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The Measurement of Outcome in Alcohol and Other Drug Treatment: A Review of Available Instruments

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EXECUTIVE SUMMARY

This technical report outlines the issues in measuring outcome in the alcohol and other drug field. It provides a review of the measures that are currently available.

Introduction

- Outcome is defined as the effect on an individual's health status that is attributable to an intervention.

- The potential clients are the 10% of the population who will meet criteria for an alcohol or other drug use disorder in the past 12 months. Only a third of the potential clients seek treatment in any year. Three quarters of those who seek treatment are seen by general practitioners.

- Outcome measurement is of importance to clients, clinicians and administrators.

- The standard measurement of outcome is likely to improve treatment.

- Outcome measures are reviewed in regard to their applicability, acceptability, practicality, reliability, validity and sensitivity to change. The advantages and disadvantages of self -report and clinician rated measures are discussed.

- Outcome measures are commonly cited in the literature. Measures that are brief, low in cost, multi-dimensional and require little training, are likely to be most suitable for use in routine clinical services.

Methodology

- *Consultation:* A brief survey was conducted of 50 government and non-government alcohol and other drug treatment services

- *Literature:* A keyword search on Medline, Psych Info, Embase and Web of Science was conducted. Outcome measures were also identified from specialist

texts and the citation lists of published treatment outcome studies in the alcohol and other drug field. Over 300 measures were examined as possible outcome measures. Of those, 44 were selected for examination and review by two independent raters. These measures include those designed for and used in adolescent populations.

Results

- *Consultation:* Consultation with the field showed that 'use of alcohol or other drugs' and 'functioning' are viewed as the most important areas of outcome measurement. 'Questionnaire' or 'interview with the client' were rated as the preferred methods, and respondents stated that the collection of such data would improve service efficacy.

- *Literature Review:* The 44 measures reviewed covered the following areas: 'screening of problematic use and quantity/frequency', 'diagnosis of dependence/harmful use', 'relapse', 'functioning', 'multi-dimensional' and 'satisfaction with service'.Measures were reviewed in regard to their applicability, acceptability, practicality, reliability, validity and sensitivity to change.

Recommendations

- Four measures met minimum criteria for use as routine outcome measures: Addiction Severity Index (ASI), Health of the National Outcome Scale (HoNOS), Opiate Treatment Index (OTI) and Short Form-36 (SF-36).
- The Opiate Treatment Index is a measure developed in Australia and meets all the requirements. It is recommended that it be revised and shortened for use as a routine outcome assessment tool.

Conclusion

- Outcome is important for clients, clinicians and managers. This report provides a review of instruments currently used to assess outcome in the alcohol and other drug field.

INTRODUCTION

The primary aim of any health care service is to have a positive impact on the health and wellbeing of its clients. The routine and systematic measurement of 'treatment outcome', is gaining increased attention. This issue is now firmly on the agenda with the advent of managed care in the USA. In Australia at present there is no agreed measures of treatment outcome in alcohol and other drug treatment settings. This technical report addresses the issue of how progress towards measurement of client outcomes might be achieved.

Background to the Study: The National Minimum Data Set

In Australia, an ongoing data collection system will commence on the first of July 2000 as agreed by all States and Territories. This project was borne out of a national forum conducted in 1995 by the Alcohol and Other Drugs Council of Australia that examined barriers between research and practice within the alcohol and other drug (AOD) field. The aim of the project was to design a national framework for collection of consistent data across all treatment services (Conroy & Copeland, 1998). This collection is known as the 'National Minimum Data Set on Clients of Alcohol and Other Drug Treatment Services (NMDS:CAODTS)'. The objectives of the NMDS: CAODTS are to:

- monitor broad patterns of service utilisation;
- monitor access to services for specific population groups;
- inform planning and development of service delivery strategies; and
- support the development of benchmarking.

In 1998 The National Drug and Alcohol Research Centre (NDARC) developed and piloted, in consultation with treatment agencies, a set of data items for national collection. The Commonwealth funded the Australian Institute of Health and Welfare (AIHW) as the national collection agency for the data set. Throughout 1999, under the management of the AIHW, substantial modifications were made to the data domains and definitions of the proposed items. Due to inherent difficulties in the modified design of the data set, only a subset of the original proposal is to be collected nationally from July of this year.

This subset will contain information on client demographics and drug use. It will not however contain information pertaining to the treatment services provided by treatment agencies. Unfortunately, due to the modifications, the items to be collected nationally are not consistent with those that were presented in the NDARC Technical Report No. 65, which resulted from the 1998 pilot study. The potential for the further development and expansion of the NMDS-CAODTS is currently being explored by a working group of the Inter-Governmental Committee on Drugs.

The NSW Monitoring and Outcomes Project

Within New South Wales, NDARC is involved in a partnership with the NSW Health Department – the Monitoring and Outcomes Project (MOP). The major goals of this project are to establish a statewide treatment data set, and following this, to introduce the regular assessment of treatment outcomes using a brief outcome instrument.

This project will provide data on the drug and alcohol services available, the utilisation of these services, client population profiles, treatment needs, the types of treatment delivered and outcomes achieved. This information will serve to facilitate increased awareness and improved responses to relevant issues by the government, treatment and other health agencies, and the broader community.

Collection of the NSW Minimum Data Set will also formally commence in July this year. The data set being collected includes all of the data items agreed to nationally, as well as additional items to describe the treatment services being provided. Definitions of these data items are available in the Data Dictionary for Alcohol and Other Drug treatment Services in New South Wales. A ‘ready reference’ version of this dictionary is also being developed, and training sessions will be conducted in various regions of New South Wales.

The next stage of the MOP project is the addition of an outcomes section to the data collection. A review of outcome measures is a necessary progression from this aim. Currently there is no standard protocol for measuring outcome in the alcohol and other drug field. This technical report reviews the literature on outcome measures and

makes recommendations as to how progress towards the routine measurement of outcome might be made.

What is 'outcome'?

In 1994 the Australian Health Ministers Advisory Council Health Outcomes Seminar agreed that 'a health outcome is a change in the health of an individual, or group of people or population which is attributable to an intervention or series of interventions' (AHMAC, 1993). The key aspect of health outcomes as defined here is that change is attributable to the intervention used. For aggregate data the overall effect should be improvement. However on an individual basis the expectation of measurable change may be unrealistic. The outcome of good treatment for some individuals may be maintenance of a given level of functioning rather than measurable improvement in functioning.

The outcome of detoxification treatment for a homeless person withdrawing from opiates or alcohol may be markedly different from the outcome achieved with a young person detoxing for the first time with the full emotional and financial resources of parents and family. Accordingly it may then be more appropriate to think of and define treatment outcome as an EFFECT on the health of an individual, group of people or population, which is attributable to an intervention or series of interventions (Andrews et al., 1994).

Outcome is:
The effect on an individuals health status that can be attributed to a treatment intervention.

Who are the clients?

It is important to understand the basic profile of the clients of alcohol and other drug services, in order to choose the most meaningful outcomes and measures for this group. Who are the clients to whom measurement of outcome should apply? Whilst clients with an alcohol or other drug problem cut through the entire spectrum of

society it is helpful first to look at the extent of the problem in terms of the percentages of the population that will suffer from an alcohol and other drug use disorder in any year.

The National Survey of Mental Health and Wellbeing can provide information on the nature and extent of substance use disorders in Australia. The National Survey of Mental Health and Well-Being (NSMHWB) (ABS.,1998) is a nationally representative survey of 10641 Australians. Disorders were defined in terms of ICD-10 (World, 1993) and DSM-IV diagnostic criteria (Diagnostic and statistical manual of mental disorders, 1994).

The NMHWB survey found that one in thirteen Australian adults aged 18 years and older (7.7%) had a substance use disorder according to ICD-10 criteria (World, 1993) in the past 12 months. Males were about twice as likely as females to have a substance use disorder; 11.1% of males and 4.5% of females met criteria for the diagnosis of a substance use disorder in the past 12 months.

Substance abuse is a term that covers both abuse of alcohol and abuse of other drugs. The NSMHWB survey provides specific information on the each of these areas as follows:

Alcohol use disorders

A large proportion of the Australian adults sampled (83% of males and 63% of females) reported that they had consumed at least 12 drinks of alcohol in the preceding year. One in fifteen (6.5%) met criteria for an alcohol use disorder in the past 12 months. Three percent reported harmful use (4.3% of males and 1.8% of females) and 3.5% could be classified as alcohol dependent (5.2% of males and 1.8% of females). A greater number of males than females had an alcohol use disorder within the past 12 months (9.4% versus 3.7% respectively).

The majority of persons meeting criteria for alcohol dependence (96%) reported impaired control over their alcohol use, indicating greater use or using for longer than intended, or by a persistent desire or unsuccessful efforts to cut down. Of those with

alcohol dependence three in four persons (73%) reported tolerance to the effects of alcohol but only half (50%) reported having experienced either withdrawal symptoms from alcohol, or having used alcohol to avoid or relieve withdrawal symptoms (Teesson, Hall, Lynsky, & Degenhardt, 2000).

Other drug use disorders

Of the other drugs used (cannabis, stimulants, sedatives and opioids), one in eight males (12.5%) and one in fourteen females (6.9%) reported that they had used at least one of these drugs more than five times in the past year. Cannabis was the most commonly reported drug in this class, used by 10.3% of males and 4.3% of females. Stimulant, sedative and opioid use was reported by 1.3 - 1.9% of males, and 0.6 - 2.3% of females.

About 1 in 45 persons were affected by drug use disorders in the past 12 months. An estimated 2.2% of the Australian adult population met criteria for a drug use disorder (0.2% with harmful use, and 2.0% with dependence) on at least one of these controlled substances in the last 12 months. Cannabis accounted for most drug use disorders: 1.7% of the sample met criteria for a 12 month diagnosis of a cannabis use disorder. Sedative use disorders affected 0.4% of the study population, while 0.3% could be diagnosed with a stimulant use disorder. In addition 0.2% met criteria for an opioid use disorder in the past 12 months.

The NSMHWB, being a household survey will be likely to under-represent the extent of heroin dependence in the community. The NSMHWB estimated opioid dependence in the past 12 months as 0.2% or 2 per 1000. Hall, Lynsky, & Degenhardt (1999) state " Indirect estimates of the prevalence of heroin dependence produce higher estimates. These are provided by multiplying the number of dependent heroin users who are identified from a particular source by a factor thought to represent the ratio of known to unknown dependent heroin users. These estimates, and a consensus of experts in the field, suggest that there were approximately 100 000 dependent heroin users in Australia in the late 1990s (0.7% of adults)."

Co-morbidity

Forty-eight per cent of females with an alcohol use disorder met criteria for an anxiety, affective or drug use disorder compared with 15% in the 'non-drug use disordered' general female population. One third of males with an alcohol use disorder met criteria for a mental health disorder compared with 9% in the general male population.

There is also a moderate degree of co-morbidity between substance use disorders and other common mental health problems. According to the NHSMHWB 65% (two thirds) of females with a drug use disorder met criteria for an anxiety, affective or alcohol use disorder. These rates contrast markedly with the females without a drug use disorder of whom only 12% met criteria for a mental health diagnosis.

The figures were similar for males with 64% meeting criteria for a mental health disorder, compared with only 11% of men without a drug use disorder meeting similar criteria. Forty-two per cent of individuals with a drug use disorder had a co-morbid physical disorder.

Who seeks/receives treatment?

The NSMHWB (1998) found, as did the Epidemiological Catchment Area survey (Regier et al., 1990) and the National Co-morbidity Survey (Kessler et al., 1994), that only a minority of those who meet criteria for an alcohol and drug use disorder had sought professional help for their condition (21% of women and 12% of men). Treatment seeking was related to gender, with females being more likely to seek assistance than males. Among those who sought help, general practitioners were the health professionals most likely to be consulted.

In other words the survey findings do not necessarily mean that 6.5% of Australian adults need specialist treatment for alcohol use disorders (Teesson et al., 2000). Specialist treatment is one response that should form part of a general public health approach to reducing alcohol and other drug use disorders (Teesson et al., 2000).

Public health policies that reduce the availability and increase the price of alcohol may also reduce the prevalence of alcohol use disorders (Walsh & Hingson, 1987).

Screening and brief advice for excessive alcohol consumption in general practice and hospital settings has been shown to reduce consumption and the problems caused by alcohol (Wilk, Jensen, & Havighurst, 1997;Nathan & Gorman, 1998). Screening is of considerable importance for males who were unlikely to seek assistance in the present survey (Teesson et al., 2000). The focus of this report is not the measurement of the outcome of these public health approaches but rather the measurement of the outcome for individuals who seek specialist treatment. It is important to note that the efficacy of treatments have been demonstrated in the literature.

Does treatment work?

Of those who have sought treatment in the past, controlled evaluations have demonstrated that about a third of patients remain abstinent over a year, a third show reductions in their drinking, while the drinking in the remaining third is largely unchanged (Mattick & Jarvis, 1993).

There is also good evidence that treatment for alcohol dependence has a net economic benefit. Holder & Blose (1986) & Holder & Schachman (1987) show a substantial reduction in health care expenditure of insured persons between the three years before and the three years after alcohol treatment. More recently new pharmacological treatments such as acamprosate and naltrexone have proven to be effective in preventing relapse in people with alcohol dependence (Whitworth, 1996;Volpicelli, 1992).

Several studies in both the USA and the UK have established the efficacy of treatment for substance use disorders more broadly; DATOS (Hubbard, Craddock, Flynn, Anderson, & Ethridge, 1997) CALDATA(Gerstein, Johnson, Harwood, Suter, & Malloy, 1994) & NTORS; (Gossop, Marsden, & Stewart, 1998)).

The Drug Abuse Treatment Outcome Study (DATOS) was a national community-based treatment outcome study conducted in the United States (Flynn, Craddock,

Hubbard, Anderson, & Etheridge, 1997b). In this study 10 010 individuals undergoing treatment were sampled. Of this total, 4229 were interviewed 12 months following treatment. Outpatient methadone maintenance, long-term residential treatment, outpatient drug-free treatment and private/public short-term residential treatment were the four major treatments offered. Significant reductions in most types of drug use across all treatments were recorded. Reduced crime and increased employment in the long-term residential treatment group and improved long-term employment and reduced suicidal ideation in the outpatient drug-free group were also found.

The California Drug and Alcohol Treatment Assessment Project (CALDATA) was another large scale pre-treatment post-treatment study of the effectiveness, cost effectiveness and overall economic value to society of drug and alcohol treatment in America (Gerstein et al., 1994). 3055 individuals were selected to participate in this study. These subjects were recruited from the following treatment modalities: residential programs, social model recovery houses, outpatient non-methadone, methadone maintenance, and detoxification (both residential and outpatient). 1859 individuals were included in a follow-up study on an average of 15 months following treatment. Reductions in drug use among 40% of subjects, a 17% improvement in self-reported health, and a decrease in hospitalisation were found. The study concluded that treatment is effective.

Recent data on outcome has also come from the United Kingdom. The National Treatment Outcome Study (NTORS;Gossop et al., 1998) was the first broadly based study in the United Kingdom aimed at examining outcomes for primary illicit drug problems at multiple sites: specialist inpatient treatment, rehabilitation programs, methadone maintenance and methadone reduction programs. 1075 clients were recruited for this study. 753 of these were followed-up at one year following treatment initiation. At 12-month follow-up results indicated that clients in all treatment modalities had substantially reduced their use of illicit drugs. A number of improvements in both their physical and mental health were recorded, as was a substantial reduction in their involvement in criminal activity.

Clearly treatment can be effective with this population. Treatment services work. Providing treatment is undoubtedly crucial in order to assist people to recover from

AOD use and their associated problems and subsequently reducing the burden of such problems to the community. However treatment provision is not sufficient on its own. Once treatment has been delivered it must then be evaluated in order to ensure that treatment is effective and that it is meeting the needs of the target population. Such evaluation is a component of good clinical practice - providing feedback to clinicians about their practises. Evaluation is also important, in order to truly gauge the cost effectiveness of such treatment services. But exactly what outcomes are important and therefore necessary to measure and how do we measure those outcomes?

What outcomes should be measured in drug and alcohol?

As outlined above, one of the main purposes of evaluation is to attribute outcome in the client to a treatment intervention. Measuring outcome in health is not a new concept. Traditionally there has been a tendency to measure outcome in terms of input and process. Quality assurance programs have often measured outcome by measuring the amount of treatment resources (capital and staff) resources provided (input) and the number of treatment occasions provided (level of service or process) (Jenkins, 1990). In other words an increase in the provision of resources has traditionally been equated with an improvement in the health of consumers. This is an erroneous assumption (Solomon, Buckingham, & Epstein, 1993).

Input and process cannot be ignored when evaluating outcome. It is important to improve processes and set standards for best practice, but this alone does not ensure a beneficial outcome. It is only by determining what effects on health and functioning the treatment aims to achieve, and then by measuring if such effects have taken place as a result of treatment, that outcome can be truly gauged.

It is vital at this point to discuss the nature of health effects or outcomes that need to be assessed. Before this can be done it is important to note the difficulties involved in attributing change in an individual to the receipt/consumption of treatment.

There are 3 basic factors that can lead to the mistaken belief that an improvement in functioning occurred as the result of treatment. The first of these is called regression to the mean (Andrews et al., 1994). Regression to the mean describes an improvement

that occurs as a normal fluctuation in the course of a disorder. Research has shown that disorders fluctuate. Individuals usually seek treatment when the symptoms of their condition are most severe, and so an improvement after treatment may simply have occurred without treatment, in the normal course of fluctuations in their health.

The second factor that can lead to improvement in functioning regardless of treatment is spontaneous remission (Cook & Campbell, 1979). Spontaneous remission occurs with some illnesses whereby the individual recovers due to non-specific variables that are not in any way related to treatment; internal biological improvements, external environmental improvements.

Finally the placebo effect can lead to an improvement in client functioning (Andrews et al., 1994). This is the general effect of receiving treatment, rather than a specific effect of a particular treatment. Receiving treatment, even a placebo can lead to a positive outcome in functioning, simply because the client is encouraged and becomes motivated to try harder to recover and report the expected gains.

Essentially randomised-controlled trials are the most stringent way of controlling for or, at least minimising, these errors, which attribute change to treatment rather than the three factors actually responsible for the change as outlined above. Obviously not all treatment can undergo such cost and labour intensive procedures as randomised control trials.

It is essential to develop ways of monitoring outcome that; 1) manage to minimise the above errors, 2) acknowledge input and process, without relying exclusively on these, and 3) measure the real effect of the treatment on the client and how this compares with the goals of treatment for each client. This leads to a discussion of the measures that have often been used in the past to evaluate change in clients with an alcohol or drug problem.

Traditionally, treatment outcome measurement in the alcohol and other drug services has focussed on the drug and alcohol use of an individual. However implicit in the notion of harm minimisation is the idea that it is not just the use of alcohol and drugs

that should be attended to, but also the consequences of their use, especially with regard to the ability of the individual to function in the community.

Levels of functioning and quality of life form the core constructs of disability and, therefore are likely to be part of most measures of consumer outcome. Factors such as an individual's ability to attend to self-hygiene and maintain employment and social relationships need to be assessed, in order to demonstrate the efficacy of a particular treatment. Similarly an individual's ability to derive pleasure and satisfaction from his/her existence is another area that can reflect the effectiveness of treatment. Satisfaction with treatment too can impact upon the recovery of the individual.

The World Health Organisation's (WHO) International Classification of Impairments, Disabilities and Handicaps (ICIDH) (World, 1980) recognises a distinction between a problem or illness, and it's consequences. The consequences are classified as impairments (loss of function), disability (restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being) and handicap (disadvantage which limits the fulfilment of role).

In light of the above discussion it is important that measurement of outcome be multi-dimensional, covering not only alcohol and drug use quantity and frequency but also symptoms and disability or functioning (including psychological, physical health) as well as risk to self and others. Only in this way can treatment efficacy be comprehensively defined.

How do we measure these outcome domains once they have been identified? How can the outcomes of treatment services be measured effectively and consistently and compared across services, sites and service areas? Standardised measures are the most appropriate measures to achieve this end.

Standardised measures are those that have been proven to test the target domain, that have been shown to provide consistent results both over time and when administered by different raters, and those that are simple to administer and have easily interpretable results.

Why use standardised measures of outcome?

Clinicians use their clinical impressions as the main tool to continuously monitor and evaluate the outcome of their treatment for each client. Similarly, consumers are usually aware of their own well-being. This informal assessment of outcome should guide clinicians towards desirable treatments and away from ineffectual ones. The argument is, therefore, not "why measure outcome" for everyone does at some level, but "why attempt to introduce standardised measures of outcome". The problem is that while clinical judgements are important and necessary, they have repeatedly been shown to be unreliable (Meehl, 1954).

Global judgments are equally fallible simply because they are dominated by the clinician's recent experience of patients who they wrongly believe to be representative of all patients (Cohen & Cohen, 1984). In reality the patients who are seen most often are those who are slow to improve, whilst assessment of an entire patient group might generally reveal good outcomes (Andrews et al., 1994).

Having accurate information about outcome is therefore important to good clinical care. Standardising the content and the scoring of outcome measures ensures their validity and comparability across services and settings. Obtaining standardised responses to standardised questions is an efficient way to measure health, in part because results from many different studies and locations can be collated when standardised measures are used. The repeated measurement of symptoms, disability and risk factors using standardised measures is likely to improve treatment as well as provide the information necessary for identifying the outcome of treatment.

Routine outcome measurement requires a commitment of resources and infrastructure if it is to be accomplished. This review is being conducted in conjunction with the development of a clinical monitoring system for alcohol and other drug services. This system provides the input and process data context of the outcome measurement. Such infrastructure along with a commitment of staff resources is a necessity in the application of routine outcome measurement.

Characteristics of good measures

The importance of using standardised instruments to measure outcome should be clear. What is it then that separates a good standardised measure from a poorer measure? Basically, a good measure is one that has high levels of internal consistency, test-retest reliability and, where applicable, inter-rater reliability. A good measure should also have high content, construct and criterion validity. Replication studies demonstrating the psychometric properties of an instrument are important in order to further validate the findings. Finally in terms of the practical application of an outcome measure in the drug and alcohol field, a good measure is one that is brief and requires minimal training.

Internal consistency

High internal consistency means that the test scales correlate highly with each other and thereby measure a single phenomenon. The most stringent measure of internal consistency is Cronbach's Alpha (Cronbach, 1951). Coefficient alpha ranges from 0, indicating that the scale is not at all consistent, to 1, indicating perfect consistency. Acceptable levels of consistency tend to range from 0.8 to 0.95. Shorter scales tend to have lower levels of internal consistency.

Test-retest reliability

Test-retest reliability means that the test results for any given individual are quite consistent over 2 separate administrations of the test by the same clinician/worker, in a short time period (to exclude differences due to changes in the individuals health as a function of time or treatment). The most stringent form of test-retest reliability is the intra-class correlation coefficient. Values of 0.81-1.00 are considered to be close to perfect, 0.61-0.80 substantial, 0.41-0.60 moderate, and 0.21-0.40 fair and below 0.2 indicative of a very small relationship (Landis & Koch, 1977).

Inter-rater reliability

This refers to the ability of an instrument to produce the same or a very similar result when two different people administer the instrument to the same client. If the scores for an individual on the same instrument tested by different clinicians over a very short time period are quite similar, then the instrument is said to have high inter-rater reliability. Cohen's Kappa coefficient is the statistic most often used to demonstrate the level of inter-rater reliability (Cohen, 1960). Kappa values of 0.40 and above, are considered acceptable. The closer to 1.00 the Kappa, the higher is the test-retest reliability.

Content Validity

Content validity refers to the ability of the instrument to adequately cover the domain that it purports to measure. Content validity is the basic building block on which the instrument is established. Content validity is also sometimes referred to as face validity; the degree to which an instrument appears to be sampling the area it is designed to measure.

Construct Validity

Construct validity is the extent to which an instrument is able to adequately measure the underlying construct such as health, depression, quality of life or intelligence. Construct validity is usually demonstrated by comparing the instrument to other standardised instruments with proven psychometric properties. The instrument should correlate highly with very similar instruments (convergent validity), moderately with somewhat similar instruments, and not at all with instruments that have been proven to measure totally different constructs (divergent validity).

Criterion validity

Criterion validity refers to the ability of an instrument to predict scores on direct external criteria of which the test purports to measure. For example, an instrument used to test physical ill health would be expected to correlate highly with days sick from work, visits to a GP and blood tests. An instrument used to test for alcohol abuse would be expected to correlate highly with poor results from a liver function test.

Sensitivity to change

This refers to the ability of the instrument to reflect real changes in the external criteria of a client. For example, if a client is tested before and after treatment, the score of the client on an instrument that measures physical ill-health should be lower the second time the client is tested, if physical examination reveals marked improvement following treatment. The change in the client's score on this instrument should also be consistent with changes in other related criteria such as days absent from work.

Practicality of the instrument

If an instrument is to be used in routine clinical assessment then it must also be brief, easy to understand and administer. It must also be simple to score and have easily interpretable results (Slade, Thornicroft, & Glover, 1999).

Professional versus self rated questionnaires and interview

There is also the issue of internal validity or the extent to which the information collected is a true reflection of the facts. Self report by clients with an alcohol or other drug problem has often been found to be inaccurate. The reasons for this include individual differences in recall ability, fear of legal complications associated with disclosure of illicit drug use, demand characteristics (wanting to please the researcher/clinician), and emotional factors that distort accurate recall.

Clinician rated questionnaires and interviews are considered to be slightly more accurate as they can be more objective, however there is also unintentional bias that can come from the clinician in both questionnaires and interviews. Third party assessment of change is therefore often beneficial as it can eliminate clinician bias. Structured interviews whilst providing more comprehensive information on clients are often longer and thus more costly and generally burdensome.

As discussed above a questionnaire which meets the criteria for standardisation, is clinician rated and brief in order to avoid the burdens of time and cost is possibly the most suitable type of instrument for routine outcome measurement.

When to measure?

Now that the most effective way of measuring change have been established, it is important to discuss at what points measurement need take place in order to improve sensitivity to change. There is no standard rule about the timing of measurement. If measurement is being used to inform the clinician about client progress then measurement is necessary at the beginning, throughout, and at the end of treatment. Gathering a consistent baseline is important with this type of single subject approach, and measurements should be no longer than 6 months apart. Measurement at the beginning and end can be sufficient to gauge overall outcome of a treatment and is particularly enhanced if data can be compared to changes achieved in a normative sample. Finally, longer-term follow-up can be very useful to ascertain the sustainable benefits from a particular treatment. (Andrews et al., 1994).

It should be noted that there are particular difficulties associated with the process of following up clients who have utilised alcohol and other drug services. Frequent changes in residency, fears associated with the illicit nature of some substance use, criminality and incarceration as well as death from overdose, are all factors that can interfere with comprehensive follow up in this population (Cottler, Compton, Arbi, Horne, & Claverie, 1996). Follow up at both three and six-month intervals are therefore important in this group, as clients may be slightly more accessible in the shorter term.

METHOD

Consultation

A brief survey was conducted of 58 government and non-government alcohol and other drug treatment services. These agencies were chosen from mailing lists at the National Drug and Alcohol Research Centre. In this pilot 58 surveys were mailed, 42 were received completed, 6 were returned blank due to incorrect addressing and 10 were not returned. This represents a response rate of 72%.

Three main questions were covered: importance of measurement of different areas of drug and alcohol treatment outcome, importance of methods of assessment, and the uses of outcome measurement. Importance is rated on a 5 point scale from "1" (not important) to "5" (extremely important). The main areas in which consumer outcome can be measured are included in the questionnaire, namely symptoms, disablement or functioning, quality of life, and satisfaction with services. An "other" option was also provided to allow respondents to nominate other areas of importance.

Five assessment formats were rated covering questionnaires completed by the consumer, clinician, or family member, an interview with the consumer, and a rating scale completed by the clinician. A range of ‘uses of information obtained from outcome measurement’ were also assessed and include: to inform the clinician about progress of the consumer, to inform the consumer about their own progress, to assess the efficacy of treatment services, to make funding decisions about services, and an "other" option.

Literature

A thorough search of the literature was conducted in order to identify all of the outcome measures that have been used both in the mental health and alcohol and other drug field. This was achieved by searching the Medline, Psych Info, Embase and Web of Science databases. A general Internet World Wide Web ‘Excite’ search was also conducted. The substance abuse treatment literature and associated citation lists were then examined to ensure that those instruments whose name is not included in the title

or abstract of the published article (the basis on which web searches operate) were not omitted. Further outcome measures were identified through this process. Only those measures used with the alcohol and other drug population were considered.

RESULTS

Consultation

The results are presented in Table 1 below. Consultation with the field demonstrated that use of alcohol and other drugs (quantity/frequency) and functioning were considered to be the most important areas of outcome evaluation. 'Clinician rated questionnaire' or 'interview with the client' were rated as the preferred methods and respondents stated that the collection of such data would improve the effectiveness of treatment. Those denoted with an asterisk were rated significantly different to other ratings ($p<0.05$).

Table 1. Survey of attitudes to outcome measurement.

Survey Question	**Mean**	**Median**	**SD**
Area			
Use Drugs or alcohol	4.5*	5	0.7
Disability/functioning	4.4*	4	0.6
Quality of life	4.1	4	0.8
Satisfaction	3.7	4	0.8
Physical/psychological Health	4.3	4	0.6
Method			
Questionnaire for consumers	4.1*	4	0.8
Questionnaire for clinician	3.7	4	0.9
Questionnaire for family	3.0	3	0.9
Interview with consumer	4.0*	4	1.0
Rating by Clinician	3.9	4	0.9
Uses			
Inform clinician	4.2	4	0.7
Inform Consumer	4.1	4	0.9
Service efficacy	4.5*	5	0.6
Service funding	3.7	4	1.0

Rating scale; 1=not at all important; 2 = a little important; 3 = somewhat important; 4 = very important; 5 = extremely important

Literature search

Initially the literature search methods yielded a list of almost 300 instruments. The full list can be found in appendix A.

Once this final list was assembled it was then necessary to eliminate all of those instruments that were too specific to be considered as overall outcome measures. Instruments such as those that detect biochemical markers, instruments that assess 'craving' or 'moods' or 'latency to relapse' or 'high-risk situations' exclusively were eliminated. This decision was made on the basis that such specific measures are too narrow to be used as an outcome assessment.

Further elimination of instruments was made on the basis of insufficient published information. Measures that were cited only once in the literature, or measures that have been used infrequently, or not used for many years, were also eliminated from detailed examination.

As a result of this process, 44 instruments remained. These instruments were then examined in detail by collecting the relevant articles that document testing of their psychometric properties. At least two of the authors then rated all instruments independently. Where any discrepancy arose, each examiner discussed their rationale for their rating of the instrument until consensus was achieved.

The rating criteria for the instruments can be found in the appendix and are as follows: - for each category of reliability; item, test-retest and inter-rater and for each category of validity; content, construct and criterion the measure could receive a rating of either 1 weak, 2 adequate or 3 excellent. A summary rating was also given on the same scale depending on the rating for each category, and the number of studies reporting on the psychometric findings. For example a measure that has high levels of each type of reliability and validity but only a few reported studies on the psychometrics was given an adequate overall rating. A measure that has adequate levels of reliability and validity reported in numerous studies was also given an adequate rating and an instrument that has adequate ratings of some measures of reliability and validity in few studies was rated as weak.

The 44 instruments fall into the following categories: ‘screening for problematic use and quantity/frequency’, ‘diagnosis of dependence/harmful use’, ‘functioning’, ‘multi-dimensional measures’, ‘relapse’, and ‘satisfaction with service’.

Screening for problematic use/ quantity/frequency

Screening instruments are those that are used to detect potentially harmful levels of alcohol or other drug use. They are generally brief, easily understood by the client and easily scored by the clinician (Dawe & Mattick, 1997). They need to provide reliable information that alerts the clinician to the need, or lack thereof, for further assessment and treatment. The literature search uncovered nine instruments that fall into this category. They are outlined in Table 2.

The following instruments comprise this list; The Alcohol Use Disorder Identification Test (Audit) (Saunders, Aasland, Babor, Fuente, & al., 1993), the Alcohol Use Inventory (Horn, Wanberg, & Foster, 1974), The CAGE (Ewing, 1984), The Customary Drinking & Drug Use Record (Brown et al., 1998), The Drug Use Screening Inventory (Tarter & Hegedus, 1991), the Form 90 (Miller & Del Boca, 1994), the Michigan Alcoholism Screening Test (Selzer, 1971), the Time Line Follow Back (Sobell & Sobell, 1992), and the TWEAK (Russell, 1994).

Most of these instruments were designed as brief tools to detect potentially harmful alcohol or other drug use and as such are not comprehensive enough to be used as a measure of treatment outcome. Most have not been tested for their sensitivity to change over time and some have very little psychometric testing reported in the literature. For all of these reasons none of these instruments can be considered for use as a routine outcome assessment tool.

Table 2. Screening/Assessment Instruments

TITLE & AUTHOR & ORIGIN/SOURCE	TIME Mins	DESCRIPTION	VALIDITY	RELIABILITY	SENSITIVITY
Alcohol Use Disorder Identification Test: AUDIT 1993 (Saunders, Centre for Drug & Alcohol Studies Camperdown, Australia)	5	10 items; past 12 months Assesses harmful/hazardous drinking, forced choice, max score 40, cut off score id's pathology Self or clinician rated questionnaire Free, nil training, 400 citations	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest adequate	Yes
Alcohol Use Inventory 1974 (Horn, Centre for Alcohol Abuse, Research & Eval, Denver, Colorado, USA)	35-60	147 items; 16 primary scales covering styles of use, unfavourable consequences & benefits of drinking Self rated questionnaire, training required, 20 citations, $29.50 + $13.50 per test	Construct adequate	Item adequate	Unknown
CAGE 1994 (Ewing, , JAMA,252 1905-1907)	5	4 items; past/present Covering need to **C**ut down, **A**nnoyed at criticism re drinking, **G**uilty about drinking, need for **E**ye opener to remove hang over. Nil training, 1500 citations, Clinician rated. Free	Content adequate Criterion adequate	Item adequate	Yes
Customary Drinking & Drug Use Record (CDDR) 1987 (Brown , Psychol Ser, Veterans Affairs Med Ctr, California, USA)	15-30	3 months past & lifetime. Use quantity &frequency, psychological/behavioural dependence, withdrawal, consequences. Training required, 3 citations Clinician rated questionnaire	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest adequate Inter-rater adequate	Unknown
Drug Use Screening Inventory-Revised (DUSI-R) 1990 (Tarter et al, Gordion Grp, Hartsville, SC, USA)	15-20	159 items past yr, month week10 domains- AOD Use, Behaviour, Health, Psych disorder, Social, Family, School, Work, Peer & Leisure nil training, 10 citations Clinician or self rated questionnaire	Content adequate Criterion adequate	Item adequate Test-retest adequate Inter-rater adequate	Unknown
Form 90 1993 (Miller, Dep Psychol, Uni New Mexico, Alberquerque, USA)	40-60	90 items, past 90 days Calender used to chart consumption. BAC peaks also calculated, 2 days training, 53 citations Clinician rated interview	Content adequate Construct adequate	Test-retest adequate Inter-rater adequate	Unknown
Michigan Alcoholism Screening Test MAST 1971 (Selzer, Dep Psychiatry, Uni Michigan, Ann Arbor, Michigan)	10-15	25 items, current, past assessing problematic alcohol use forced choice Y/N answers, nil training, 190 citations Self or clinician rated questionnaire	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest adequate	

Table 2. Screening/Assessment Instruments cont'd……

TITLE & AUTHOR & ORIGIN/SOURCE	TIME Mins	DESCRIPTION	VALIDITY	RELIABILITY	SENSITIVITY
Time Line Follow Back (TLFB)1985 (Sobell, NIAA Treatment Handbook, DHHS pub No 85 1380)	5	30-60 items, past 30-60 days estimates quantity/frequency using calender + memory aids, nil training, 7 citations Self rated record. Free	Content weak Construct adequate Criterion adequate	Test-retest adequate	Unknown
TWEAK 1979 (Russell 1994, Alcohol health & Research World, 18:1, 55-61)	5	5 items current Assessing risk; **T**olerance, others **W**orried about your drinking, need for **E**ye opener, **A**mnesia (memory loss of drinking episode), need to C **(K)**ut down. Max score 7. Cut off defines risk, Nil training, 25 citations Self or clinician rated questionnaire. Free	Construct adequate Criterion Adequate	Unknown	Unknown

Diagnosis (Dependence/Harmful use)

Diagnostic instruments are those that can identify that an individual has a clinical alcohol or other drug syndrome (Dawe et al, 1997). Diagnostic instruments are longer and more comprehensive than screening instruments. Diagnostic instruments allow an individual's condition to be classified according to specific and widely recognised criteria (Such as DSM IV or ICD-10). They can provide an indication about suitable treatments/management plans for that individual. (They do not provide information on specific features of each individual case, and cannot substitute for a comprehensive collection of all information pertinent to each individual's presenting problems).

The literature search yielded a total of fifteen instruments that meet the standardisation criteria and fit into this category. These can be found in table 3 below. The CIDI-SAM (Cottler, Robins, & Helzer, 1989), the Adolescent Drug Abuse Diagnosis (Friedman & Utada, 1989), the Alcohol dependence Scale (Skinner & Allen, 1982), the Benzodiazepine Dependence Questionnaire (Baillie & Mattick, 1996), the Comprehensive Addiction Severity Index (Myers, McLellan, Jaeger, & Pettinati, 1995), the Dartmouth Assessment of Lifestyle (Rosenberg et al., 1998), the Fagerstrom Test for Nicotine Dependence (Heatherington, Kozlowski, Frecker, & Fagerstrom, 1991), the Leeds Dependence Questionnaire (Raistrick et al., 1994), the MacAndrew Alcoholism Scale (MacAndrew, 1965), the Millon Clinical Multiaxial Inventory (Craig, 1999), the Severity of Alcohol Dependence Scale (Gossop et al., 1995), the Severity of Opiate Dependence Scale (Sutherland et al., 1986), the Short Form Alcohol Dependence Data Questionnaire (Raistrick, Dunbar, & Davidson, 1983), and the Substance Abuse Treatment Scale (McHugo, Drake, Burton, & Ackerson, 1995) are all included in the following table. The sensitivity to change of most of these instruments has not been documented in the literature and most of these instruments are too long to be considered as a routine outcome assessment tool.

Table 3. Diagnosis

TITLE & AUTHOR & ORIGIN/SOURCE	TIME Mins	DESCRIPTION	VALIDITY	RELIABILITY	SENSITIVITY
Adolescent Drug Abuse Diagnosis (ADAD)1989 (Friedman, Belmont Ctr for Comprehensive treat, Philadelphia, USA)	45-60	150 items. 9 areas; medical, school, employment, social, family, psychological, legal, alcohol, drug. Composite scores & severity ratings Clinician administered interview .Questionnaire free, $10-$90 manual, software etc, 1 day training, 2 citations	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest adequate Inter-rater adequate	Unknown
Alcohol Dependence Scale (Skinner & Allen; addiction Research foundation, Toronto, Canada*)*	15	25 items; past 12 months Assesses physical dependence, forced choice responses Self rated questionnaire users guide $18.00, 0.40c per questionnaire, Nil training, 80 citations	Content adequate Construct adequate Criterion adequate	Item Execellent Test-retest adequate	Unknown
Benzodiazepine Dependence Questionnaire BDEPQ)1996 (Baillie , Dep Psychol, Macquarie Uni, Ryde, NSW, Australia)	5-10	30 items, 4pt likert scale sub scales- gen dependence, pleasant effects & perceived need, nil training, 5 citations	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest adequate	Unknown
Composite International diagnostic Interview-Substance Abuse Module (CIDI-SAM*)* 1997 (Cottler, Dep Psych, Washington Uni School medicine, St Louis, USA)	60	276 items, lifetime or recent period eg past month/year 1 week training, 180 citations Clinician rated interview	Content adequate Construct adequate	Test-retest high Inter-rater high	Unknown
Comprehensive Addiction Severity index (CASI-A) 1995 (Myers , University of Pennsylvania, VA Medical Ctr, Pennsylvania, USA)	45-60	Assesses known risk factors, concomitant symptomatology, + AOD consequences in 7 domains, Training required, 3 citations Clinician rated interview	Content adequate Construct adequate Criterion adequate	Item adequate	Unknown
Dartmouth Assessment of Lifestyle Instrument(DALI) 1998 (Rosenburg, Dep Psych, Dartmouth College, New Hampshire, USA)	5-10	18 items, Current Assesses alcohol &/or Drug us disorder, 2 scales – alcohol, drug, nil training, 1 citation Clinician rated interview, Free	Content adequate Criterion adequate	Test-retest adequate Inter-rated adequate	Unknown
Fagerstrom Test of Nicotine Dependence (FTND) 1991 (Fagerstrom, Smoking Wdl Clin, Ulleraker Hospital, Sweden)	5-10	6-8 questions, overall score indicates minimal, moderate or severe dependence Free. self or clinician rated, nil training	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest excellent	Unknown
Leeds Dependence Questionnaire (LDQ) 1994 (Raistrick, Leeds Addiction Unit, Leeds, UK)	5-10	10 items, preceding week Salience, compulsion to start, & continue, planning, max effect, narrowing repertoire, primacy of effect, consist of state, cog set. Free 1 hr training, 3 citations, Self rated questionnaire	Content adequate Construct adequate	Item adequate Test-retest adequate	Unknown

Table 3. Diagnosis cont'd……..

TITLE & AUTHOR & ORIGIN/SOURCE	TIME Mins	DESCRIPTION	VALIDITY	RELIABILITY	SENSITIVITY
MacAndrew Alcoholism Scale 1965 (MacAndrew, 1965, Quarterly Journal of Studies on Alcohol, 26:2, 238-46)	30-90	49 items form MMPI, current determining diagnosis, prognosis & personality factors, forced choice T/F response format nil training, 90 citations Self rated questionnaire. $1.00 per test	Content weak Construct weak Criterion weak	Test-retest adequate	Unknown
Millon Clinical Multiaxial Inventory (MCMI) 1983 (Millon, National Computer Systs Inc, Minneapolis, USA)	20-25	175 items,26 sub-scales Nil training, 71 citations Clinician or self rated questionnaire $0.25 per Questionnaire, $20 scoring & interpretation.	Content adequate Construct adequate Criterion adequate	Item adequate Inter-rater adequate	Unknown
Severity of Alcohol Dependence Questionnaire SADQ 1979 (Stockwell, Curtin Uni of Tech, Curtin WA, Australia)	5-10	20-33 items, past 6 months 5 domains; physical, affective, need (craving), quantity, post abstinence rapidity of reinstatement of symptoms, forced choice- never to nearly always. Nil training, 40 citations. Self or clinician rated questionnaire	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest adequate	Unknown
Severity of Dependence Scale (SDS) 1995 (Gossip, National Addiction Centre, Maudsley Hospital, London, UK)	5	5 items, past year Loss of control of use, worry re missed dose, worry re use, desire to stop, difficulty stopping/ missing dose. Nil training, 13 citations Self rated questionnaire	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest adequate	Yes
Severity of Opiate Dependence Questionnaire (SODQ) 1986 (Sutherland, Addiction Res Unit, Inst Psychiatry, London)	10	21 items, most recent 1 month of heavy use Qty & pattern opiate use, phys wdl sympt, affect wdl sympt, wdl relief drug taking, rapidity of reinstat of sympt post abstinence, nil training, 5 citations	Content adequate Construct adequate Criterion adequate	Item adequate	
Short Form Dependence Data Questionnaire SADD 1983 (Raistrick, Leeds Addiction Unit, Leeds, UK)	5	15 items, Recent Assesses dependence; physical, psychological/emotional & behavioural. Forced choice 4 pt scale never to nearly always. Nil training, 4 citations Self rated questionnaire. Free	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest adequate	Unknown
Substance Abuse Treatment Scale (SATS*)* 1990 (McHugo, Dartmouth Psych Res Centre, New Hampshire, USA)	5	Assesses stage of change, past 6 months Clinician rated scale Nil training, 21 citations	Content adequate Construct adequate Criterion adequate	Test-retest adequate Inter-rater adequate	Unknown

Relapse

Relapse questionnaires are those that detect the degree of risk of an individual of returning to a potentially dangerous or harmful level of alcohol or other drug use. Relapse questionnaires are generally brief and provide clients and clinicians with an indication of the areas that need addressing if abstinence is to be maintained. The literature search yielded 4 such measures; The Abstinence Self-Efficacy Scale (DiClemente, Carbonari, Montgomery, & Hughs, 1994), the Cocaine Relapse Interview (McKay, Rutherford, Alterman, & Cacciola, 1996), the Controlled Drinking Situational Confidence questionnaire (Sitharthan & Kavanagh, 1990), and the Situational Confidence questionnaire (Anis, 1982). These can be found in table 4.

All of the questionnaires in this category assess a particular aspect of an alcohol or drug problem. All have unknown sensitivity to change and most have not been well cited in the literature. For all of these reasons none of these instruments would be suitable as a routine outcome measurement tool.

Table 4. Relapse Measures

TITLE & AUTHOR & ORIGIN/SOURCE	TIME Mins	DESCRIPTION	VALIDITY	RELIABILITY	SENSITIVITY
Alcohol Abstinence Self Efficacy Scale 1993 (DiClemente, Dep Psych, Uni Houston, USA)	10	20 items; Current time Assesses belief in ability to resist urge to drink heavily (alcohol). Negative affect, social positive, physical & other concerns, withdrawal & urges. Nil training, 4 citations, Self rated questionnaire	Content adequate Construct adequate Criterion adequate	Item Adequate	Unknown
Cocaine Relapse Interview (CRI) 1996 (McKay, Uni Pennsylvania, Trt Res Ctr, Philadelphia, USA)	30	5 categories, Experiences on day prior to relapse, experiences in week prior to R, attributions re cause of relapse, experiences post onset, perceptions re factors assoc with termination of relapse, training- unknown, 5 citations	Criterion adequate	Item adequate Test-retest adequate	Unknown
Controlled Drinking Situational Confidence Questionnaire 1991 (Sitharthan, Drug & Alc Dep, RPA Hospital, Camperdown 2050, Australia)	??	16 items, current/future Assesses confidence in not drinking heavily in 16 high risk situations (0-100% ratings)- 2 scores; self efficacy strength (overall confidence) & self efficacy level (No. situations with max confidence) Training unknown, 1 citation, Clinician rated	Criterion moderate	Unknown	Unknown
Situational Confidence Questionnaire 1982 (Annis, Addiction Research Foundation, Toronto Canada)	15	39 items, current assesses confidence in ability to resist drinking; profile in 2 areas- 1/personal states 2/social situations, $25 (25 questionnaires & manual- additional cost for software), users guide for training, 18 citations. Self rated questionnaire	Content adequate Construct adequate Criterion adequate	Item adequate	Unknown

Functioning

Instruments that assess level of functioning are those that provide a profile of how well an individual is able meet the challenges of everyday living. These instruments generally cover the domains such as a) psychological functioning – eg levels of mood, anxiety/depression, b) social functioning- ability to maintain relationships with others, c) physical functioning – ability to attend to self hygiene, motivation/energy levels and/or d) behaviour – level of violence/aggression. Instruments that fall into this category can be found in the table 5.

The Global Assessment Scale (Endicott, Spitzer, Fleiss, & Cohen, 1976), the General Health Questionnaire (Goldberg, 1972), the Nottingham Health Profile (Hunt, McKenna, McEwen, Williams, & Papp, 1981), the Short Form 36 (Ware & Sherbourne, 1992), and the Symptom Checklist 90 Revised (Derogatis, 1983) all fall into this category. All of these instruments have good levels of reliability, validity and sensitivity to change but none have a component that measures quantity or frequency of alcohol or other drug use. For this reason none of these instruments except the SF 36 were selected for potential use as a routine outcome assessment tool. The SF 36 was considered because of its strong psychometric properties and its considerable use as an outcome tool.

Table 5. Functioning

TITLE & AUTHOR & ORIGIN/SOURCE	TIME Mins	DESCRIPTION	VALIDITY	RELIABILITY	SENSITIVITY
General Health Questionnaire (GHQ) 1972 (Goldberg, General Practise Res Unit, De Crespigny Pk, London, UK)	5-15	12, 20, 28, 30 or 60 items, Current 4 area; depression, anxiety, behaviour, hypochondriasis, 4 pt likert scale Nil training, 1625 citations Self rated questionnaire	Content high Construct high Criterion adequate	Item high Test-retest adequate	Yes
Global Assessment Scale (GAS) 1976 (Endicott, NY State Psych Inst, NY, USA)	5-10	1 item, Current Rating 1-100, 10 equal intervals from 1-10 (needs constant supervision) to 90-100 (superior functioning in wide range activities). Appropriate category chosen 6 hrs training, 197 citations, Clinician rating	Content adequate Construct adequate Criterion adequate	Inter-rater adequate	Yes
Nottingham Health Profile (NHP) 1981 (Hunt, Dep Comm Hlth, Queens Med Ctre, Uni Nottingham, UK)	10	38 items, Current 6 dimensions; energy, emotional reaction, social isolation, sleep, pain, phys mobility Y/N answers nil training, 333 citations Self rated questionnaire	Content high Construct adequate Criterion adequate	Test-retest adequate	Yes
Short Form 36, SF-36 (Ware & Sherbourne, The health Inst, Boston, USA)	5-10	8 variables- gen health, mental health, pain, phys functioning, role limitations physical, role limitations emotional, vitality, social functioning, self or clinician rated questionnaire. Nil training, no charge	Content excellent Construct excellent Criterion adequate	Item adequate Test-retest excellent Inter-rater excellent	Yes
Symptom checklist 90 Revised (SCL90- R) 1973 (Derogatis, Clinical Psychometrics Res Inc, Maryland, USA)	10-20	90 items, Current 9 areas; Somatisation, OCD, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism, 5 pt likert scale, gen symptom index. Nil training, 10 citations Self rated questionnaire	Content adequate Construct adequate Criterion adequate	Test-retest adequate	Yes

Satisfaction with Service

Questionnaires that assess satisfaction with services are those that provide information about the degree to which individual recipients of treatment (clients) feel that the treatment they received was satisfactory/beneficial. These questionnaires cover the domains of both the physical environment in which the service was provided as well as the quality of care from the staff who delivered the service. The literature search yielded a total of three such instruments (refer Table 6).

The Client Satisfaction Questionnaire (Attkisson & Zwick, 1983), the Service Satisfaction Scale (Greenfield & Attkisson, 1989) and the Verona Service Satisfaction (Ruggeri & Dall'Agnola, 1993) all fall into the category of satisfaction with service. These questionnaires reflect information about the clients' feelings regarding the service they have received. Satisfaction with service has not been shown to be consistently related to outcome (Andrews et al., 1994); a client may be thrilled with the level of care they received but their level of functioning may not necessarily benefit from such care. Consequently these instruments cannot be used as routine outcome assessments.

Table 6. Satisfaction questionnaires

TITLE & AUTHOR & ORIGIN/SOURCE	TIME Mins	DESCRIPTION	VALIDITY	RELIABILITY	SENSITIVITY
Client Satisfaction Questionnaire 1982 Attkisson & Zwick	10	31 items covering 9 categories: physical surrounding, support staff, types of service, treatment staff, quality of service, outcome of service, general satisfaction, procedures. Clinician or self rated, 50c each.	Content adequate Construct adequate	Item adequate	No
Service Satisfaction Scale 1989 Greenfield & Attkisson	10	30 items covering interpersonal manner, technical quality, efficacy/outcomes, accessibility/convenience, finances, physical environment, availability, self rated over 1 year, 5 pt scale, nil training, cost ??	Content adequate Construct adequate	Item adequate	No
Verona Service Satisfaction Scale-Patients 1993 Ruggeri & Dall'Agnola	45	56 items covering 7 areas: overall satisfaction, skills & behaviour, information, access, efficacy, types of intervention, relatives involvement. 5-pt scale, self or clinician rated, 2 days training, cost ???	Content adequate Criterion forthcoming	Test-retest adequate	No

Multi-dimensional

Questionnaires and interviews that fall into this category gather information across a number of domains. These instruments generally provide information on all or most of the following: the level of alcohol and/or drug use, physical functioning, psychological functioning, social functioning, leisure activities, behaviour, and satisfaction with service. The literature search identified seven instruments that can be classified as multi-dimensional. These can be found in the Table 7.

The Addiction Severity Index (McLellan et al., 1992), the Alcohol Problems Questionnaire (Drummond, 1990), the Drug Use Screening Inventory (Tarter & Hegedus, 1991), the Health of the Nation Outcomes Scales (Wing et al., 1998), the Opiate Treatment Index (Darke, Hall, Heather, Wodak, & Ward, 1992), the Teen Addiction Severity Index (T-ASI) (Kaminer, Bukstein, & Tarter, 1991), and the Treatment Outcome Profile (Holcomb, Parker, & Leong, 1997) have all been classified as multi-dimensional instruments.

All of these instruments were examined in detail by the authors in order to determine which of these instruments would be most appropriate as a routine outcome assessment tool.

Table 7. Multi-dimensional

TITLE & AUTHOR & ORIGIN/SOURCE	TIME Mins	DESCRIPTION	VALIDITY	RELIABILITY	SENSITIVITY
Addiction Severity Index (ASI) (McLellan, Penn VA Centre, Philadelphia USA)	40-60	7 domains, substance abuse, medical, psychological, legal, family/social, employment, support, Clinician rated interview, training required, no charge	Content adequate Construct Excellent Criterion Excellent	Item excellent Test-Retest excellent Inter-rater excellent	Yes
Alcohol Problems Questionnaire 1990 (Drummond, Addiction Research unit, London, UK)	15-20	44 items, past 6 months 8 problem domains; children, police, employment, finances, physical & psychological Self or clinician rated questionnaire, 6 citations	Construct adequate Criterion adequate	Item adequate Test-retest adequate	Unknown
Comprehensive Drinker Profile & Follow Up Profile 1984 (Miller & Marlatt, Psychol Assess Resources, Oddessa, Fl, USA)	60-120	88 items, Lifetime Drinking History, motivation,, Demographic, self efficacy,20 hrs training, 5 citations Clinician rated interview, Approx $113, varies	Content adequate Criterion adequate	Test-retest adequate	Unknown
Drug Use Screening Inventory (DUSI) 1990 *(*Gorney D, Gordion Group, PO Box 1587, Hartsville, SC 29550)	15-20	159 items, past week, month, year 10 domains- AOD Use, Behaviour, Health, Psych disorder, Social, Family, School, Work, Peer & Leisure. Nil training, few citations. Clinician or self rated questionnaire	Content adequate Criterion adequate	Item adequate Test-retest adequate Inter-rater adequate	Unknown
Health of the Nation Outcome Scales (HoNOS) (Wing, Royal College of Psychiatrists, London, UK)	15-30	12 scales- aggression, self harm, alcohol & drug, memory/orientation, physical problems, mood disturbances, hallucinations & delusions, other mental problems, social relationships, social environment, 4 sub-scales behaviour, impairment, symptoms & social., clinician rated questionnaire, some training required, Free	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest adequate Inter-rater adequate	Yes
Opiate Treatment Index (OTI) (Darke, National Drug & Alcohol Research Centre, Sydney Australia)	20-30	5 domains – AOD use, HIV risk behaviour, Criminal behaviour, Social and Psychological Functioning, Clinician rated interview, nil training. Free	Content adequate Construct adequate Criterion adequate	Item adequate Test-retest excellent Inter-rater adequate	Yes
Teen Addiction Severity Index (T-ASI) 1991 (Kaminer, Uni Pittsburgh, School Med, Pittsburgh, PA, USA)	30-45	Modelled on ASI, 7 domains, substance use, school performance, family, peer/social, employment, legal, psychiatric, training required, 4 citations, Clinician rated interview. Free	Content adequate Construct Adequate Criterion adequate	Inter-rater adequate	Unknown
Treatment Outcome Profile (TOP) 1997 (Holcomb, Dep Psych, Uni Missouri, USA)	5-10	27 items, Current QOL, symptomatology, level of functioning & treatment satisfaction, forced choice 5 pt likert scale Manual for training, 3 citations. Self rated questionnaire	Content adequate Construct adequate Criterion adequate	Item adequate	Unknown

Note that inclusion into the above tables is reflective only of the process and criteria used in this study to identify potential outcome measures for the purpose of widespread implementation.

These criteria are that the instruments be

- psychometrically sound (valid, reliable and sensitive to change),
- practical,
- used in the alcohol and other drug field and
- that they are multi-dimensional – assessing different domains of AOD use and physical and emotional functioning.

There are other measures that have been used with clients suffering from alcohol or drug use conditions that have not been included in the short list above. As outlined in the method, instruments assessing craving, withdrawal, biochemical evidence of AOD use, the existence of depression, anxiety or other mental health conditions are not listed above. None of these measures alone would be a satisfactory and generic indicator of treatment outcome and hence their exclusion from the above list. It may be necessary to use such specific measures in particular circumstances and with particular clients/studies. Instruments able to be used for these purposes can be found in the extended list of assessment measures located in the appendix 1.

Of the multi-dimensional instruments, only three plus one instrument from the functioning category (the SF-36) met the stringent criteria used in this study, that is applicability, acceptability, practicality, reliability, validity, and sensitivity to change. Those four include the Addiction Severity Index, the Health of the Nation Outcome Scales, the Opiate Treatment Index and the Short Form 36-health survey.

The Addiction Severity Index (ASI)

McLellan A, T., Luborsky, L., Woody, G, E., & O'Brien, C, P. (1980)

The ASI was developed in 1980 to enable a group of clinical researchers in the United States to evaluate treatment outcome for people with substance abuse problems. This instrument is a structured interview consisting of seven scales; alcohol use, drug use, medical problems, psychological problems, family/social problems, employment

problems and legal problems. According to the ASI severity is defined as 'the need for additional treatment'. The interview takes approximately 45-60 minutes to administer by a trained professional. Three days training is required in the use of the Addiction Severity Index and it is available free of charge.

The interviewer estimates an overall rating of severity. The ASI also includes a rating by the client on their estimation of problem severity. A Composite Score is calculated for each scale and a total Composite Score calculated for the sum of the Interviewer Severity Rating Scales. Questions for each scale require the client to comment both on problems over the past 30 day period and over the course of their lifetime.

Extensive research has been carried out on the psychometric properties of the ASI. There are many studies that report on the content validity of the ASI (Alterman et al., 1998; Carey, Cocco, & Correia, 1997; McLellan et al., 1985; Wertz, Cleaveland, & Stephens, 1995; Alterman, Brown, Zaballero, & McKay, 1994; Zanis, McLellan, Cnaan, & Randall, 1994; & McLellan, Luborsky, Woody, & O'Brien, 1980). The fact that it was developed by clinical researchers who have extensive experience in the AOD field, and that it has been so widely adopted, are testimony to its content validity. Some studies have criticised certain scales of the ASI as being irrelevant to particular populations such as the homeless and the severely psychiatrically impaired (Carey et al., 1997).

The ASI has been found to have reasonable construct validity in a number of studies (Alterman et al., 1998; Appleby, Dyson, Altman, & Luchins, 1997; De Jong, Willems, Schippers, & Hendricks, 1995; Joyner, Wright, & Devine, 1996; Argeriou, McCarty, Mulvey, & Daley, 1994; Zanis et al., 1994; Hodgins & El-Guebaly, 1992; Hendricks, Kaplan, Van Limbeek, & Geerlings, 1989; Rogalski, 1987; McLellan, et al 1985; Kosten, et al 1983; McLellan et al., 1980). However, Carey, Correia, & Cocco, Carey et al., (1997) found the construct validity to be poor in a psychiatric population.

Criterion/concurrent validity is reported as being in the moderate range when the ASI is compared with independent variables matching the subscales, and also when compared with other similar instruments (Alterman et al., 1998; Appleby, et al 1997; Argeriou et al., 1994; Kosten, Rounsaville, & Kleber, 1983; McLellan et al., 1985; &

McLellan et al., 1980). Daepen et al., (1996) found the criterion validity of the ASI to be weak in a French speaking alcohol dependent population. Zanis, McLellan, & Corse (1997) found weak criterion validity with a population having a severe & persistent mental disorder and substance abuse problem. Wertz, Cleaveland, & Stephens (1995) also report weak criterion validity of the ASI. Overall the criterion validity as reported in the majority of studies is adequate.

Item reliability has been reported as moderate to good in most studies (Argeriou et al., 1994; Appleby et al., 1997; Zanis et al., 1997; De Jong et al., 1995; Alterman et al., 1994; McCusker, Bigelow, Servignon, & Zorn, 1994; Zanis et al., 1994; Hodgins & El-Guebaly, 1992; Hendricks et al., 1989; & McLellan et al., 1980).

Test-retest reliability has been reported as moderate to high for Composite scores and generally lower for Interviewer Severity Ratings (Carey et al., 1997; Zanis et al., 1997; Daepen et al., 1996; Joyner et al., 1996; Drake, McHugo, & Besanz, 1995; McCusker et al., 1994; Zanis et al., 1994; & McLellan et al., 1985).

Inter-rater reliability has been reported as being good to very good in most studies for the composite scores (Appleby et al., 1997; Carey et al., 1997; Zanis et al., 1997; Wertz et al., 1995; Alterman et al., 1994; McCusker et al., 1994; Stoffelmayr, Mavis, & Kasim, 1994; Hodgins & El-Guebaly, 1992; & McLellan et al., 1980). Interviewer Severity ratings tend to be more subjective than Composite scores and higher variability has been found. These scores have thus been found to be less stable/reliable across interviewers and over time.

Generally the ASI has been found to be quite sensitive to change in a number of studies (Argeriou et al., 1994; & Appleby et al., 1997).

Health of the Nation Outcome Scale (HoNOS)
Wing, J, K. Beevor, A, S. Curtis, R, H. (1998)

The HoNOS (Wing et al., 1998) is a scale developed by clinicians in the United Kingdom as a tool for measuring the general health and social functioning of mentally ill people. The HoNOS consists of an overall score of severity derived from 12 scales;

aggression, self harm, alcohol and drug, memory/orientation, physical problems, mood disturbance, hallucination and delusions, other mental, social relationships, social environment. These 12 scales can be grouped into 4 categories or sub-scales; behaviour, impairment, symptoms and social. The HoNOS takes 15-30 minutes to complete and must be administered by a trained clinician. The HoNOS is available free of charge.

Several studies investigating the reliability and validity of the HoNOS have been reported in the literature. The results indicate that the HoNOS has satisfactory to good content, construct and criterion validity (Amin et al., 1999; Bebbington, Brugha, Hill, Marsden, & Window, 1999; Orrell, Yard, Handysides, & Schapira, 1999; & Wing et al., 1998). Results on reliability are mixed.

Generally test-retest and item reliability are moderate to good (kappa 0.4 – 0.8) (Orrell et al., 1999; Wing et al., 1998). Inter-rater reliability reports are lower and are explained as 'possibly being due to insufficient agreement/understanding between raters on the standard of reference for each question's validity (Amin et al., 1999; Orrell et al., 1999; Wing et al., 1998). Bebbington, et al (1999) report quite poor inter-rater reliability for the HoNOS.

Sensitivity of the HoNOS to change has been reported as fairly good (Sharma, Wilkinson, & Fear, 1999). Some studies however indicate that the HoNOS does not register subtle changes in functioning (Stein, et al 1999).

The HoNOS is a brief global assessment of functioning that can measure clinical change (Chaplin & Perkins, 1999; Sharma et al., 1999; & Taylor & Wilkinson, 1997). It does not provide information on specific areas of client need or on how change was facilitated. HoNOS scores can be a useful measure of change, or lack of change, provided they are collected at set intervals & by trained raters with established reliability' (Sharma et al., 1999).

In summary the HoNOS is a brief measure of clinical change that has been proven to be reliable and valid when used with a psychiatric population. It has as yet to be tested more comprehensively on a wider range of populations such as those abusing

substances and/or multi-cultural populations. It is important to stress the need for clinicians to be trained in the use of this instrument in order to gain valid and reliable data on client progress. Whilst the HoNOS has been shown to be sensitive to change, it does not aid in treatment planning and its major utility is as a gross measure of treatment effectiveness/client change over time.

The Opiate Treatment index (OTI)
Darke, Ward, Hall, Heather & Wodak, 1991

The Opiate Treatment Index (OTI) was developed in Australia in 1991. It was developed as a measure of treatment outcome for the population of opiate users. The OTI was developed for use as both a clinical and a research tool. This instrument was developed in the form of a structured clinical interview and takes approximately 20 – 30 minutes to administer. The OTI consists of questions that focus on AOD use, HIV risk taking behaviour, criminal behaviour, social functioning and psychological functioning. All of the questions except for social functioning refer to the month prior to the interview.

Several studies examining the psychometric properties of the OTI have been reported in the literature. The OTI has been found to have reasonable internal reliability (Adelekan, 1996; Adelekan, 1996b; Darke et al., 1992; & Darke, Ward, Zador, & Swift, 1991).

Test retest reliability has been demonstrated to be adequate in the 2 studies that examined this issue (Adelekan, 1996; & Darke et al., 1992). Similarly Inter rater reliability has been shown to be good to very good (Adelekan, 1996; Adelekan, 1996b; Deering & Sellman, 1996; & Darke et al., 1992)

Studies by Darke et al (1992) and Darke et al (1991) have found that the OTI has good content/ construct validity. Adelekan (1996) and Darke et al (1992) confirm the criterion validity of the OTI.

Few published studies have focused on the ability of the OTI to register clinical change over time. However the OTI has been utilised extensively in clinical research.

The Short-Form 36 Health Survey (SF-36)

Ware & Sherbourne (1992)

The SF 36 is a self-administered questionnaire that was developed in 1992 as part of a study in the US to evaluate services in the health care system. It consists of 36 questions that reflect the client's functioning status, symptoms/well being and overall health. The SF 36 has 8 multi item scales; physical functioning, physical role limitation, emotional role limitation, bodily pain, mental health, social functioning, vitality and general health perceptions. This instrument takes approximately 5 – 10 minutes to complete. The scores are summed for each item, but an overall score is not calculated. Rather a profile for scores on the different dimensions is used.

The SF 36 has been adapted for use in a number of countries. The internal reliability is acceptable (Sanson-Fisher & Perkins, 1998; Jenkinson, Coulter, & Wright, 1993; & Garratt, Ruta, Abdalla, Buckingham, & Russell, 1993) and test-retest reliability of the SF 36 are reported to be good (Sanson-Fisher & Perkins, 1998; & Brazier et al., 1992).

Content and construct validity of the SF 36 has been shown to be quite high (Sanson-Fisher & Perkins, 1998; Jenkinson et al., 1993; Garratt et al., 1993; & Brazier et al., 1992) Tests of criterion validity are scarce, however Brazier et al (1992) have demonstrated good validity in this area in their study.

There is published data on norms for the SF 36 (Aronson et al, 1992) and the SF 36 has been shown to be sensitive to change (Rost, Smith, Burnam, & Burns, 1992). The SF-12 is a shorter version of this instrument that has been used extensively as an outcome tool. Whilst the SF-36 and the SF-12 do not register quantity and or frequency data on alcohol or other drug use, they cover every other important domain that a routine outcome assessment tool would need to access.

CONCLUSION

In conclusion, this report clearly establishes the importance of routine outcome measurement. It is an essential tool for clinicians as it enables an objective assessment of treatment. Clinicians thereby have access to information that can serve as feedback for the effectiveness of a particular treatment/service and the potential need for modification of treatment services.

Routine outcome measurement also provides an important source of information for clients. Assessment of outcome provides clients with objective evidence of the improvement in their health, validating and reinforcing gains that have been made during treatment.

Assessment of outcome allows comparison of treatment across services. This can help in the process of standardising treatment services and assisting less functional services to adopt processes that have been proven to be more effective in services treating a similar population. In addition the information that is generated from routine outcome assessment can assist funding bodies to channel funds into areas where outcome is poor, with the aim of either improving existing treatments or developing and implementing new/more efficacious treatments.

This project identified four outcome measures that could potentially be used in routine clinical outcome measurement. None of these instruments would be suitable to be utilised in their current format. They are either too long and labour intensive (ASI, OTI), require too much training for a reliable result (ASI), do not provide consistent enough results (HoNOS), or are too general (HoNOS, SF36).

In light of the above discussion, one of these instruments would be suitable to be used in a modified version. The OTI is the obvious choice as it was developed specifically for use with the alcohol and other drug population. Exactly how this instrument would be modified is the subject for further investigation. Obviously a modified version would need to be briefer, reflect use of all substances and be validated via correlation with other major instruments outlined above. Possibly some component of client satisfaction with treatment could be added.

This study succeeded in identifying potential outcome measures and providing a recommendation as to an instrument that may be used for routine outcome assessment. This recommendation is a minimum recommendation. There are many instruments capable of detecting statistically and clinically significant change in clients with an alcohol or drug use disorder.

Any of these instruments could be used in addition to the recommended measure in order to enhance the findings and identify more specific domains of treatment success/failure.

Questionnaires that assess risk of relapse, instruments that reflect changes in depression and/or anxiety and biological measures can all be used in addition to the recommended minimum measure. The basic instrument, being multi-dimensional, is capable of assessing outcome in clients with AOD problems only as well as clients with a co-morbid psychiatric condition. Additional instruments can be used, however, in order to gain a more comprehensive profile of a particular client or client group.

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APPENDICES

Appendix 1:

Complete list of instruments

Name of Instrument	Reference
Addiction Research Centre Inventory	(Wilkinson, 1998)
Addiction Research Foundation Clinical Institute Withdrawal Assessment-Alcohol	(Alen, 1995)
Addiction Severity Index & Follow-up form	(McLellan et al., 1980)
Adolescent Alcohol Involvement Scale	(Mayer & Filstead, 1979)
Adolescent Diagnostic Interview	(Winters & Henly, 1993)
Adolescent Drinking Index	(Harrell & Wirtz, 1989)
Adolescent Drug Abuse Diagnosis	(Friedman & Utada, 1989; Friedman, Granick, & Kreisher, 1994)
Adolescent Problem Severity Index	(Metzger, Kushner, & McLellan, 1991)
Adolescent Relapse Coping Questionnaire	(Myers, Martin, Rosenow, & Monti, 1996)
Adolescent Self Assessment Profile	(Wanberg, 1991)
Alanine Aminotransferase	(Burge & al., 1997)
Alcohol Abstinence Self-Efficacy Scale	(DiClemente et al., 1994; Parvin, 1998)
Alcohol Beliefs Scale	(Connors, O'Farrell, & Cutter, 1987)
Alcohol Craving Questionnaire	(Potgeiter, Deckers, & Geerlings, 1999)
Alcohol Dependence Scale	(Skinner, 1984; Ross, Gavin, & Skinner, 1990;& Allen, Ferig, Towle, Altshuler, & al., 1994)
Alcohol Effects Questionnaire	(Brown , 1980)

Alcohol Effects Scale	(Allen, 1995)
Alcohol Expectancy Questionnaire	(Brown, Christiansen, & Goldman, 1987)
Alcohol Expectancy Questionnaire-Adolescent	(Brown et al., 1987)
Alcohol Problems Inventory	(Stockwell, Bolt, Milner, Pugh, & Young, 1990)
Alcohol Problems Questionnaire	(Drummond & Glautier, 1994; Thom et al., 1992; & Williams & Drummond, 1994)
Alcohol Use Disorder and Associated Disabilities Interview-Alcohol/Drug Revised	(Ustun et al., 1997)
Alcohol Use Disorders Identification Test	(Saunders et al., 1993; Conigrave, Hall, & Saunders, 1995; & O'Hare & Sherrer, 1999)
Alcohol Use Inventory	(Wanberg, Horn, & Foster, 1977; Lee & diClemente, 1985; & Rohsenow, 1982)
Alcoholics Anonymous Affiliation Scale	(Humphries, Kaskutas, & Wesner, 1998)
Alcoholics Anonymous attendance	(Besson & al., 1998)
Alcohol-Related Harm Scale	(Rehm, Frick, & Bondy, 1997)
Alcohol-related Problems Screening Questionnaire	(Ryder, Lenton, Harrison, & Dorricott, 1988)
American Drug & Alcohol Survey	(Peters, Oetting, & Edwards, 1992)
Areas of Change Questionnaire	(McCrady, Stout, Noel, Abrams, & Nelson, 1991)
Aspartate aminotransferase	(Wetterling, Anitz, H., Hapke, & Fischer, 1998)
Beck Anxiety Inventory	(Steer & Beck, 1997)
Beck Depression Inventory - self-report	(Steer, Cavalieri, Leonard, & Beck, 1999)
Beck Hopelessness Scale	(Steer & Beck, 1997)
Benzodiazepine Dependence Questionnaire	(Baillie & Mattick, 1996; &,Baillie, 1996)
Binge drinking episodes in past month	(Fleming, Barry, & Johnson, 1997)
Biochemical measures of nicotine use	(Dawe , & Mattick, 1979)

Biphasic Alcohol Effects Scale BAES	(Martin, Earlywine, Musty, Perrine, & al., 1993)
Blood Alcohol Levels	(Wolff et al., 1999)
Brief Drinker Profile	(Senft, Polen, Freeborn, & Hollis, 1997)
Brief Psychiatric Rating Scale	(McGorry & Goodwin, 1988)
Brief Symptom Inventory (from SCL-90)	(Derogatis & Savitz, 1999)
CAGE	(Ewing, 1984; Mischke & Venneri, 1987; & Bisson, Nadeau, & Demers, 1999)
Camelback Vista Self Assessment and Management Scale	(Little, 1990)
Canterbury Alcoholism Screening Test	(Elvy & Wells, 1984)
Carroll Rating Scale for Depression	(Carroll, Feinberg, Smouse, Rawson, & Greden, 1981)
Centre for Epidemiological Studies Depression Scale CES-D	(Radloff, 1977)
Chemical Dependency Adolescent Assessment Project	(Harrell, Honaker, & Davis, 1991)
Children of Alcoholics Information Test	(NIAAA, 1995)
Children of Alcoholics Screening Test	(NIAAA, 1995)
Circumstances, Motivation, Readiness, and Suitability	(de Leon et al., 1995)
Client Satisfaction Questionnaire	(Larsen, Attkisson, Hargreaves, & Nguyen, 1979; Attkisson & Zwick, 1983; & Greenwood, Key, Burns, Bristow, & Sedgwick, 1999)
Clinical Alcoholism Interview Schedule	(Caetano, Edwards, Openheim, & Taylor, 1978)
Clinical Global Impression Scale	(Pelc et al., 1997)

Cocaine & Sexuality Questionnaire	(Hoffman, Mayo, Koman, & Claudill, 1994)
Cocaine Craving Questionnaire	(Smelson, McGee-Caulfield, Bergstein, & Engelhart, 1999)
Cocaine Effect Expectancy Questionnaire	(Schaefer & Fals-Stewart, 1993)
Cocaine Negative Consequences Checklist	(Michalec et al., 1996)
Cocaine Relapse Interview	(McKay et al., 1996)
Cocaine Risk Response Test	(Carroll et al., 1999)
Cocaine Selective Severity Assessment	(Kampman et al., 1998)
Collateral Interview Form	(Long, Williams, & Hollin, 1998)
College Alcohol Problem Scale	(O'Hare, 1997)
College Behaviour Questionnaire	(Kahn, Maher, & Bornstein, 1973)
Completing treatment	(Hayashida et al., 1989)
Complications seizures, DTs, death during treatment	(Hayashida et al., 1989)
Composite International Diagnostic Interview	(Robins et al., 1989)
Composite International Diagnostic Interview - Substance Abuse Module (CIDI-SAM)	(Sobell, Toneatto, & Sobell, 1994; Wittchen, 1994; & Cottler et al., 1997)
Composite Outcome Measure	(Cisler & Zweben, 1999)
Comprehensive Addiction Severity Index for Adolescents	(Meyers, McLellan, Jaeger, & Pettinati, 1995; & Whitmore et al., 1997)
Comprehensive Drinker Profile & Follow-up Profile	(Miller & Marlatt, 1984; & Skutle & Berg, 1987)
Contemplation Ladder	(Sobell et al., 1994)
Controlled Drinking Self-Efficacy Scale	(Kavanagh, Sitharthan, & Sayer, 1996; & Sitharthan & Kavanagh, 1990)
Coping Behaviours Inventory	(Ito & Donovan, 1990)

Cumulative Abstinence Duration	(Potgeiter et al., 1999)
Customary Drinking and Drug Use Record	(Brown et al., 1998; Stewart & Brown, 1995; & Stewart, Brown, & Myers, 1997)
Dartmouth Assessment of Lifestyle Instrument	(Rosenberg et al., 1998),
Days of heavy drinking over a fixed period eg 6 months	(O'Malley et al., 1996)
Denial Rating Scale	(Newsome & Ditzler, 1993)
Depression Adjective checklist	(McDowell & Newell, 1996)
Depression, Anxiety, Stress Scale	(Lovibond & Lovibond, 1995)
Desire for Alcohol Questionnaire	(Love & Willner, 1998)
Desire to Use Drugs Inventory	(Rhoades, Creson, Elk, Schmitz, & Grabowski, 1998)
Diagnostic Interview Schedule	(Burge & al., 1997)
Digit Symbol Test	(Rainer, Mucke, Chwatal, & Havelec, 1996)
Dose Adequacy Questionnaire	(Strain, Stitzer, Liebson, & Bigelow, 1993)
Drinker Inventory of Consequences	(Miller, Tonigan, & Longabaugh, 1995)
Drinking and Craving Questionnaire	(Ludwig & Stark, 1974)
Drinking days per week	(Poldrugo, 1997)
Drinking Expectancy Questionnaire	(Young & Knight, 1989)
Drinking Problems Index	(Allen, 1995)
Drinking Refusal Self-Efficacy Questionnaire	(Allen, 1995)
Drinking Survey	(Richmond, Heather, Wodak, Kehoe, & al., 1995)
Drinking-Related Locus of Control	(Koski-Jannes, 1994)
Drinks per day	(Poldrugo, 1997)
Drug & Alcohol Problem Quick Screen	(Schwartz & Wirtz, 1990)

Drug Abuse Inventory	(NIAAA, 1995)
Drug Abuse Screening Test	(Gavin, Ross, & Skinner, 1989)
Drug Abuse Treatment for AIDS Risk Reduction Intake Form	(Richard, Montoya, Nelson, & Spence, 1995)
Drug Avoidance Self-Efficacy Scale	(Martin, Wilkinson, & Poulos, 1995)
Drug Effects Questionnaire	(Fischman, Schuster, & Hatano, 1983)
Drug Impairment Scale for Cocaine	(Halikas, Crosby, & Nugent, 1992)
Drug Use Scale	(Baker, Heather, Wodak, Dixon, & Holt, 1993)
Drug Use Screening Inventory	(Tarter & Hegedus, 1991;Tarter, Mezzich, Kirisci, & Kaczynksi, 1994; & Tarter, 1990)
DSM-IV criteria	(Diagnostic and statistical manual of mental disorders, 1994)
Dyadic Adjustment Scale	(Jensen, Witcher, & Upton, 1987)
Dysfunctional Attitudes Scale	(Brown, Kessel, Lourie, & Ford, 1997)
Effectiveness of Coping Behaviours Inventory	(ARF, 1993)
Effects of Drinking Alcohol	(Sobell et al., 1994)
Emergency department casualty visits	(Fleming et al., 1997)
Employee Reliability Inventory	(Borofsky & Garely, 1995)
Excessive Drinker Outcome Expectations Scale	(Rollnick, Morgan, & Heather, 1996)
Excessive drinking in past week	(Fleming et al., 1997)
Expected Treatment Outcome Survey	(Alemi, 1995)
Expired Air Carbon Monoxide	(Dawe , & Mattick, 1979)
Fagerstrom Test for Nicotine Dependence (Rev of FTQ)	(Kozlowski, Porter, Orleans, Pope, & Heatherington, 1994; Heatherington et al., 1991; & Pomerleau, Carton, Lutzke, Flessland, &

	Pomerleau, 1994)
Fagerstrom Tolerance Questionnaire	(Kozlowski et al., 1994)
Family Environment Scale	(Moos & Moos, 1986)
Family Relationship Inventory	(Stewart & Brown, 1993)
Follow-Up Drinker Profile	(Alen, 1995)
Form 90	(Tonigan, Miller, & Brown, 1997; & Miller & Del Boca, 1994)
Gamma-glutamyl transpeptidase	(Wetterling et al., 1998)
General Behaviour Inventory	(Depue, Krauss, Spoont, & Arbisis, 1989)
General Health Questionnaire	(Goldberg, 1972; Hupert, Walters, Day, & Elliot, 1989; & Winefiled, Goldney, Winefield, & Tiggemann, 1989)
Global Assessment Scale	(Endicott et al., 1976; Dill, Eisen, & Grob, 1989)
Global other-ratings	(Ling, Charuvastra, Collins, Batki, & al., 1998)
Global self-rating of severity of drug problem	(Ling et al., 1998)
Guttman Scale of Adolescent Substance Use	(Andrews, Hops, Ary, & Lichtenstein, 1991)
Hair analysis	(Wolff et al., 1999)
Halikas-Crosby Drug Impairment Rating Scale for Cocaine	(Halikas et al., 1992)
Hamilton Anxiety Scale	(Malyszak, Kiejna, & Grzesiak, 1998)
Hamilton Rating Scale for Depression	(Hamilton, 1967)
Health and Fitness Questionnaire	(Rowland, Dickinson, Newman, & Ford, 1994)
Health Behaviour Questionnaire	(Donovan, Jessor, & Costa, 1989)
Health Questionnaire	(Brodman, Erdman, Lorge, & Wolff, 1949)
Heavy Smoking Index (2 Qs from FTND only)	(Kozlowski et al., 1994)

Helping Alliance Questionnaire	(Luborsky, Barber, Siqueland, & Johnson, 1996; & Belding, 1997 l
Hilton Drinking Behaviour Questionnaire	(Hilton & Lokare, 1978)
HIV Risk-Taking Behaviour Scale - in OTI	(Baker et al., 1993)
Hospital Anxiety and Depression Scale	(Snaith, 1984)
Hospital days	(Fleming et al., 1997)
Impaired Control Questionnaire	(Heather, Tebbutt, Mattick, & Zamir, 1993)
Inventory of Drinking Situations	(Anis, 1982)
Inventory of Drug-Taking Situations	(Annis & Graham, 1991)
Iowa Stages Index	(Finney, Hahn, & Moos, 1996)
Latency to drinking at a particular level	(Drummond & Glautier, 1994)
Latency to first drink	(Sass, Soyka, Mann, & Zieglgansberger, 1996)
Latency to first morning drink	(Drummond & Glautier, 1994)
Latency to first withdrawal	(Drummond & Glautier, 1994)
Learned Helplessness Scale	(Verma, Mahajan, & Verma, 1998)
Leeds Dependence Questionnaire	(Raistrick et al., 1994; Raistrick et al., 1983; & Lennings, 1999)
Le-Go Grid	(NIAAA, 1995)
Life Stressors and Social Resources Inventory	(Moos & Moos, 1997)
Liver Function Tests	(Dawe , & Mattick, 1979)
Locke-Wallace Marital Adjustment Test self and spouse	(McCrady et al., 1991)
Lubeck Craving Scale	(Potgeiter et al., 1999)
MacAndrew Alcoholism Scale	(MacAndrew, 1965; Weed, Butcher, & Williams, 1993; & Knowles & Shroeder, 1990)

Manifest Anxiety Scale	(Kaliappan, Rajalakshmi, & Sarada, 1982)
Marijuana Craving Questionnaire	CPDD Abstracts p60
Marijuana Effect Expectancy Questionnaire	(Schafer & Brown, 1991)
Marital Adjustment Test	(Maisto, McKay, & O'Farrell, 1998)
Marital separation	(Rotunda & O'Farrell, 1997)
Maudsley Addiction Profile	(Marsden et al., 1998)
Maudsley Personality Inventory	(Woody, McLellan, Luborsky, & O'Brien, 1987)
Mean corpuscular volume	(Besson & al., 1998)
Mean days marital separation	(McCrady et al., 1991)
Medical Outcomes Study Short Form Health Survey	(Brazier et al., 1992)
Medication Side Effects Questionnaire	(Rhoades et al., 1998)
Michigan Alcohol Screening Test - MAST & SMAST & Brief MAST & Self-administered AST & Malmo Modification	(Selzer, 1971; Gibbs, 1983; & Storgaard, Nielsen, & Gluud, 1994)
Michigan Alcoholism Screening Test for Significant Others	(NIAAA, 1995)
Millon Clinical Multiaxial Inventory-II & III	(Craig, 1999; McMahon & Richards, 1996;& Flynn, McCann, Luckey, Rounds-Bryant, & al., 1997a)
MMPI-derived Scales - Hampton AL - Hoyt & Sedlacek AH - Holmes & Burton AM - Mac - Mac+L – Rosenberg Composite	(NIAAA, 1995)
Montgomery-Asberg Depression Rating Scale	(Bowling, 1991)
Montgomery-Asberg Depression Rating Scale	(Naranjo, Donigier, & Bremmer, 1997)
Mood Adjective Checklist	(Cruickshank, 1978)
Mortimer-Filkins Questionnaire	(Mischke & Venneri, 1987)

Motivational Structure Questionnaire	(Cox & Klinger, 1988)
Multimedia Assessment of Student health	(Dimeff, 1998)
Munich Alcoholism Test	(Benforado, 1982)
Natural History Interview	(Grella, Anglin, & Wugalter, 1997)
Negative Alcohol Expectancy Questionnaire	(McMahon & Jones, 1993)
NET	(Bottoms, .S., & Sokol, 1989)
Newcastle Alcohol-related Problems Scale	(Ryder et al., 1988)
Nicotine Withdrawal Checklist	(Smith, Pristach, & Cartagena, 1999)
Nottingham Health Profile	(Hunt et al., 1981;& Doll, Black, Flood, & McPherson, 1993)
Obsessive-Compulsive Drinking Scale	(Anton, Moak, & Latham, 1995)
One/Two Questions	(Sobell et al., 1994)
Opiate Treatment Index	(Darke et al., 1992)
Opiate Withdrawal Symptom Checklist	(Schottenfeld, Pakes, Oliveto, Ziedonis, & Kosten, 1997)
Opiate Withdrawal Symptoms	(Kahn et al., 1973)
Parental Drinking Questionnaire	(NIAAA, 1995)
Perceived Benefit of Drinking Scale	(Petchers & Singer, 1987)
Percent days abstinent	(Brown et al., 1997)
Personal Experience Inventory	(Winter & Henly, 1989)
Personal Experience Inventory for Adults	(Winter & Henly, 1989)
Personal Experience Scales	(NIAAA, 1995)
Personal Experience Screening Questionnaire	(Winter & Henly, 1989)
Personal Experience with Living Scale	(NIAAA, 1995)
Personal Involvement With Chemicals Scale	(Winters & Henly, 1987)

Pleasant Events Schedule-Mood Related	(Brown et al., 1997)
Problem Drinking Questionnaire	(Hanna, 1978)
Problem Recognition Questionnaire	(Cady, Winters, Jordan, Solberg, & Stinchfield, 1996)
Problem Severity Index	(Dobkin, Chabot, Maliantovich, & Craig, 1998)
Problem Situation Inventory	(Hawkins, Catalano, & Wells, 1986)
Problems Oriented Screening Instrument for Teenagers	(Hall, Richardson, Spears, & Rembert, 1998)
Proceeding to treatment from detoxification	(Hayashida et al., 1989)
Processes of Change Inventory for Opiate Addicts	(Tejero, Trujols, Hernandez, de los Cobos, & Casas, 1997)
Profile of Mood States	(Lorefice, Steer, Fine, & Schut, 1976)
Psychiatric Symptom Assessment Scale	(Bigelow & Berthot, 1989)
Psychosocial Functioning Inventory	(Timberlak & Verdieck, 1987)
Purpose in Life Test	(Waisberg & Porter, 1994)
Quantity, frequency and patterning of drug use	(Chang & Dodder, 1983)
Quantity-Frequency methods (smoking)	(Dawe , & Mattick, 1979)
Questionnaire of Alcohol Urges	(Modesto-Lowe, Burleson, Hersh, Bauer, & Kranzler, 1997)
RAND Definite Alcoholism	(Finney et al., 1996)
RAND overall impairment	(Finney et al., 1996)
RAND serious symptoms	(Finney et al., 1996)
Readiness to Change Questionnaire	(Rollnick, Heather, Gold, & Hall, 1992)
Recovery Attitude and Treatment Evaluation Research Scale	(Mee-Lee, 1988)

Relapse latency	(Besson & al., 1998)
Relapse Situation Appraisal Questionnaire	(Myers et al., 1996)
Resistance to Continuing Care	(McKay, Alterman, McLellan, & Snider, 1994)
Resistance to Treatment	(McKay et al., 1994)
Revised Fagerstrom Tolerance Questionnaire	(Kozlowski et al., 1994)
Rhode Island Change Assessment	(Willoughby & Edens, 1996)
Risk Behaviour Inventory	(Ottomanelli, Heller, Bihari, & Kramer, 1989)
Risk for AIDS Behaviour Inventory	(Sands, Archer, & Puleo, 1998)
Rosenberg Self-Esteem Scale	(Dobson, Goudy, Keith, & Powers, 1979)
Rutgers Alcohol Problem Index	(White & Labouvie, 1989)
Schedule for Affective Disorders and Schizophrenia	(Woody et al., 1987)
Schedules for Clinical Assessment in Neuropsychiatry	(Ustun et al., 1997)
Screening, Women and Alcohol in Goeteborg	(Spak & Haellstroem, 1996)
Self-Administered Questionnaire	(Bull, Kvigne, Leonardson, Lacina, & Welty, 1999)
Self Administered Alcohol Screening Test	(Swenson & Morse, 1975)
Self-Help Group Beliefs Subscale	(McKay et al., 1994)
Self-Help Group Participation Subscale	(McKay et al., 1994)
Self-monitoring for alcohol intake	(Kavanagh et al., 1996)
Self-Rating Form	(Richard et al., 1995)
Service Satisfaction Scale 30	(Greenfiled & Attkisson, 1999)
Severity of Alcohol Dependence Questionnaire	(Stockwell, Sitharthan, McGrath, & Lang, 1994; Dawe , & Mattick, 1979; & Doherty & Webb, 1989)
Severity of Dependence Scale	(Gossop et al., 1995; Topp & Mattick, 1997; & Oberg, Andren, Ronnberg, & Stenstrom, 1995)

Severity of Opiate Dependence Scale	(Sutherland et al., 1986; Sutherland, Edwards, Taylor, Phillips, & Gossop, 1988; & Burgess, Stripp, Pead, & Holman, 1989)
Shipley Institute of Living Scale	(Woody et al., 1987)
Short Alcohol Dependence Data Questionnaire	(Raistrick et al., 1983; Davidson & Raistrick, 1986; &Davidson, 1987)
Short-Form-20 Health Survey	(Brazier et al., 1992)
Short-Form-36 Health Survey	(Brazier et al., 1992)
Short Opiate Withdrawal Scale	(Gossip, 1990)
Situational Confidence Questionnaire	(Miller, Ross, Emerson, & Todt, 1989; & Kirisci, Moss, & Tarter, 1996)
Situations for Drinking Questionnaire	(Deardorff, Melges, Hout, & Savage, 1975)
Social Adjustment Self-Report Questionnaire	(Weissman, 1987)
Social Avoidance (Anxiety) and Distress Scale	(Sheikh & Kaushik, 1990)
Social Support Appraisals Scale	(O'Reilly, 1995)
Social Support Behaviours Scale	(Vaux, Reidel, & Stewart, 1987)
SSAGA	(Bucholz, Gadoret, Cloninger, & Dinwiddie, 1994)
Stable Recovery Period	(Potgeiter et al., 1999)
Stages of Change Readiness and Treatment Eagerness Scale	(Hewes & Janikowski, 1998)
State-Trait Anxiety Inventory (Spielberger)	(Sielberger, Gorsuch, Vagg, & Jacobs, 1983)
Straus-Bacon Index- measure of social stability	(Drummond & Glautier, 1994)
Structured Clinical Interview for DSM-III-R	(O'Malley et al., 1996)
Student Alcohol Questionnaire	(Engs & Hanson, 1994)
Substance Abuse Attitude Survey	(Chappel, Veach, & Krug, 1985)

Substance Abuse Subtle Screening Inventory	(Cooper & Robinson, 1987)
Substance Abuse Treatment Scale	(McHugo et al., 1995)
Substance Use Disorders Diagnostic Screening Test	(Davis, Hoffman, Morse, & Luehr, 1992)
Substance Use Index	(Sitharthan, Kavanagh, & Sayer, 1996)
Substance Use Screening Instrument	(Oliansky, Wildenhaus, Manlove, Arnold, & Schoener, 1997)
Symptom Checklist-90-Revised	(Derogatis, 1983; Mercier et al., 1992)
Symptom Severity Checklist	(Stockwell et al., 1990)
Symptoms of Anxiety and Depression Scale	(Bowling, 1991)
T-ACE	(Russell & Bigler, 1979)
Teen-Addiction Severity Index	(Kaminer et al., 1991; Kaminer, Wagner, Plummer, & Seifer, 1993;&Kaminer, Bukstein, & Tarter, 1989)
Teen Health Advisor	(Paperny, Aono, Lehman, Hammar, & Risser, 1990)
Temptation and Restraint Inventory	(Collins & Lapp, 1992)
Tennessee Self-Concept Scale	(Hoffman & Gelen, 1983)
The Khavari Alcohol Test	(Khavari & Farber, 1973)
The Marijuana Questionnaire	(Hollister & Overall, 1975)
The Missouri Alcoholism Severity Scale	(Sexias, 1983)
The Student Alcohol Questionnaire	(Engs & Hanson, 1994)
Time to the First Cigarette	(Sobell et al., 1994)
Timeline Followback	(Sobell & Sobell, 1992; Sobell & Sobell, 1992; Carey,1997)
Torabi-Veenker Alcohol Attitude Scale	(Torabi & Veenker, 1986)
Trail Making Test	(Reitan, 1955)

Treatment Expectancy - single question	(Sitharthan et al., 1996)
Treatment Follow-up Inventory	(Stinchfield, Niforopulos, & Feder, 1994)
Treatment Outcome Profile	(Holcomb et al., 1997;Holcomb, Parker, Leong, Thiele, & Higdon, 1998)
Treatment Satisfaction Scale	(Lewis, Bradley, Knight, Boulton, & Ward, 1988)
Tremor Index	(Zilm, Durand, & Kaplan, 1978)
Trier Alcoholism Inventory	(Berman, Hales, & Yudofsky, 1996)
TWEAK	(Russell & Bigler, 1979; Cherpital, 1997; Allen, 1995)
University of Rhode Island Change Assessment	(Willoughby & Edens, 1996)
Urine analysis	(Dawe , & Mattick, 1979)
Veterans Alcoholism Screening Test	(Magruder, Harris, & Fraker, 1982)
Visual Analogue Scale - to measure craving	(Besson & al., 1998)
Voris Cocaine Craving Scale	(Smelson et al., 1999)
Weekly Drug Use Inventory	(Schottenfeld et al., 1997)
Withdrawal Symptom Checklist	(Lader, 1983)
Yale-Brown Obsessive-Compulsive Scale	(Modell, Glaser, Mountz, & Schmaltz, 1992)
Young Adult Alcohol Problems Screening Test	(Hurlbut & Sher, 1992)
Zung's Self Rating Depression Scale	(McDowell & Newell, 1996)

Appendix 2: Copies of Instruments A-D –
a) Addiction Severity Index

Appendix 2: Copies of Instruments A-D –
b) Health of the Nation Outcome Scales

Appendix 2: Copies of Instruments A-D –

c) Opiate treatment Index

Drug use section

For full OTI refer to NDARC Technical Report No 11.

Appendix 2: Copies of Instruments A-D –
d) Short-Form 36

Appendix 3:

Copy of questionnaire rating form