Trajectories of alcohol use for rural participants in a court-based illicit drug program (MERIT)

Describing patterns of alcohol use during and after treatment for illicit substances.

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ABBREVIATIONS

MERIT	Magistrate's Early Referral into Treatment
AUDIT	Alcohol Use Disorder Identification Test
PDC	Principal Drug of concern
AUD	Alcohol Use Disorder
SUD	Substance Use Disorder
HRQL	Health-Related Quality of Life
AIC	Australian Institute of Criminology
NHMRC	National Health and Medical Research Council
K-10	Kessler-10 scale
SDS	Severity of Dependence Scale
MIMS	MERIT Information Management System
MRN	Medical Record Number
RAD	Rural Alcohol Diversion

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SUMMARY of FIGURES and TABLES

This study provides a detailed investigation of the alcohol use outcomes for the participants in treatment for illicit substance use with the MERIT program. The paper reports the outcomes for alcohol use from entry into treatment through to exit and follow-up 3-months after completing treatment with the MERIT program. The concurrent use of alcohol among predominantly cannabis users characterised the sample in this study. Alcohol outcomes are reported for the cohort and changes in drinking behaviour are reported by categories; low risk, risky and high risk drinkers. The study also investigates associations between self-reported drinking behaviour and primary drug of concern, self-reports of psychological distress measured by the Kessler-10 and severity of dependence (SDS), among the 46 participants.

Findings

There was a high prevalence of risky drinkers in this treatment sample.

The results show a high prevalence of alcohol use among the sample at entry into MERIT treatment, 76% of participants reported regularly consuming more than four standard drinks on a typical drinking day and were categorised risky and high risk drinkers.

There was a reduction in risky drinking behaviour between entry and exit

While a majority of the sample (76%) were risky drinkers at entry into treatment there was a substantial reduction to 35% of the sample as risky drinkers at exit from treatment. This change in drinking behaviour was viewed as clinically significant.

Within sample variability was evident

Detailed analysis indicate that of the 35 people categorised risky and high risk drinkers at entry, 16 (46%) remained risky or high risk drinkers at the time of exit from treatment while more than half, 19 (54%) changed their drinking behaviour enough to re-locate to the low risk category by exit from treatment. Substitution between principal drug of concern and alcohol was not realised in this sample. Within the 11 respondents considered low risk drinkers at entry into treatment, only one person had increased their drinking enough by exit from treatment to be relocated to the risky category. By exit from treatment 65% of the sample was located in the low risk category.

Alcohol outcomes at follow-up: Results indicate an increase in the proportion of risky and high risk drinkers at the 3-month follow-up after MERIT treatment.

Factors potentially associated with change: No statistically significant relationships between alcohol use and drug of choice, psychological distress or severity of dependence at entry into the program were found.

Key messages

There is a high prevalence of concurrent alcohol and substance use among MERIT participants.

Alcohol intervention efforts are essential among treatment participants where patterns of use include combining alcohol with other drugs

There is a need to advance the quality of healthcare by increasing knowledge about homotypic comorbidity and how to intervene to improve health outcomes.

It is important that accurate information about alcohol consumption is gathered as problematic alcohol use has been associated with increased likelihood of post-treatment relapse.

Implications

Health Services should encourage and strengthen treatment practices that accurately estimate the dangers of comorbid alcohol and other substance use.

The use of alcohol may be a complement or a substitute for other substances suggesting that practices that address risky drinking would impact on the use of other substances as well.

Future research

The literature documents that there is a significantly increased health risk when substances are used simultaneously compared to concurrently. Future research concerned with improving health outcomes in treatment populations would benefit from refining data collection to capture patterns of simultaneous substance use.

Investigating alcohol prevalence and alcohol outcomes in metropolitan treatment samples would be useful in allowing comparisons with rural alcohol outcomes.

INTRODUCTION

Health service providers in the fields of Drug and Alcohol, Primary Health Care and Allied Health are not astonished to hear confirmation that self-reported risk drinking is increasing in Australia[1]. Widespread concern about alcohol use is reflected in its high status on health agendas. In NSW, the state Drug and Alcohol Plan 2006-2010[2] and North Coast Area Health Service Drug and Alcohol Strategic Plan 2007-201[3], identify alcohol-related problems as key priority areas. The Australian National Alcohol Strategy 2006-09 recommended strengthening data collection at the local level to develop a better understanding of alcohol-related harm[4].

Data on alcohol use collected by epidemiological surveys in general populations identify that alcohol use varies by age[4]; by gender[5]; by location[6-8] and by ethnicity[9]. Research also identified that problematic use of alcohol is implicated in crime[10], injury[11] and partner violence[12, 13].

Previous research indicate that people with alcohol use disorders (AUD) have a significantly increased risk of having a second 'substance use disorder' and a greater risk of comorbidity with one or more psychiatric disorders like anxiety or depression[14-17].

For most health workers, comorbidity or 'dual diagnosis' refers more specifically to the co-occurrence of substance use disorders and other psychiatric disorders. More recently, the term comorbidity has been expanded to produce definitions of 'Homotypic comorbidity'; the co-occurrence of disorders within the same diagnostic grouping (e.g. cannabis dependence and alcohol use disorders) and 'Heterotypic comorbidity', the co-occurrence of two disorders from different diagnostic groupings (e.g. depression and alcohol use disorders)[18].

Substance users seeking treatment typically present with patterns of multiple drug use and their co-occurring disorders are generally associated with greater severity of dependence. Comorbidity has therefore important implications for diagnosis and treatment[19]. Traditionally, many effective treatments have been available to treat alcohol dependence and drug dependence when these occurred independently of one another. However, despite a paucity of research specifically focused on the analysis of co-occurring alcohol and other drug dependence[20], substance use treatment programs are encouraged to develop interventions suited to multiple health risk factors.

Prevalence and impact of comorbidity

In 1997, the Australian Bureau of Statistics collected for the first time, information on alcohol and drug use to address the lack of data on the prevalence of comorbidity between mental health and alcohol and other drug use in the general population[21]. Data from the 1997 National Survey of Mental Health and Well-Being (NSMHWB) was used by Degenhardt et al[22] in a focused analysis of homotypic comorbidity. They identified strong

associations in the general population between alcohol dependence and higher rates of other substance use problems including cannabis and tobacco*.*

In 2005, The National Health Survey identified that in the general population 'alcohol use disorders' (AUD) have a lifetime prevalence of 23% compared to 11% for other 'substance use disorders' (SUD)[1]. A high prevalence of AUD is particularly salient when it is known that individuals with 'alcohol use disorders' have a greater risk of having a second 'substance use disorder'[14].

Since 2003, concurrent use of alcohol and illicit substances has also been recorded among police detainees. The Australian Institute of Criminology (AIC) documents comorbidity via its nationwide multi-site data collection 'Drug Use Monitoring in Australia' (DUMA)[23]. In 2008, the AIC reported that among interviewed police detainees (n= 2956), 43% of males and 35% of females reported drinking more than 5 drinks on the same day and had done so in the past 48 hours. Half of the detainees who reported drinking at these levels tested positive for cannabis, 20% to benzodiazepines, 17% to methamphetamine, 13% to heroin and 1% to cocaine. Nineteen percent tested positive for two or more of these drugs. The most common 'most serious offence' category for those detainees that had consumed alcohol in the past 48 hours was a violent offence (30%). As with previous years, a high correlation between alcohol and drug dependency was found. Almost half the detainees (49%) who were dependent on alcohol were also dependent on drugs[23].

The potential impact on an individual's health when using two or more substances concurrently has been highlighted by researchers conducting analyses that separated individuals with only alcohol use disorders from those with alcohol and drug use or psychiatric disorders. When focusing on homotypic comorbidity, researchers identified that co-occurrence has health-related problems specific to that pattern of use. The interaction between alcohol and other substances can be additive, interactive or synergistic[24].

Epidemiological evidence indicates that the co-occurrence of alcohol use disorders with psycho stimulants, sedative and opioid use disorders increases the chance of seeking help, so that the prevalence of these patterns of comorbidity is even higher in treatment populations[19, 25, 26]

Analyses of epidemiological surveys also point to the consistently higher treatment-seeking rates among polysubstance users. Among the substances that were predictors of treatment contact, Agosti et al[27] found that the combination of alcohol and cannabis had the highest incidence. Similar findings were observed in a 12-month study by Stinson and Grant[17] reporting an increase in the incidence of treatment contact of 6% for alcohol use disorders only, 15% for substance use disorders and an increase of 21% for polysubstance users of alcohol and other substances.

As well as polysubstance users being over-represented in treatment populations they generally have poorer health outcomes then those with alcohol or substance use disorders alone[24]. Researchers have explored the relationship between alcohol use, concurrent alcohol and substance use and Health-Related Quality of Life (HRQL) and found that harmful levels of alcohol consumption combined with the use of methamphetamine in the past month had the strongest associations with reduced HRQL. They concluded that a

harm reduction approach focused on reducing heavy alcohol use showed promise for improving HRQL[28]. Similarly in 2008, Sabanjo et al[29] in the UK, using the same instrument; the HRQL, replicated the results in a sample of clients in Methadone treatment and concluded that excessive alcohol consumption was associated with a quality of life impairment when compared with clients without alcohol.

In terms of mental health, a recent study exploring the associations between alcohol use disorders and major depression proposed that a causal model was best suited to describe their findings. They concluded that alcohol use disorders led to increased risk of major depression as opposed to a self-medication model in which major depression led to increased risk of alcohol disorders[30]. The author argues that these results are also likely to be found in a dual-dependent treatment population.

Alcohol and Cannabis
Alcohol and cannabis remain the two most commonly reported drugs of concern in Australia[31]. Researchers assessing the evidence for the additive effects of alcohol when used in combination with cannabis have shown that alcohol increases levels of the active cannabis ingredient tetrahydrocannabinol (THC) and the subjective effects after cannabis use in human volunteers[32, 33]. Booth and Kirchner[33] asserted that concurrent cannabis and alcohol use lead to greater problems then exclusive cannabis use. They challenged previous findings by Grant and Pickering[34] that risk of cannabis dependence increased with frequency of consumption and argued that cannabis dependence occurs more often in the context of comorbid use of other drugs and cited alcohol as the drug commonly associated with cannabis use or dependence[33]. Further research has shown that alcohol use serves as a primary predictor of cannabis dependence[15]. In 2005, Barnwell et al[35] hypothesised that the association between cannabis use and cannabis dependence increased with alcohol consumption. They observed significant interactions between cannabis use and alcohol consumption when predicting cannabis dependence. Additionally, Agosti et al[36] in the US in 2005 while investigating the rates of psychiatric comorbidity with cannabis dependence found that alcohol dependence had a stronger association with cannabis dependence than with anxiety and mood disorders.

Alcohol and Cocaine
A review of the research on the effects of concurrent use of alcohol and cocaine conducted by Pennings et al[37] found that concurrent use of cocaine and alcohol is more potent and potentially more toxic then use of either alone. To further develop their argument in support of abstinence from alcohol during treatment for cocaine Mengis and colleagues[38] focused on alcohol use during treatment and found that it was negatively implicated in people's ability to achieve cocaine abstinence during and after treatment.

Alcohol and Opiates
Problem drinking in relation to treatment outcome among opiate users has been the focus of several large scale studies in the US, the UK and in Australia. A Canadian review of the literature in 2008 found that cessation of illicit opioid use and retention in treatment are positively correlated with decrease in alcohol use and the psychosocial complications associated with problematic alcohol use[39]. In Sweden in 2007, a study found that drinking problems among patients undergoing Methadone Maintenance Treatment (MMT) was

associated with increased risk of relapse to illicit drug use and with discharge from treatment[40].

Alcohol: Substitution or Complement

Anecdotal evidence of concerns from Alcohol and other Drugs workers that clients who decrease or stop their use of one substance will substitute with another substance have not often been confirmed by empirical data. In terms of alcohol used as a complement to other drugs, research findings in Australia identify alcohol as the substance most commonly used in combination with cannabis; that is alcohol is consumed in addition, as a complement to cannabis within the same drug use occasion[15].

Arguably, interventions which succeed in reducing consumption of one substance but result in an increase in the use of other drugs (licit or illicit) do not necessarily produce a reduction in drug-related harm. Research exploring the concepts of a substance used as a substitute for/or a complement to another drug is scant due to unreliable self-reported measures and methodological challenges in ascribing changes in patterns of use to substitution or complement. It is nonetheless important for treatment purposes to consider available evidence of 'switching' between substances.

In 2001, the well documented national shortage in the supply of heroin constituted a rare and unique natural experiment within which to examine the potential for drug substitution. Degenhardt and colleagues[15] conducted a review of the research on the correlate of the heroin shortage, namely changes in the patterns of illicit drug injection. They noted that whilst in the short-term some drug injectors left the market altogether other data pointed to an increased prevalence and frequency of stimulant injection. In concluding their review Degenhardt et al.[15] asserted that the findings that some heroin users switched their drug preference to a stimulant and subsequently attributed this change to reduced availability of heroin did suggest that reducing the supply of one drug may serve to increase the use of others.

In another investigation of potential drug substitution, the Australian Institute of Health and Welfare[41] asked survey respondents whether they would use more alcohol, smoke more tobacco or switch to illicit drugs if cannabis became too hard to get or too expensive. Thirty-one percent indicated they would drink more alcohol, 23% indicated they would smoke more tobacco and 8% suggested they would switch to other illicit substances.

In 2009, Hughes & Peters[42] conducted a within-subjects study that demonstrated a 15% increase in alcohol use when volunteer subjects agreed to become abstinent from cannabis. The data also showed that individuals with a past diagnosis of alcohol dependence substituted alcohol to a greater degree (52% increased). In their study, increases in alcohol correlated with increases in cannabis withdrawal discomfort scores.

Tobacco research has also contributed to the body of evidence for drug substitution. In 2004, Friend et al[43] reported that in their sample of clients in treatment for alcohol use 15% of non-smokers at baseline initiated tobacco use during treatment and further increased significantly at the 3 and 15-month follow up assessments.

To establish points of differences between drug substitution and drug complement, researchers in the UK used behavioural economic models with polysubstance users and investigated the influence of price upon hypothetical purchase of alcohol, amphetamines, cocaine and ecstasy. They found that subjects who identified a preference for amphetamines used alcohol and ecstasy as complements to amphetamines or as substitutes when amphetamines were not available. Subjects who expressed a preference for ecstasy indicated that alcohol was their drug of choice when economic considerations were brought into play[44].

Alcohol and Relapse

A review of the literature on relapse reveals that most studies exploring rates of relapse to initial drug of use after treatment typically do not address multiple drugs of dependence. The author argues that it is more useful to understand relapse within a temporal framework whereby consideration is given to the timing and patterns of use for all substances involved in the relapse to the initial drug of use.

Increasingly, study designs reflect researchers' understanding that a 'pure' substance user is becoming rare and a broader definition of relapse which includes alcohol use, illicit substances or their combination have a greater utility. The few studies that have addressed multiple drugs of dependence and focused on rates of relapse following treatment have observed that the proportion of polysubstance users who relapse to pre-treatment levels tends to be significantly higher than for those entering treatment using only one substance[45]. For example, Spear et al[45] found that 62% of alcohol-and-cannabis dependent participants returned to the level of using weekly (as opposed to daily) compared with 44% of alcohol-dependent participants. Schonfeld et al.[46] investigated the recent use of substances for inpatients re-entering treatment for illicit substances and found that alcohol was often the initial and subsequently the most frequently used substance.

It is well documented in the smoking cessation literature that alcohol use is a relapse factor for resuming tobacco use[47]. Similar implications of problem drinking and treatment outcome among opiate addicts in methadone maintenance treatment are also documented. In 2007, Stenbacka et al.[40] confirmed the implications of alcohol use in treatment outcomes and found that among patients undergoing methadone maintenance programs, problematic use of alcohol is associated with increased risk of relapse into illicit drug use and with discharge from treatment.

Alcohol and Rural Areas

The NSW Alcohol Summit (2003)[48] documented that alcohol misuse is often driven by cultural factors and different issues face rural compared to metropolitan NSW. This is reflected in the disproportionately high burden of alcohol-related harm in rural, as opposed to metropolitan locations[1]. Williams' study[7] showed that for example 8% of men in rural areas report consuming alcohol at a hazardous or harmful level compared to 5% in metropolitan areas. In rural communities 82% of adults regularly consume alcohol compared to 71.5% in metropolitan areas and 22% of rural road fatalities are alcohol-related compared to 14% for metropolitan areas[7]. On the north coast of NSW, the Population Health Survey 2006[49] reporting on adult health established that the prevalence

of self-reported risk drinking behaviour on the north coast was higher than the state average. For example 61.2% of 16-24 year olds on the north coast reported risky drinking compared to 41.2% of NSW.

In 2008 O'Kane[50], exploring rural men's attitude to their health used the concepts of risk-taking behaviour and the social construct of masculinity observed that many men, particularly rural men experienced health disadvantage. A quarter of the men surveyed consumed alcohol at a risky level and were found to have a less then desirable attitude to health such as needing a health scare before changing lifestyle behaviours.

MERIT: Magistrates Early Referral into Treatment
Across Australia, a number of diversionary and drug court strategies are currently in operation. One particular diversion project, trialled in Lismore in 2000 is the "Magistrates Early Referral into Treatment" (MERIT) program. MERIT is a voluntary diversion scheme for adult drug-involved defendants who come before Local Courts and is designed to run for 12 weeks[51, 52]. Findings from program evaluations indicate that participants who completed the program were significantly less likely to reoffend, took longer to reoffend and received less severe sentences that those who did not complete the program and health outcomes studies have also been positive[53, 54].

The target population for the MERIT program is people with criminal charges and an illicit drug problem. This by definition excludes people whose main or only drug of concern is alcohol[52]. An exception was made in response to the NSW Summit on Alcohol (2003)[48] when the Rural Alcohol Diversion (RAD) pilot program was trialled in Orange and Bathurst, NSW. Using the MERIT model, RAD operated as a treatment program for selected defendants with primarily alcohol problems or dependence. Following a favourable evaluation MERIT- Alcohol was subsequently rolled out to limited rural locations like Coffs Harbour and some metropolitan suburbs of Sydney.

Although eligibility criterion for most MERIT programs require the primary drug of concern to be an illicit substance, routine assessments of alcohol use are conducted and data on alcohol use at entry and exit from treatment are also collected. The MERIT Health outcomes report (2007)[55] using state-wide data collected between April 2004 and June 2006 revealed a high prevalence of alcohol use for MERIT participants in treatment for drug use. For example, at program entry 65% of participants were using alcohol. Of those, 17% consumed an average six or more standard drinks per drinking day over the previous month, 9% consumed on average 10 or more standard drinks per drinking day and 10.5% drank 20 standard drinks or more on the days that they were drinking.

The MERIT Health Outcomes Report (2007)[55] indicated that data collected from MERIT teams in the Northern Section of the North Coast Area Health Service (NCAHS), the location of the present study, showed that at program entry 42% of male drinkers and 17% of female drinkers were considered risky drinkers. State-wide data showed that of the MERIT participants who were drinkers at program entry, 77% indicated that they were drinkers at program exit; suggesting that for the majority of these MERIT participants their drinking behaviour remained unchanged.

The above-mentioned data from the MERIT outcomes study[55] described alcohol consumption obtained from retrospective data and from a mixed rural and metropolitan cohort (state-wide 2004-2006) of MERIT participants. The data showed the prevalence of alcohol use without describing changes in individuals' drinking behaviour as they progressed through treatment.

Study context

This review has so far explored previous research that provided evidence for the impact of comorbid alcohol and substance use in general and in treatment populations. The epidemiological data also relevant to the present study identify that alcohol is consumed at higher rates in rural compared to metropolitan areas[7, 8]. While retaining a focus on comorbid alcohol and substance use, this study seeks to provide a rural perspective by locating its enquiry within a specific treatment setting for adult offenders engaged in treatment for their substance use; the MERIT program at four rural locations in the north of NSW.

Study Aims

The present study aimed to provide a detailed analysis of alcohol use by MERIT participants by using prospective data to describe the trajectories of alcohol use from entry into treatment through to exit and at 3-month post-treatment follow-up. A further aim of the study was to report alcohol outcomes from the perspective of a rural cohort and changes in drinking behaviours to be reported by categories; low risk, risky and high risk drinkers. The study also intended to investigate associations between self-reported drinking behaviour, primary drug of concern and self-reports of psychological distress measured by the Kessler-10 among the 46 participants. The specific research questions that the current study aimed to address were:

- Will reductions in alcohol consumption be observed at exit and at follow up among the risky and high risk drinkers?

- Will low risk, risky drinkers and high risk drinkers remain in their respective category at all assessment points?

- Is there an association between changes in alcohol consumption and main drug of concern, psychological distress or severity of dependence?

The research questions central to the present study were also guided by previous outcomes studies that have found limited change in drinking behaviour while people participated in a wide range of treatments settings including out-patient methadone maintenance therapy and community-based primary health care settings. For example, the above-mentioned findings from the MERIT Health Outcomes Study (2007)[55] paralleled those of a seminal study conducted in the UK in 2003 by Gossop and colleagues[56]. They reported on alcohol use outcomes at 4-5-years among a treatment sample of drug misusers. They reported a quarter of the sample were risky drinkers at intake and about the same proportion of the sample were risky drinkers at all assessment points. The tendency for drinking behaviours to remain unchanged was evident across alcohol abstainers, risky drinkers and high risk drinkers at intake, with people in each category tending to remain in the same drinking category at all assessment points. Gossop et al[56]

reported that a more detailed analysis of their results however showed some variability in drinking patterns within their sample. More than half of those who were high risk drinkers at intake were no longer in that category at 4-5 year follow-up and about a quarter of them were abstinent from alcohol. In contrast, among those who were not using alcohol at intake, almost half were drinking at 4-5 year follow up[56].

METHOD

Research design
This descriptive study follows a cohort of clients participating in treatment for substance use with the MERIT program and explores their trajectories of alcohol use at three discreet time points; at commencement (entry) of treatment episode, at completion (exit) of treatment episode and at a 3-month post treatment phone follow-up.

Context
The rural context for this study comprised of four large towns in the north coast of New South Wales; Lismore, Port Macquarie, Tweed Heads and Grafton. The north coast is one of the fastest-growing areas in Australia with a population of about 340,000 in a combination of large towns, villages and farming areas. The region has high unemployment and a large tourist and transient population.

The "Magistrate's Early Referral into Treatment" (MERIT) program provided a suitable background from which to draw the study population due to its outpatient clinical setting offering treatment to drug-involved defendants who come before the local court. The principal researcher is a case manager on the MERIT program at Lismore and as such represents the link between potentially informative data on alcohol use and the recruitment of an appropriate sample to answer the study question.

Participants
All court-endorsed MERIT program clients commencing treatment from the 1st April 2009 and completing before 30th July 2010 were considered eligible to become participants of this study irrespective of alcohol consumption levels. Consent to participate in this study was sought at completion of each client's tenure in the treatment episode with MERIT. The timing of the request to participate in the study was specifically selected to be at completion of the MERIT treatment episode to avoid potential perception of coercion to participate in the study in order to be seen as 'doing well' in treatment. It was envisaged that because potential participants were invited to participate at completion of their MERIT treatment episode they would be reassured that their participation in the study had no impact on their MERIT treatment outcome and no impact on their court results.

Recruitment
Case managers at study sites were provided with training in presenting to their own clients the aims of the study, obtaining their consent and administering the nominated instrument. Potential participants were provided with a Participants Sheet about the project and a Consent form (Appendix 1 & 2). This process was repeated with every MERIT client at each of the four recruitment sites. The information sheet alerted potential participants to be aware that consent included allowing the researcher access to other information initially

provided to the MERIT program and deemed relevant to the study such as demographic data, self-reports of alcohol consumption, primary substance of concern and other health-related information.

Timeline
The nominated timeframe for data collection was 1st April 2009 to 30th March 2010. An unexpectedly low number of clients on the MERIT program however motivated a review of the initial timeline and data collection was extended until 30th July 2010.

Measurements
Prospective data on alcohol use was collected using a modified version of the Alcohol Use Disorder Identification Test (AUDIT) purposely adapted for the present study. The original AUDIT is a brief 10-item screening instrument developed by the World Health Organization[57] for detecting risk levels of drinking in the past 12 months. The AUDIT is routinely administered as part of the assessment when entering treatment with the MERIT program.

Modification of the AUDIT in this study aimed to capture self-reported alcohol use within a shorter period of three months to coincide with the typical 12-week MERIT treatment episode. (A copy of the modified AUDIT is in Appendix 3). The first three questions of the original AUDIT concern alcohol consumption (quantities and frequencies) and these are increasingly used as a screener for alcohol use disorders and risk drinking[58]. The modification in the present study consisted of adding at the beginning of the original AUDIT, three questions (based on the original AUDIT questions about quantities and frequencies) requesting respondents to consider their answer within a 3-month timeframe. The respondents were reminded that completing the rest of the AUDIT questionnaire was for a 12-month timeframe. Beside quantity and frequency measures, the AUDIT explores a range of other domains including severity of dependence (How difficult would you find it to cut down or stop drinking?); impact on well being and perception of problematic use (Do you think you presently have a problem with drinking?). The MERIT database was used to gather the following routinely collected demographic information and psychometric results:

- Age
- Gender
- Principal drug of concern (clinical determination)
- Kessler-10 scores (entry and exit)
- Results of Severity of Dependence Scale (SDS) for primary drug of concern

Psychological health was examined using the scores on Kessler-10 (K-10). The K-10 is a scale measuring non-specific psychological distress[59, 60] and consists of ten questions which seek to measure the level of current anxiety and depressive symptoms a person may have experienced in the four weeks prior to interview. Scores for the ten items are summed, yielding a minimum possible score of 10 and a maximum score of 50, with low scores indicating low levels of psychological distress and high scores indicating high levels of psychological distress.

The level of compulsive use or dependence on the principal drug of concern was explored using the Severity of Dependence Scale (SDS) which is a five-item scale assessing the degree of psychological dependence symptoms in the past 12 months[61]. The conservative choice of a cut-off score of three was selected to identify individuals with a significant level of dependence and ensure high sensitivity by including any possible cases of dependence[62].

Procedure

Study participants had measurements performed at three discreet time points. First administration of the modified Audit occurred routinely upon entering treatment with MERIT and the results were recorded on the MERIT Information Management System (MIMS) database. These AUDIT scores were retrospectively obtained for use in this study upon obtaining subjects' consent for participation.

The second administration of the modified AUDIT occurred at completion of treatment with the MERIT program; generally of 12-week duration. At that time case managers sought consent from MERIT participants to participate in the present study and accordingly administered the same version of the modified AUDIT as initially completed at commencement of treatment. The scores were entered on the MIMS database using a spread sheet specifically designed for the purpose of this study.

The third administration of the modified AUDIT occurred at a 12-week phone follow up as agreed with the participants when providing consent for the study. The follow up administration of the modified AUDIT was performed by the principal researcher of this study and used mobile phone contact details provided by the participants. The purpose and content of the follow-up phone calls exclusively focused on the first three questions of the modified AUDIT relating to quantity and frequency of alcohol use in the past three months. No enquiries in relation to other substance use were made and when either increase or relapse to alcohol were disclosed, a brief reminder was offered to the participants to refer to their post-MERIT care plan for self-direction. The modified AUDIT results were then recorded in the MIMS database using the specifically designed spreadsheet.

Data management

Results from questionnaires were stored according to the confidentiality guidelines from North Coast Area Health on the password-secured MIMS database using re-identifiable Medical Record Number (MRN**).** Additionally, results from the study were kept in a purpose-designed password secured domain located within the MIMS database where access was reserved to MERIT staff involved in the study. At completion of data collection, results were extracted from the MIMS database for the purpose of analysis.

Analyses

Patterns of alcohol consumption were analysed using the questions on the modified AUDIT scale that asked about alcohol use in the past three months. The first outcome measure of drinking behaviour assessed quantity of alcohol consumed on a typical day when the respondent had an alcoholic drink. It was obtained from using counts of standard drinks per day supplied by participants: On a day that you had an alcoholic drink, how many standard drinks did you usually have? For the purpose of analysis, responses were categorised by using cut-off scores as follows: 'Low Risk' 0-4 standard drinks for males (M) and 0-2 for females (F); 'Risky' 5-6 standard drinks (M) and 3-4 (F); 'High risk' 7 or more standard drinks (M) and 5 and above (F). The cut-off scores were based on 2001 Australian Guidelines to reduce risk from drinking alcohol[63]. The 2001 guidelines were the preferred guidelines for analysis as they avoided the tendency to collapse categories whereby large proportions of respondents were categorised in risky categories, therefore reducing sensitivity to detect mobility between categories.

Usual weekly consumption was estimated using both quantity and frequency from the modified AUDIT (Appendix 3). Weekly consumption was calculated using the maximum and minimum number of drinks that could be consumed for each combined quantity and frequency category[64]. The mean of these two values represents the average number of

standard drinks consumed per week. For example, three or four drinks, two or three times a week is scored as nine standard drinks per week.

Frequency of risky drinking as an outcome measure was obtained from the responses to question three from the modified AUDIT: Q#3; How often did you have six or more drinks on one occasion? A median split was used to form two categories; below and above the suggested six drinks in the question.

Trajectories

Projections were calculated using both consumption on a typical drinking day and usual weekly consumption, stratified by risk. Generalized estimating equations (GEEs) were used to fit the trajectories. The GEE introduced by Liang and Zeger[65], is a method of analysing correlated data that otherwise could be modelled as a generalized linear model. GEEs are particularly useful in the analysis of data from longitudinal studies, in which multiple measures are taken from the same individuals across time.

All models used were GEEs with a Poisson distribution, scaled by the deviance to account for over dispersion. An autoregressive correlation structure was specified. Trajectories were obtained for two risk categories: High risk and low risk or risky (as classified by the NHMRC guidelines 2001)[63].

Only complete records were used in the analysis of trajectories. The records of 45 people were included in the two point (entry and exit) model and the records of 30 people were included in the three point (entry, exit and follow up) model. One participant was excluded from analysis due to their extremely unusual drinking pattern (entry: 224 standard drinks per day; exit: 0 standard drinks per day) All other records with complete date were included in the analysis. Analysis was performed using SAS 9.2 and STATA 11.

Exploring relationships

Possible associations between changes in alcohol consumption and other factors were assessed using Fisher's Exact test. The relationship between changes in alcohol consumption risk category and drug of concern, baseline SDS and baseline K10 were tested.

RESULTS

Between April 2009 and July 2010, a total of 103 MERIT program participants commenced their treatment episode. Of them, 42 did not complete the MERIT treatment and were therefore ineligible for inclusion in the study; they comprised twenty-one participants who breached the MERIT program conditions, twelve participants who voluntarily withdrew from the program and nine participants who were removed by the court. Sixty-one participants who completed the treatment episode were eligible for inclusion in the study but four declined consent citing the intrusive nature of the survey and eleven did not participate in an exit interview therefore no exit data were collected and consents to participate in the study were not obtained. The remaining 46 participants had the minimum requirement of at

least an entry and exit score on the modified AUDIT and they formed the sample for the study. In the sample of 46 participants, 30 had an entry, an exit and a Follow-up score on the modified AUDIT. Sixteen participants had an entry and an exit score but did not have a follow-up score due to nine completers not able to be contacted by phone for the follow-up interview and seven participants completed treatment but the data collection closed before they could be contacted for their follow-up interview.

Mean age in the sample was 31.9 years (SD = 7.9) and the participants ranged in age from 18 to 60 years old; 20 were < 30 and 26 were >30. The sample was 80% men (37) and 20% women (9). The majority of the sample (n=34; 74%) identified cannabis as their primary drug of concern, other primary drugs of concern (n=12; 26%) were categorized together in analysis and comprised of heroin (n=3); broad category amphetamines (n=7); benzodiazepines (n=1) and LSD (n=1). Based on self-reports, 35 participants (76%) commenced treatment with risky or high risk levels of alcohol use. At entry into treatment, the median quantity of drinks consumed in one day was 12 and at exit the quantity had reduced to two. Psychological distress, measured by the K-10 showed at entry into treatment half (n=23) of the participants reported very high and a quarter (n=11) of the participants reported high levels of psychological distress.

Daily Alcohol Consumption
Analysis of responses to the question regarding the amount consumed on a day when they were drinking is shown in Figure 1 and Table 1. At commencement of treatment the participants exhibited high levels of problematic alcohol use with 76% reporting alcohol use categorized at risky and high risk levels. Figure 1 also reflects the extent to which there were changes in drinking behaviour between alcohol assessment time points.

Figure 1. Comparison of risk of alcohol consumption on a typical drinking day for participants at entry and exit from the MERIT program
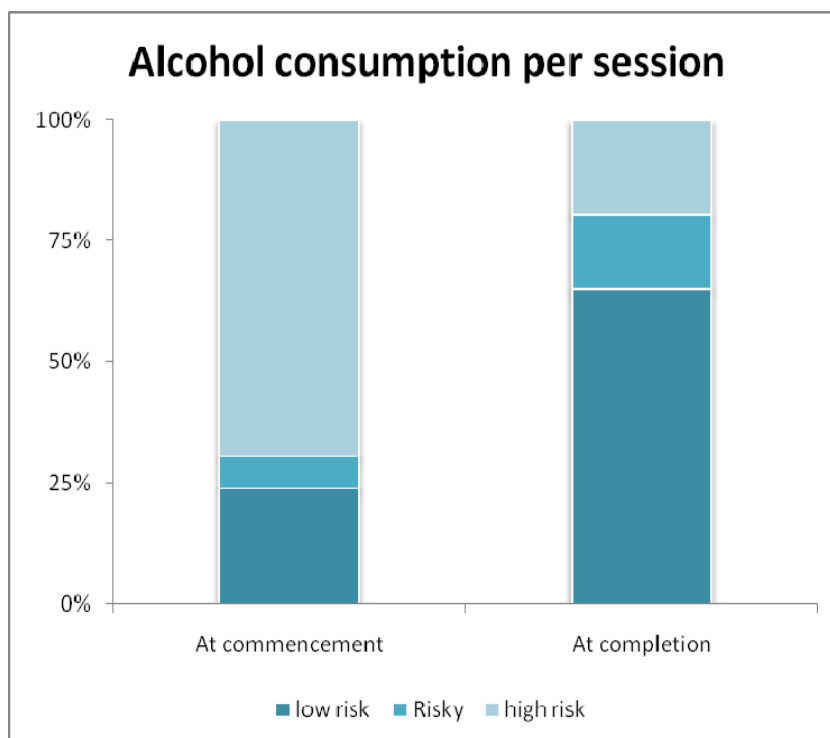
Table 1. Risk levels for alcohol use per session at entry and exit from the MERIT program

entry alcohol consumption	exit alcohol consumption			
	Low risk	Risky	High risk	Total
Low risk	10	1		11
Risky	1	2		3
High risk	19	4	9	32
Total	30	7	9	46

* Males: Low risk= 0- 4 standard drinks/day; Risky= 5-6; High risk= 7 or more
*Females: Low risk= 0- 2 standard drinks/day; Risky= 3-4; High risk= 5 or more

Of the 11 people who reported low risk alcohol use on a typical drinking day at the commencement of the program, 10 maintained a low risk level, one increased to a risky level and zero increased to a high risk level by completion of the program.

Of the three people who reported risky alcohol use on a typical drinking day at the commencement of the program, two maintained a risky level, one had decreased consumption to a low risk level, and zero had increased to high risk levels.

Of the 32 people who reported high risk alcohol use on a typical drinking day at the commencement of the program, nine maintained a high risk level, four had decreased consumption to a risky level, and 19 had decreased to low risk level.

Weekly alcohol consumption

Alcohol consumption over a week was estimated by combining data on frequency of alcohol consumption and the amount consumed on a typical day. Changes between entry and exit in weekly alcohol consumption are shown in Figure 2 and Table 2.

Figure 2. Comparison of risk of alcohol consumption of usual weekly alcohol use for participants at entry and exit from the MERIT program
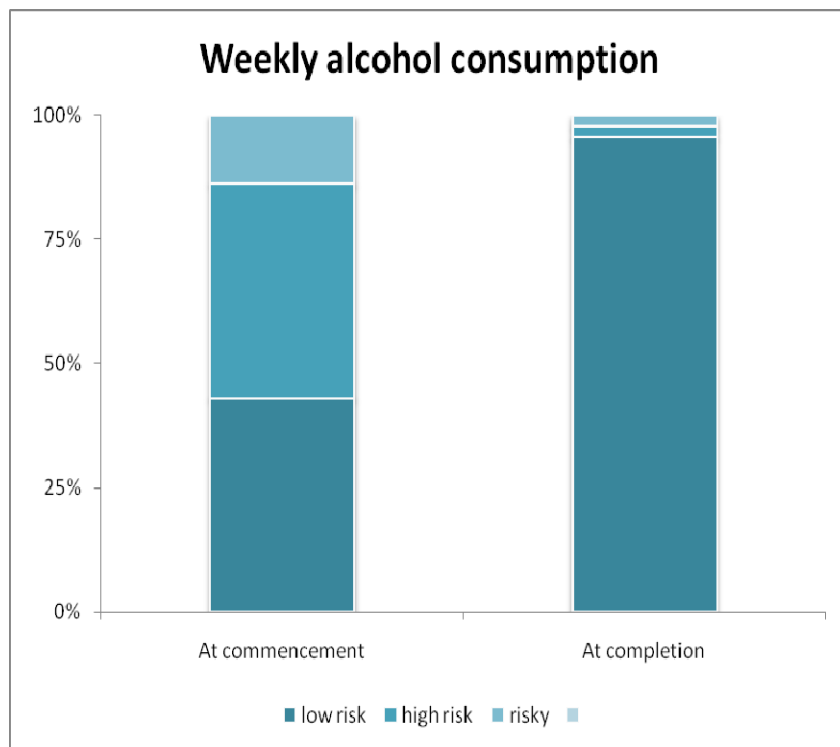

Table 2. Risk levels for weekly alcohol use at entry and exit from the MERIT program

Entry alcohol consumption	Exit alcohol consumption			
	Low risk	Risky	High risk	Total
Low risk	19	1	0	20
Risky	6	0	0	6
High risk	19	0	1	20
Total	44	1	1	46

*Males: Low risk= 0-28 standard drinks/ week; Risky= 29 - 42; High risk= 43 or more
*Females: Low risk= 0-14 standard drinks/ week; Risky= 15-28; High risk= 29 or more

Of the 20 people who reported low risk alcohol consumption at the commencement of the program, 19 maintained a low risk level, one increased to a risky level, and none increased to a high risk level by completion of the program.
Of the six people who reported risky alcohol consumption at the commencement of the program, none maintained a risky level, six had decreased consumption to a low risk level, and none had consumption to high risk levels.

Of the 20 people who reported high risk alcohol consumption at the commencement of the program, one maintained a high risk level, none had decreased alcohol consumption to a risky level, and 19 had decreased consumption to low risk levels.

Consumption of six or more standard drinks in one session
Participants were asked how frequently they consumed six or more standard drinks in one session. Figure 3 and Table 3 below illustrate the changes in frequency of heavy drinking between program entry and exit.

Figure 2. Comparison of frequency of consuming six or more standard drinks in one session for participants in the MERIT program at commencement and completion
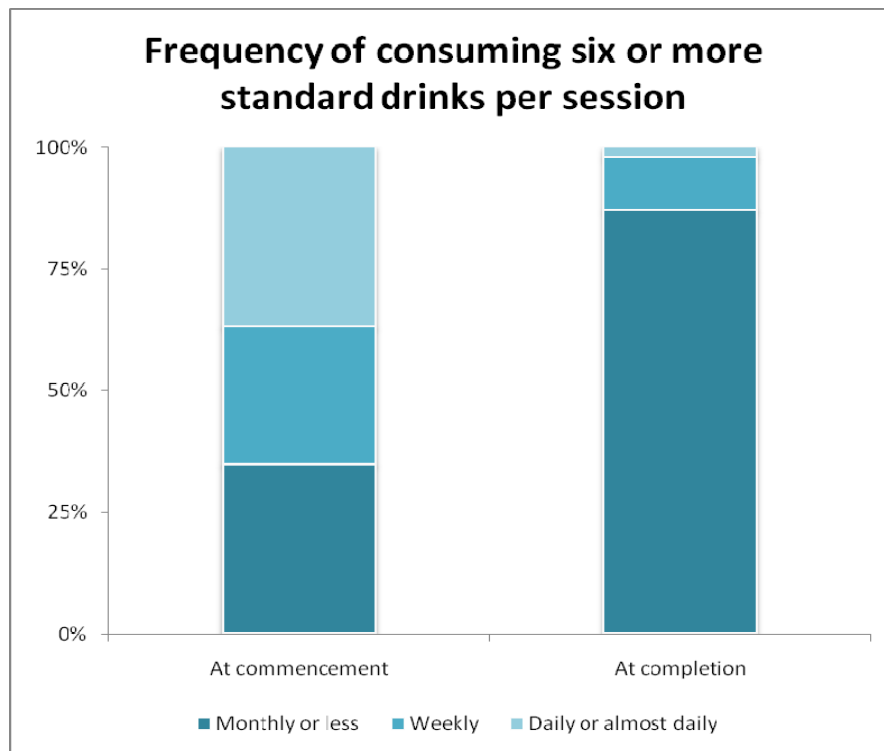

Table 3: Risk levels of frequency of drinking six or more standard drinks at entry and exit from the MERIT program

entry frequency	exit frequency			
	Daily/almost daily	Weekly	Monthly or less	Total
Daily or almost daily	1	1	15	17
Weekly	0	4	9	13
Monthly or less	0	0	16	16
Total	1	5	40	46

All of the 16 people who reported consuming six or more drinks on a monthly basis or less frequently at the commencement of the program maintained this frequency.

Of the 13 people who reported consuming six or more drinks on a weekly basis at the commencement of the program, four maintained a weekly frequency, nine had decreased to monthly or less, and none had increased to daily.

Of the 17 people who reported consuming 6 or more drinks on a daily or almost daily basis at the commencement of the program, one maintained a daily frequency, one decreased to weekly, and 15 decreased to monthly or less.

Trajectories

It was possible to establish two distinct alcohol use trajectories based on number of completed assessment points for the sample portion of participants (46) with entry and

exit scores and the sample portion of participants (30) with entry, exit and Follow-up scores. The trajectories of alcohol use between entry and exit assessment points are illustrated in Figure 4 below.

Figure 4. Projections for counts of standard alcoholic drinks consumed on a typical drinking day using entry and exit data
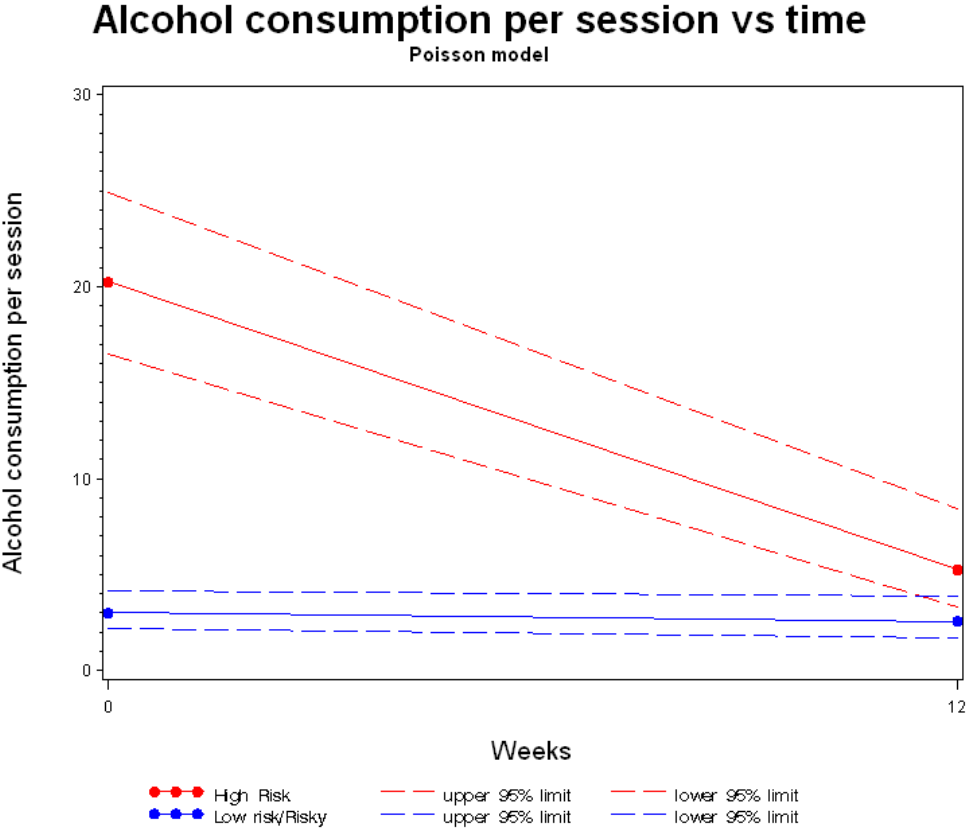
A Poisson model was used to describe trajectories of each of these two groups. The high risk trajectory tended to have a large decrease in number of standard drinks consumed on a typical drinking day throughout the program.

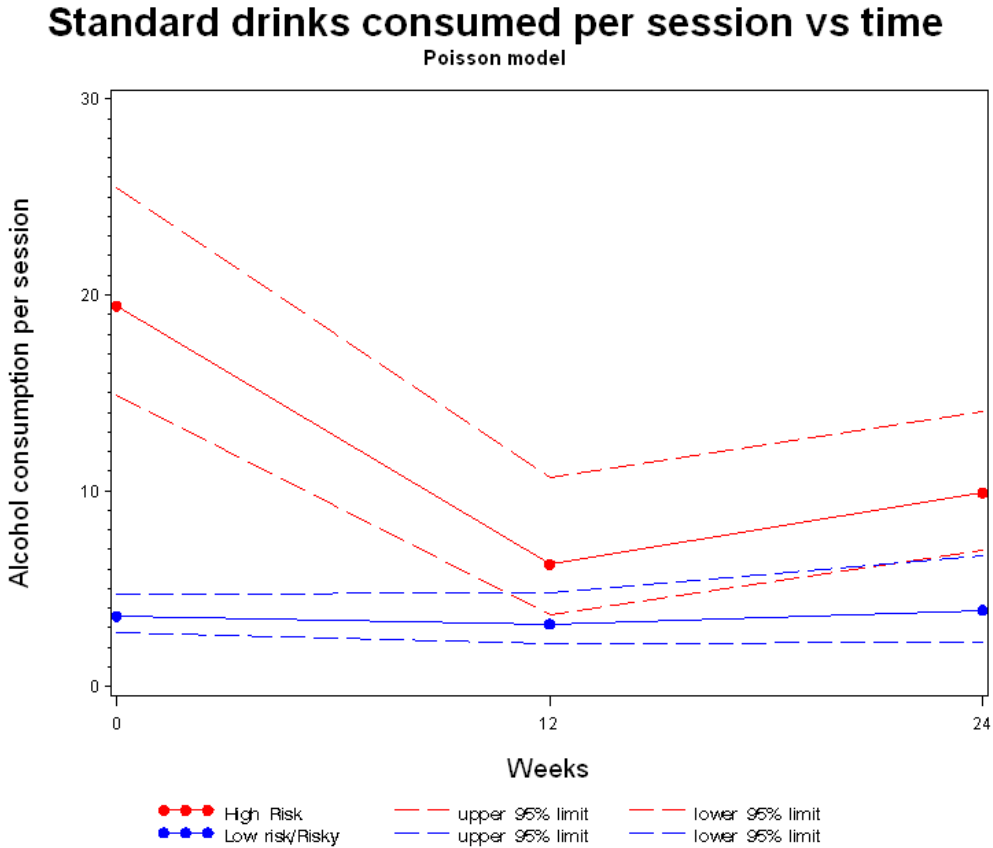The low to risky trajectory tended to have no significant change in number of standard drinks consumed on a typical drinking day throughout the program.

Figure 5: Projections for counts of standard alcoholic drinks consumed on a typical drinking day using entry exit and Follow up data.

Thirty people were included in the Poisson modelling analysis including the follow-up measures. This showed that the high risk trajectory tends to have a large decrease in number of standard drinks consumed on a typical drinking day from commencement to completion of the program. The number of drinks consumed on a typical drinking day tends to increase at follow up, however it remains below initial levels.

In the low risky trajectory, there was no significant change in number of standard drinks consumed on a typical drinking day from commencement of the program at to completion or at follow up.

Figure 6. Projections for usual weekly count of standard alcoholic drinks using entry and exit data.

Standard drinks consumed in a usual week vs time
Poisson model
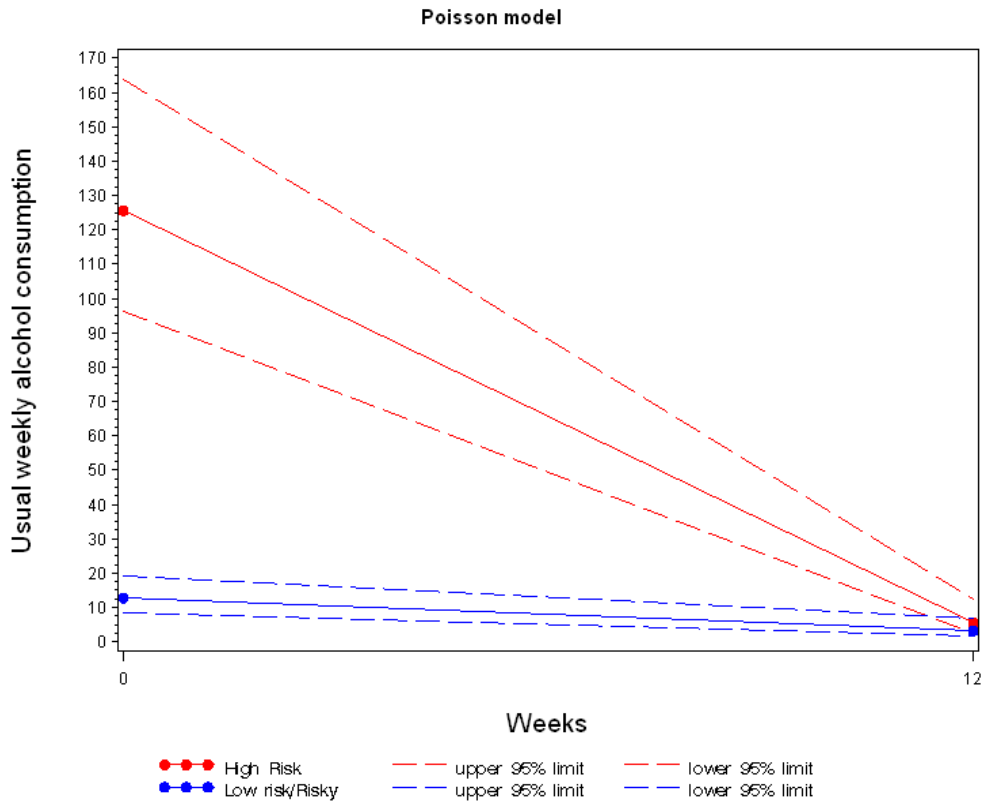
Forty-five people were included in the analysis. The high risk trajectory tends to have a large decrease in the usual number of standard drinks consumed per week whereas the low to risky trajectory shows a significant slight decrease in usual number of standard drinks consumed per week throughout the program.

Figure 7. Projections using for usual weekly count of standard alcoholic drinks using entry, exit and follow up data.

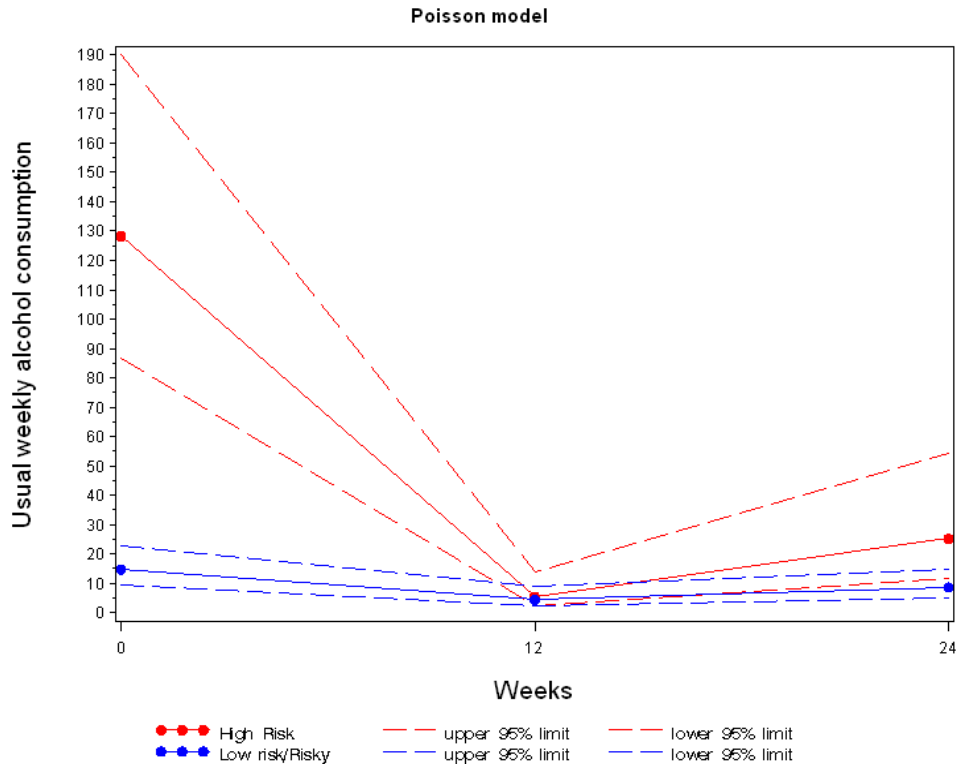**Standard drinks consumed in a usual week vs time**
Poisson model

Thirty people were included in the analysis. The high risk trajectory tends to have a large decrease in usual number of standard drinks consumed per week. The number of drinks consumed on a typical drinking day had a slight increase at follow up.

The low to risky trajectory shows significant slight decrease in usual number of standard drinks consumed per week from commencement of the program at completion. No change detected at follow up.

Associations with change in alcohol behaviour (Drug of choice)

We tested for a relationship between changes in alcohol consumption and drug of choice using Fisher's exact test. For ease of analysis, drugs other than cannabis were grouped together. There were no significant associations between drug of choice and change in daily or weekly alcohol consumption, or the frequency of consuming six or more standard drinks in one session.

Table 4: Change in alcohol consumption, by drug of choice**.**

Change in alcohol consumption		Drug of Choice			
		Cannabis	Other	Total n=46	Fisher's exact test P-value
Daily	Increase	1	0	1	
	No Change	16	5	21	0.812 (>0.05)
	Decrease	17	7	24	
Weekly	Increase	1	0	1	
	No Change	16	4	20	0.707 (>0.05)
	Decrease	17	8	25	
6 or more per session	Increase	0	0	0	
	No Change	18	3	21	0.176 (>0.05)
	Decrease	16	9	25	

Association with change in alcohol behaviour (Kessler-10)

We tested for a relationship between changes in alcohol consumption and scores of psychological distress (K-10) using Fisher's exact test. Drugs other than cannabis were grouped together. There were no significant associations between scores of psychological distress and change in daily or weekly alcohol consumption, or the frequency of consuming six or more standard drinks in one session.

Table 5. Association between change in alcohol consumption and Kessler-10 scores

Change in alcohol consumption		Psychological distress			
		Moderate/ low	High/ very high	Total n=46	Fisher's exact test P-value
Daily	Increase	0	1	1	
	No Change	6	15	21	1.000 (>0.05)
	Decrease	6	18	24	
Weekly	Increase	0	1	1	
	No Change	4	16	20	0.632 (>0.05)
	Decrease	8	17	25	
6 or more per session	Increase	0	0	0	
	No Change	5	16	21	0.508 (>0.05)
	Decrease	7	18	25	

Association with change in alcohol behaviour (SDS scores)

We tested for a relationship between changes in alcohol consumption and Severity of Dependence (SDS) score on main drug of concern using Fisher's exact test. Drugs other than cannabis were grouped together. There were no significant associations between SDS scores and change in daily or weekly alcohol consumption, or the frequency of consuming six or more standard drinks in one session.

Table 6. Association between change in alcohol consumption and Severity of Dependence Scores

Change in alcohol consumption		Dependency			
		Not dependent	Dependent	Total n=46	Fisher's exact test P-value
Daily	**Increase**	0	1	1	
	No Change	2	19	21	0.618 (>0.05)
	Decrease	1	23	24	
Weekly	**Increase**	0	1	1	
	No Change	2	18	20	0.605 (>0.05)
	Decrease	1	24	25	
6 or more per session	**Increase**	0	0	0	
	No Change	3	18	21	0.088 (>0.05)
	Decrease	0	25	25	

DISCUSSION

This study has provided a detailed description of alcohol use in a treatment sample of dependent substance users on the MERIT program. Previous MERIT health outcome reports have established a high prevalence of alcohol use among participants in drug treatment but changes in patterns of use and drinking behaviour had not previously been explored.

At entry into treatment, a large proportion (76%) of the participants were categorised as risky or high risk drinkers based on self-reported number of standard drinks consumed in a session. A slightly lower proportion (57%) were categorised as risky or high risk drinkers based on our estimate of weekly consumption, which uses both frequency and quantity measures. Sixty-five percent reported binge-style drinking (six or more drinks per session) at entry. These figures demonstrate a very high level of risky drinking among this population, although the risky drinking is not necessarily every day.

At exit from treatment, there was a large and clinically significant reduction in the number of participants drinking at risky levels, both in terms of quantity consumed per session and the weekly consumption. By this time, 20 (57%) of those initially reporting risky or high risk quantities consumed on a typical drinking day, reported reducing their drinking to zero or low risk level. However, 16 participants continued to drink heavily when they drank. The combination of the frequency and quantity data indicates that there has also been a reduction in the total weekly consumption, with only two participants categorised as risky or high risk on this measure. Thus, the pattern indicates a reduction in both the frequency of drinking and the quantity consumed during a drinking session. These findings are similar to those reported by Gossop et al[56, 66].

There may be several reasons why more than half of the risky drinkers in this sample modified their drinking behaviour. Firstly, the positive change could be attributed to the characteristics of the health intervention provided by the MERIT clinicians at the four rural locations. The sample received high quality drug and alcohol health care that included a multiple health risk factors approach to treatment for illicit substances. Timely awareness

by clinicians of comorbidity between alcohol and other substances informed the intervention received by this sample and included early assessment and ongoing monitoring of alcohol use throughout the treatment episode. Secondly, the educational component of the clinical intervention based on sound relapse prevention principles could be amenable to all substances whether licit or illicit.

However, it is of concern that despite the strongly significant reductions in quantity and frequency of drinking that was found among the risky drinkers, that many (16) remained risky drinkers at exit from treatment. To some extent, the lesser rates of change in drinking behaviour may reflect the fact that some clients commit to treatment for their illicit substance use issues and do not perceive their alcohol use as problematic. It is also possible that some participants alter their perception of their problematic alcohol use only after making changes in their substance use. It has been suggested by other researchers that drug users with co-occurring alcohol disorders perceive alcohol treatment needs as less immediate than drug treatment[14].

The potential for the results to identify clear patterns of substitution between principal drug of concern and alcohol was not realised in this sample. Among the 11 respondents considered low risk drinkers at entry into treatment, only one person had increased their drinking enough by exit from treatment to be relocated to the risky category. In fact, by exit from treatment, a decrease in alcohol consumption provoked a migration from risky and high risk categories and swelled the low risk category to 65% of the sample.

Levels of alcohol consumption in this sample however, give rise to further concerns when considering the results of the 3-month follow-up. The high risk trajectory measure indicate that a considerable proportion of risky drinkers at entry into treatment tended to have a large decrease in number of standard drinks consumed on a typical day by exit from treatment. However, those risky drinkers tended to increase the number of drinks they consumed by follow-up three months after treatment. Although the increase remained well below initial levels they returned nonetheless to risky drinking levels. The substantial rise in the proportion of risky drinkers returning to risky drinking and possibly to pre-treatment levels within a short follow-up time period represents an area worthy of further exploration. The author speculates that the results of a longer follow-up would likely align with the findings from the outcome studies conducted by Gossop et al[56] showing little change in the prevalence of heavy alcohol use one year after treatment for substance use.

Due to ethical considerations, data collection in this sample did not include gathering information about illicit drug use after completion of the treatment episode. It was therefore impossible to explore potential associations between relapse to alcohol and relapse to principal drug of concern at the follow-up time point. Other studies however have established that alcohol was implicated in the relapse to other substances. For example, Pennings et al[37] in 2001, conducted a project aimed at determining the effects of concurrent use of alcohol and cocaine and found that respondents who were once dependent on both cocaine and alcohol, compared to those previously dependent upon cocaine alone, showed greater tendency for alcohol use to trigger a relapse to cocaine. Similarly, Spear et al[45] concluded that combined cannabis and alcohol users relapsed at a higher rate (71%) compared to 46% for alcohol users.

Concerns about the rates of alcohol relapse arise when considering the majority cannabis users in this sample and the previously documented dynamic that alcohol increases positive subjective mood effects of cannabis and therefore contributing to the popularity of their combination[32].

The sample in our study is located within a rural population with a known above-state average level of alcohol use. The findings from our study also indicate a concerning rate of alcohol relapse among drug treatment completers. Although the author does not infer an association between these two pieces of information it is nonetheless a suggestion for future studies to locate samples in non-rural areas to allow comparisons in relapse rates and behaviours. Given that environmental factors including drinking cultures particularly in rural areas, exposure and peer effects are predictors of problematic alcohol and drug use[7], data collection as proposed by Rehm[67] could include the larger context of where and when alcohol is consumed.

In this study, potential relationships were also explored between changes in alcohol consumption and main drug of concern, psychological distress and severity of dependence (to respondent's main drug of choice). The rationale included the expectation that high dependency on their substance of choice or high levels of psychological distress could impact on the participants' ability to make changes in alcohol consumption levels. Fisher's Exact Tests using entry and exit data were performed to test these relationships but there was no evidence of association between any of these factors at entry and change in drinking behaviour.

In terms of representativeness and despite the relatively small sample in this study, very few respondents, nine only, declined participating in our study and missing data from eleven respondents was due to distance and time restraints not uncommon in rural areas. It should be noted also that this was a cohort of active treatment participants and as such can only aim to be representative of the participants actually completing treatment with the MERIT program. The limited sample size in this study precluded the investigation of gender differences. The literature on multiple risk factors in alcohol and substance use clearly document the gender differences in terms of onset and patterns of use, treatment response and relapse rates and behaviours.

The main strength of this study provided an opportunity to present prospective data and analysis of the patterns of alcohol use at 3-month follow-up after treatment. The results offer some information on post treatment increase in alcohol use for high risk drinkers in this sample. These findings suggest that when people participating in treatment for their substance dependence have multiple problems or dependence, including problematic alcohol use, this may require additional treatment input to meet differing treatment needs.

While it could be argued that further statistical analysis could have been conducted, this was a descriptive study with no intent to draw inferences. Future studies with larger scope of investigation could make a distinction between concurrent and simultaneous use of substances. The literature documents that there is a significantly increased health risk when substances are used simultaneously compared to concurrently. Future research concerned with improving health outcomes in treatment populations would benefit from refining data collection to capture patterns of simultaneous substance use.

CONCLUSION

In this sample of participants in treatment for illicit substances, a high prevalence (76%) of risky alcohol use was identified. The relevant literature on risky alcohol use recognise that individuals with alcohol use disorders have a greater risk of having a second substance use disorder and that the comorbidity of alcohol with another substance has health-related problems specific to that pattern of use.

The results pointed to a clinically significant proportion of risky drinkers changing their drinking behaviour between entry and exit from treatment. The patterns of reduction included both the frequency of drinking and the quantity consumed during a drinking session. These findings are similar to those reported by Gossop et al[56, 66] The findings in this sample did not support the anecdotal evidence from MERIT drug and alcohol workers in relation to substitution with alcohol when attending to drug use issues.

The positive results provide strong evidence that MERIT delivers risky alcohol users significant improvements in alcohol consumption; from an average of 17 standard drinks at program entry to one standard drink at program exit.

While the positive results indicated a significant proportion of risky drinkers changing their drinking behaviour during treatment, it also pointed to some participants increasing the number of drinks they consumed by follow-up three months after treatment. Although the increase remained well below initial levels they returned nonetheless to risky drinking levels.

These findings suggest that participants in treatment for substance use may have multiple problems or dependence, including problematic alcohol use; this may require additional treatment input to meet differing treatment needs.

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Trajectories of alcohol use for rural participants in a court-based illicit drug program: (MERIT)

Co-occurrence of risky alcohol use and substance use is widespread in treatment populations and rural residents are known to often drink at higher risk levels then their urban counterpart.

Aims: To investigate alcohol use outcomes for participants in treatment for illicit substance use by describing alcohol use trajectories at entry into treatment through to exit and at a follow-up 3-months after completing treatment. The study explores relationships between changes in drinking behaviour and main drug of concern, severity of dependence and psychological distress.

Method: Participants on the 'Magistrate's Early Referral into Treatment' (MERIT) program from four NSW rural towns formed the sample. Prospective data from self-reports of alcohol use collected via a modified 'Alcohol Use Disorder Identification Test' were used at three time points to establish trajectories of alcohol use. Quantity and frequency measures were applied to test the dependent variable.

Results: Based on quantity measures at entry, 76% of participants were risky drinkers whereas 35% remained risky drinkers at exit. Based on frequency measures at entry, weekly use had a lower proportion of 57% risky drinkers and only two participants on this measure were risky drinkers at exit. Binge-style drinking (six or more drinks per session) was reported by 65% at entry and only one participant maintained that level of alcohol use at exit; all others reduced frequency to monthly. Sixteen participants continued to drink heavily when they drank. Trajectories from 3-month follow-up data showed a considerable proportion of risky drinkers decreasing their alcohol consumption by exit to low risk. A proportion of those same drinkers had returned to risky drinking by follow-up. No associations were observed between drinking behaviour at entry and main drug of concern or changes in psychological distress or severity of dependence.

Discussion: More than half the risky drinkers in our sample made some changes in their alcohol use and by exit from MERIT drug treatment they were categorised low risk. A considerable proportion of risky drinkers however returned to risky drinking by follow up.

Implications: The findings from our study suggest that treatment service providers need to encourage and strengthen treatment practices that accurately estimate the dangers of comorbid alcohol and other substance use.

Key words: Co-occurrence, Comorbidity, Alcohol, Illicit drugs, Substances, Rural

Alcohol Survey

Information sheet

Researcher: Christian Tremblay (Case Manager MERIT program Lismore, Tel: 66207650
Supervisor: Dr. Megan Passey (Senior Lecturer Northern Rivers University Department of Rural Health, University of Sydney)

You are invited to participate in a study about drinking and how it affects your health. Your information is important to help us understand how to prevent illness and promote well being. As well as this written information about the study, your case manager will describe the study and answer your questions.

The study involves testing people who participate in the MERIT program for their level of drinking. Information will be obtained by completing an alcohol survey to identify people who drink at low, risky and high risk levels. If you agree to participate in this study you will be asked to complete this survey on two separate occasions.

You have already completed the alcohol survey when you started with MERIT, it helped in planning your treatment when you were on the MERIT program. Your consent means that today you would be required to fill in the alcohol survey now that you have completed MERIT and again in 3 months time when we would like to contact you by phone to do this survey one last time. We need your permission to compare the results of all three surveys including the first one you completed at the beginning of the MERIT program. We also ask your consent to include in this study some of the information you provided when you were on MERIT such as age, gender, main drug of concern and other health-related information. Any of your information used for the purpose of this study will remain confidential. Names will not be used in the study and a number will identify people.

We plan to publish the results of this study in a relevant Drug and Alcohol journal. In any publication, information will be provided in such a way that you cannot be identified.

Whether you decide to participate or not, your decision will not affect your treatment with North Coast Area Health Services now or in the future. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice. If you decide to participate in the survey you will be required to complete the consent form.

The NCAHS Human Research Ethics Committee has approved this research project. Any complaints or concerns about this research project may be made to the NCAHS Human Research Ethics Committee through the Research Ethics Officer as follows: Research Ethics Officer NCAHS Human Research Ethics Committee PO Box 126 Port Macquarie NSW 2444 Tel:(02) 6588 2941 Fax:(02) 6588 2942 Email: EthicsNCAHS@ncahs.health.nsw.gov.au

The research team: Christian Tremblay, Robert Lendrum, Tina Lace, Shannon White, Deb Arthur, Kate Willock and Megan Passey

Alcohol survey
Consent Form

We are looking for your consent to participate in this research.

Please remember your decision to participate is voluntary; you do not have to consent if you do not wish to participate. If you decide not to participate you do not have to give a reason.

I would like to volunteer to be part of the Alcohol Survey and I understand that this means:

- I have read the information sheet and understand the purpose of the research and any benefits and risks have been explained to me by the researcher.
- I am aware that the research will involve completing two alcohol surveys: One as soon as I complete MERIT and another in 3 months time when a person from the research team will phone me and ask me about alcohol consumption. I also give permission for the research team to have access to some of the information I provided when I was a participant on MERIT such as the results of the first Alcohol Survey I completed at the start of MERIT and other information regarding my age, gender, drug use and treatment and my general health.
- I understand that as part of the study any information collected about me as well as my personal details is confidential and that neither my name nor any other identifying information will be published.
- I understand that I am free to withdraw from the study at any time. If I wish to withdraw I should contact any of the research team to let them know. If I withdraw this will not affect my relationship with the researchers or with the MERIT program, and will not affect any health care treatment that I receive now or in the future.
- I have read and understood the written explanation provided to me on the participant information sheet and have been given this sheet to keep.
- I can lodge a complaint about the research project by writing to the NCAHS Human Research Ethics Committee PO BOX 126 Port Macquarie NSW 2444 Tel: 02 6588 2941
- I can contact Christian Tremblay on 66207650 at any time if I have questions to ask or comments to make.
- I will receive a summary report on the results of the survey if I request it

I have read the information above and agree to participate in the study

Name:

Signature: Date:

☐ Entry	**NORTH COAST**	Please enter information or affix Patient Information Label
☐ Exit	**AREA HEALTH SERVICE**	MRN: Surname: Given Names:
☐ Follow-up	**NSW⊕HEALTH**	D.O.B.: / / Sex: Date:

☐ Male

☐ Female

	☐	☐	☐	☐	☐	☐	☐
	Under 20	20 – 29	30 - 39	40 -49	50 -59	60 - 69	70+

1A In the last 3 months how often have you had a drink containing alcohol?

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Never	Less than 1 day/month	about 1 day a month	2 - 3 days a month	1 day a week	2 days a week	3 days a week	4 days a week	5 – 6 days a week	Every day

2A On a day that you had an alcoholic drink, how many standard drinks did you usually have?

Standard drinks: ——————————————

3A How often did you have 6 or more drinks on one occasion?

☐ Never   ☐ Less often than monthly   ☐ Monthly   ☐ Weekly   ☐ Daily or almost daily

Standard Drinks Guide

During the past 12 months

		Score
1	How often do you have a drink containing alcohol? ☐ Never ☐ monthly or less ☐ 2 – 4 times a month ☐ 2 – 3 times a week ☐ 4 or more times a week	
2	How many 'standard' drinks containing alcohol do you have on a typical day when you are drinking? ☐ 1 or 2 ☐ 3 or 4 ☐ 5 or 6 ☐ 7 to 9 ☐ 10 or more	
3	How often do you have 6 or more drinks on the one occasion? ☐ Never ☐ Less often than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily	
4	How often during the last year have you found that you were not able to stop drinking once you had started? ☐ Never ☐ Less often than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily	
5	How often during the last year have you failed to do what was normally expected from you because of drinking? ☐ Never ☐ Less often than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily	

6	How often during the last year have you needed a drink in the morning to get yourself going after a heavy drinking session?				
	☐ Never	☐ Less often than monthly	☐ Monthly	☐ Weekly	☐ Daily or almost daily

7	How often during the last year have you had a feeling of guilt or remorse after drinking?				
	☐ Never almost	☐ Less often than monthly	☐ Monthly	☐ Weekly	☐ Daily or almost daily

8	How often during the last year have you been unable to remember what happened the night before because you had been drinking?				
	☐ Never	☐ Less often than monthly	☐ Monthly	☐ Weekly	☐ Daily or almost daily

9	Have you or someone else ever been injured as a result of YOUR drinking?		
	☐ No	☐ Yes but not in the last year	☐ Yes, during the last year

10	Has a relative or friend or a doctor or a health worker ever been concerned about your drinking and suggested you cut down?		
	☐ No	☐ Yes but not in the last year	☐ Yes, during the last year

Do you think you presently have a problem with drinking?

☐ No   ☐ Probably not   ☐ Unsure   ☐ Possibly   ☐ Definitely

In the next 3 months, how difficult would you find to cut down or stop drinking?

☐ Very easy   ☐ Fairly easy   ☐ Neither difficult nor easy   ☐ Fairly difficult   ☐ Very difficult

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CONSENT: ☐ Yes   ☐ No

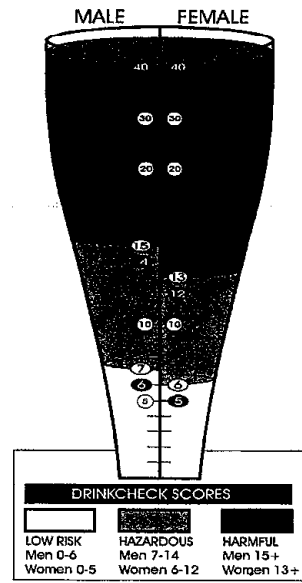**Survey administered by:**

Name: _____

Date: _____

DRINKCHECK SCORE: ☐

DRINKCHECK INTERVENTION

☐ Questionnaire only
☐ What your score means pamphlet
☐ Feedback
☐ Self help booklet
☐ Further alcohol assessment required

RECORD
DRINKCHECK SCORE & ACTION TAKEN ON
"Substance Use History MR84'

MALE   FEMALE

DRINKCHECK SCORES

LOW RISK	HAZARDOUS	HARMFUL
Men 0-6	Men 7-14	Men 15+
Women 0-5	Women 6-12	Women 13+

North Coast Area Health Service

Question 4 – 13 Alcohol Use Disorders Identification Test (Audit) developed by World Health Organisation (WHO) Modified to comply with National health & Medical Research Council (NHMRC) guidelines.