Wittchen HU, Helzer JE, Babor TF, Burke J, Farmer A, Jablenski A, Pickens R, Regier D, Sartorius N, Towle L. The Composite International Diagnostic Interview: An epidemiological instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Archives of General Psychiatry*, 45:1069-1077, 1988.
40. Wing JK, Babor T, Brugha T, Burke J, Cooper JE, Giel R, Jablenski A, Regier D, Sartorius N. SCAN - Schedules for Clinical Assessment in Neuropsychiatry. *Archives of General Psychiatry* 47:589-593, 1990.
41. Heather, N. *Treatment approaches to alcohol problems*. Copenhagen, WHO Regional Office for Europe, 1995 (WHO Regional Publications, European Series, No. 65).
42. National Institute on Alcohol Abuse and Alcoholism. *10th Special Report to the U.S. Congress on Alcohol and Health*. Rockville, MD, 2000.
43. Richmond, R.L. & Anderson, P. Research in general practice for smokers and excessive drinkers in Australia and the UK. III. Dissemination of interventions. *Addiction* 89, 49-62, 1994.
44. Babor, T.F. and Higgins-Biddle, J.C. Alcohol screening and brief intervention: dissemination strategies for medical practice and public health. *Addiction* 95(5):677-686, 2000.
45. Finnish Foundation for Alcohol Studies. *International Statistics on Alcoholic Beverages: Production, Trade and Consumption 1950-1972*. Helsinki, Finnish Foundation for Alcohol Studies, 1977.

