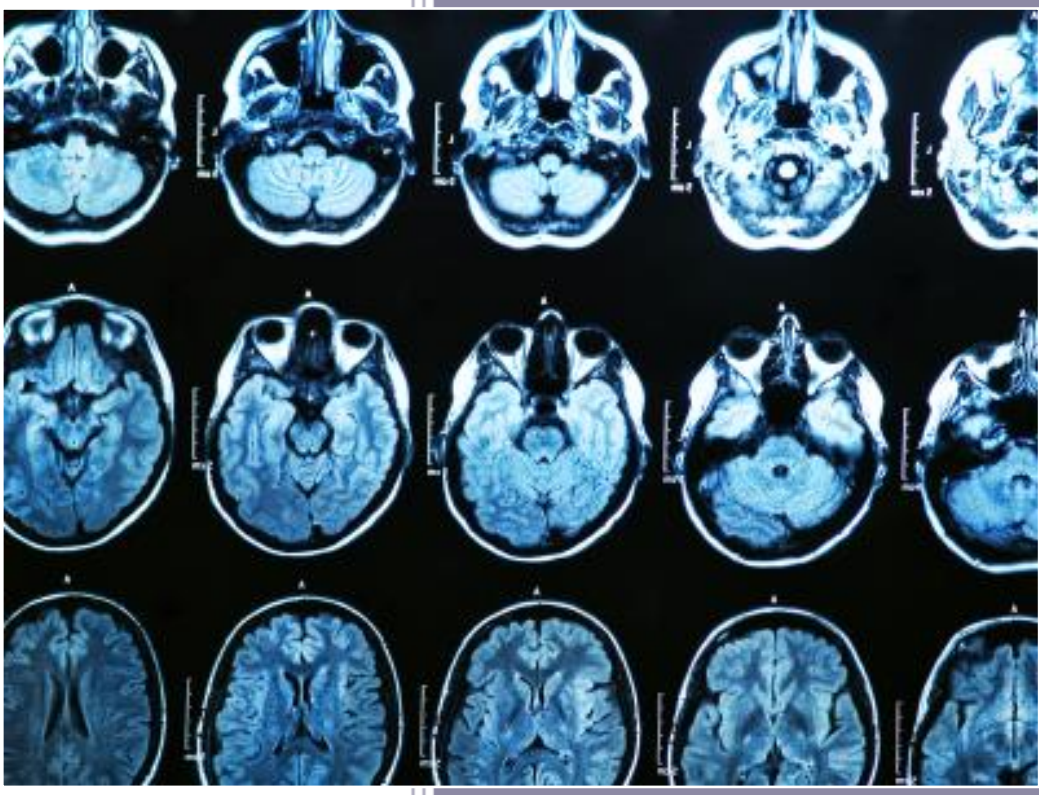
ALCOHOL RESEARCH UK

Alcohol Misuse and Cognitive Impairment in Older People



Substance Misuse & Ageing Research Team

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EXECUTIVE SUMMARY

Background

Between 50-80% of individuals with chronic alcohol problems experience cognitive impairment, including memory problems, difficulties concentrating and difficulties explaining things to others. Older people are particularly sensitive to the toxic effects of alcohol on the brain and are at high risk of having a stroke or developing dementia, both of which are common causes of cognitive impairment.

Unlike many types of cognitive impairment which get worse with time, alcohol-related cognitive impairment may improve if the person stops or greatly reduces their drinking. However, cognitive impairment can make it difficult for people with alcohol problems to stop drinking and evidence suggests that they are less likely to benefit from and more likely to drop out of alcohol treatment.

It is important that people who have alcohol problems and cognitive impairment are identified so that alcohol treatment can be adapted to meet their needs and they can receive other support from health and social services where necessary. However, evidence suggests that substance misuse practitioners find it difficult to identify cognitive impairment and people with cognitive impairment do not always recognise that they are cognitively impaired.

One way to identify people who have alcohol problems and cognitive impairment is to carry out brief cognitive testing of those attending substance misuse services using a cognitive impairment screening tool. In addition, people attending memory assessment services (NHS organisations that assess people where there is a suspicion of dementia or mild cognitive impairment) can be screened for alcohol problems using an alcohol screening tool.

The main objectives of this study were to find out:

1. Whether older people's substance misuse services are screening their service users for cognitive impairment and if cognitive screening is feasible and acceptable in these services.
2. Whether memory assessment services are screening their service users for alcohol problems and if alcohol screening is feasible and acceptable in these services.
3. What is known about how to adapt alcohol treatment for people with cognitive impairment.

Methods

A variety of methods were used in this study:

1. A questionnaire sent to professionals in older people' substance misuse services and interviews with 10 older people attending these services for an alcohol problem (objective 1).
2. A questionnaire sent to professionals in memory assessment services, two focus groups with practitioners from memory assessment services and interviews with 10 people who have been diagnosed with cognitive impairment and who attend these services (objective 2).
3. A literature review on how to work with people with cognitive impairment (objective 3).

In addition, during the interviews with substance misuse service users, cognitive screening was carried out so that participants could comment on what it is like to be screened for signs of cognitive impairment. Similarly, during the interviews with memory assessment service users, alcohol screening was carried out to find out whether it was possible for people with cognitive impairment to answer the questions in the screening questionnaire.

Results

- The older peoples' substance misuse services that took part in this study were not screening their service users for cognitive impairment. They described difficulties in identifying cognitive impairment and in working with those affected by it.
- The substance misuse practitioners who took part in the study felt that it would be feasible and beneficial to screen for cognitive impairment in substance misuse services.
- Most of the substance misuse service users who were interviewed during the study reported experiencing cognitive impairment and scored below the cut-off for 'normal' limits on the cognitive screening tool.
- The cognitive difficulties described by substance misuse service users ranged from short term memory problems to long-term difficulties which were so severe that they were unable to carry out activities of daily living such as going shopping alone or preparing a meal.
- Memory assessment services will not normally carry out a full assessment of people with alcohol problems unless they have stopped or greatly reduced their drinking.
- Memory assessment services generally ask their service users about alcohol use but do not use standard alcohol screening questionnaires which makes it

difficult for practitioners to know if the person is experiencing (or at risk of experiencing) problems related to their alcohol use.

- Although some people with cognitive impairment experienced difficulties with the alcohol questionnaires these could be overcome, for example, by using a drinking diary to record drinks as they consumed them or by rewording questions to make them more straightforward.
- Some information exists in the literature which can help practitioners make alcohol treatment more suitable for people with cognitive impairment, for example, by using memory aids and delivering information in a way which is easier to understand. However more research is required to establish how to adapt alcohol treatment for people with cognitive impairment.

Conclusions

This study suggests there may be a significant degree of undiagnosed cognitive impairment in older people with alcohol problems. Some alcohol-related cognitive difficulties can be reversed if the person stops or greatly reduces their drinking but alcohol treatment is less likely to be successful in those with cognitive impairment. Therefore it is important to identify older people with alcohol problems that coexist with cognitive impairment so that alcohol treatment can be adapted to meet their needs and they can be offered other support from health and social services if necessary. However, this study has found that opportunities are being missed to identify older people with alcohol problems and cognitive impairment and this means that those affected may not be receiving the treatment and support that they need. Service users and practitioners are broadly supportive of screening and it is brief and relatively straightforward to deliver. However, practitioners will require a degree of training to deliver screening sensitively and appropriately. More research is required to understand ways of tailoring alcohol treatment for people with cognitive impairment.

1. INTRODUCTION

Alcohol misuse frequently coexists with cognitive impairment. Advancing age is the biggest risk factor for mild cognitive impairment[1] and an estimated 5-25% of older people (aged 65 and over) are affected by it (Kumar, et al., 2005; Manly, et al., 2005; Purser, Fillenbaum, Pieper, & Wallace, 2005). Common causes of cognitive impairment in older people are degenerative neurological diseases such as dementia, stroke, traumatic brain injury and alcohol and medication misuse.

Alcohol misuse can cause damage to the brain in a number of ways:

- It is associated with brain atrophy and shrinkage (Ding, et al., 2004; Oscar-Berman, 1992).
- Neuron information transmission speed is slowed and compromised (Rosenbloom, Sullivan, & Pfefferbaum, 2003).
- Thymine deficiency which is experienced by some people with chronic alcohol problems can produce lesions in the brain (Myslinski, 1998).
- It destroys red blood cells causing decreased oxygen supply to the brain (Doweiko, 2006).
- It may cause sleep disturbances which can affect learning, processing new memories, problem solving and concentration (Brower, Aldrich, Robinson, Zucker, & Greden, 2001; Karam-Hage, 2004).
- It puts the individual at increased risk of accidental harm (e.g. trips or falls) (Tinetti, Doucette, Claus, & Marottoli, 1995), increasing the chances of traumatic brain injury.

Between 50-80% of individuals with chronic alcohol problems experience cognitive impairment (Bates, Bowden, & Barry, 2002). Many people with cognitive impairment will experience only subtle or transient cognitive disruptions (Bates & Convit, 1999; Rourke & Loberg, 1996) but a minority will have impairments as clinically severe as those seen in people with traumatic brain injury (Bates, 1997; Donovan, Kivlahan, Kadden, & Hill, 2001). Some people with alcohol-related cognitive impairment recover spontaneously with abstinence or greatly reduced drinking (Volkow & Wang, 1995). A recent meta-analysis (Stavro, Pelletier, & Potvin, 2013) and review (Fernandez-Serrano, Perez-Garcia, & Verdejo-Garcia, 2011) have shown that most of this recovery occurs in the short term (1 month) with more modest increases across mid-term (up to 1 year) and long term. However, impairment persists

[1] Abnormal decline in cognitive function greater than expected for age.

in some people (Bates, et al., 2002). Approximately one quarter of people with alcohol-related brain damage experience a full recovery, one quarter experience significant recovery, one quarter experience slight recovery and one quarter experience no recovery at all (Smith & Hillman, 1999). There is some evidence that people with alcohol-related cognitive impairment are particularly susceptible to the effects of alcohol on the brain. Following detoxification and treatment, even small amounts of alcohol may cause significant harm (Cox, Anderson, & McCabe, 2004).

Older people are also particularly sensitive to the toxic effects of alcohol on the brain (Pierucci-Lagha & Derouesné, 2003) and are less likely to recover from alcohol-related cognitive impairment (Brandt, Butters, Ryan, & Bayog, 1983). Most individuals with alcohol-related brain damage are aged 50 and over (Chiang, 2002; Elleswei E, 2000; Price, Kerr, & Williams, 1989).

Table 1 illustrates the cognitive abilities which can be affected by alcohol problems.

Table 1 *Examples of cognitive functions and abilities often found to be vulnerable or resistant to impairment in individuals with alcohol problems (Bates, Buckman, & Nguyen, 2013)*

Ability	Vulnerable	Resistant
Working, autobiographical, prospective and episodic memory	X	
Mental flexibility	X	
Self monitoring	X	
Response inhibition	X	
Concept formation	X	
Planning ability	X	
Abstraction	X	
Visuospatial skills	X	
Problem solving	X	
New learning	X	

Gait stability	X	
General intelligence		X
Vocabulary		X
Information processing speed	X	

A significant proportion of the older population have a pattern or level of drinking which places them at risk of harm (at-risk drinking). For example, the prevalence of at-risk drinking in people aged 65 and over living in the community is 20% for men and 7% for women in England (NHS Information Centre, 2009), 13% for men and 8% for women in North America (Blazer & Wu, 2009) and 11% for men and 6% of women in Australia (Dent, et al., 2000). In England in 2009/10, those aged 65 years and over accounted for 44% (461,400) of alcohol-related hospital admissions (NHS Information Centre, 2011) but comprised only 17% of the population (Office for National Statistics, 2012a). Alcohol-related hospital admissions rates are increasing more quickly in this age group than in any other in England and during the period 2002-2010 they increased by 136% for men and 132% for women (NHS Information Centre, 2012). Drinking produces higher blood alcohol levels in older people than in younger people when comparable amounts of alcohol are consumed and alcohol absorption and distribution change with age, resulting in greater sensitivity and decreased subjective tolerance in non-dependent drinkers (Blow & Barry, 2002). As a consequence, some older people experience problems in physiological, psychological and social functioning even at low levels of alcohol use.

Cognitive impairment can complicate the identification of alcohol problems and vice versa. For example, for the assessment of level of alcohol use, self-report measures may require accurate memory and the ability to do mental averaging which may be impaired in individuals with cognitive impairment. Conversely, memory problems caused by chronic alcohol misuse can make assessment for underlying dementia difficult. Cognitive impairment may also impact on an individual's ability to benefit fully from alcohol treatment. In studies of mixed age groups, it has been shown to decrease treatment retention (Donovan, et al., 2001), has a negative impact on alcohol treatment processes and therapeutic change mechanisms including readiness to change (Blume, Schmaling, & Marlatt, 2005); self-efficacy (Bates, Pawlak, Tonigan, & Buckman, 2006); insight (Rinn, Desai, Rosenblatt, & Gastfriend, 2002); coping skill acquisition (Kiluk, Nich, & Carroll, 2011; Tivis,

Beatty, Nixon, & Parsons, 1995); treatment attendance (Bates, et al., 2006; Copersino, et al., 2012) and aftercare attendance (Smith & McCrady, 1991) and is associated with poorer post-treatment outcomes (Fals-Stewart, 1993; Fals-Stewart & Lucente, 1994; Grohman & Fals-Stewart, 2003). Individuals with cognitive impairment are viewed by treatment providers as less attentive and having lower motivation and greater denial compared to unimpaired clients and are more frequently removed from treatment for rule violations (Goldman, 1995). It seems likely that non-alcohol-related cognitive impairment will also have a detrimental effect on alcohol treatment. Neither self-report nor the clinical skills of substance misuse practitioners are sufficient to identify cognitive impairment (Fals-Stewart, 1997; Horner, Harvey, & Denier, 1999; Shelton & Parsons, 1987). This has lead to calls for routine use of cognitive screening in substance misuse services (Bates, et al., 2002; Goldman, 1990; McCrady & Smith, 1986).

In October 2012, Alcohol Research UK awarded the Substance Misuse and Ageing Research Team at the University of Bedfordshire a small grant to lead a multi-collaborator project to explore alcohol misuse and cognitive impairment in older people. The research questions were:-

1. What is current practice in terms of screening for cognitive impairment in older peoples' substance misuse services and is it feasible and acceptable to clients and staff to screen in this setting?
2. What is current practice in terms of screening for alcohol problems in memory assessment services and is it feasible and acceptable to clients and staff to screen for alcohol problems in this setting?
3. Which alcohol screening tools are most appropriate for those with cognitive impairment and which screening tools for cognitive impairment are most suitable for use in substance misuse services.
4. What is known about how to identify and intervene with alcohol problems in individuals who are cognitively impaired?

This report describes the findings of this study and discusses the implications for policy and practice.

2. METHODS

The methods used in this study were:

1. A questionnaire sent to professionals in older people' substance misuse services and interviews with 10 older people attending these services for an alcohol problem (research question 1).
2. A questionnaire sent to professionals in memory assessment services, two focus groups with practitioners from memory assessment services and interviews with 10 people who have been diagnosed with mild cognitive impairment or dementia and who attend these services (research question 2).
3. A literature review to identify which alcohol screening tools are most appropriate for those with cognitive impairment and which screening tools for cognitive impairment are most suitable for use in substance misuse services (research question 3).
4. A literature review on how to work with people with cognitive impairment (research question 4).

The methods are described in detail in the following sections.

2.1 IDENTIFYING COGNITIVE IMPAIRMENT IN PEOPLE WITH ALCOHOL PROBLEMS (research questions 1 and 3)

2.1.1 Identification of cognitive impairment screening tools suitable for use in substance misuse services

We wanted to identify cognitive impairment screening tools that were suitable for use in substance misuse services. Screening tools were identified by searching electronic databases (Entrez- PubMed, CINAHL, PsycINFO and IngentaConnect) from 1990 to present for English language publications using combinations of the following terms: "(neuro)cognitive impairment", "(neuro)cognitive dysfunction", "(neuro)cognitive deficit", "dementia", "Alzheimer", "stroke", "alcohol", "substance" and "screen". Unpublished reports were identified using the Google search engine and the same search terms.

Screening tests were included if they fulfilled the following criteria:

- Able to detect subtle cognitive impairments.
- Validated in populations of older people and substance users.
- Able to be administered directly to clients rather than partly or fully informant rated.
- Cover a wide range of cognitive abilities.
- Can be delivered with little training in administration and interpretation.
- Relatively short.
- Free to use.

2.1.2 Current practice in screening for cognitive impairment in older people' substance misuse services and practitioners' views on screening

We also wanted to find out whether substance misuse services that specialise in working with older people were screening for cognitive impairment, to get their views on cognitive screening and to capture their experiences of working with older people whose alcohol problems coexist with cognitive impairment.

Due to our extensive links with practitioners in this field, we were aware of eight substance misuse agencies in the UK who deliver services exclusively for older people alongside their services for younger people (see Table 2). We focused on specialist services for older people (rather than mixed age services) because they have extensive experience of working with older people with alcohol problems and are exemplars of good practice (Wadd, Lapworth, Sullivan, Forrester, & Galvani, 2011). We planned a focus group with managers from these services at a meeting which they were due to attend but the meeting was cancelled. As it was not possible to arrange a meeting specifically for this study, we decided to e-mail the practitioners a set of questions. The e-mails were sent in November 2013 and contained the following questions:

1. Do you think there is a need to consider cognitive difficulties in your service?
2. How often does your service encounter clients whose alcohol misuse co-exists with cognitive impairment?
3. Do you routinely screen for cognitive impairment in your service using a standardised screening tool? If not, do you think it might be feasible to do so if your staff received appropriate training.
4. What are the challenges in working with clients whose alcohol misuse co-exists with cognitive impairment? Please draw on anonymous examples of your clients to more fully illuminate your response.

5. Have you identified anything that works particularly well with clients with cognitive impairment?

Examples of cognitive screening tools were attached to the e-mail for the practitioners to look at. Services that had not responded within two weeks were sent two reminders at two-weekly intervals. Ethical approval was obtained from the University of Bedfordshire's ethics committee.

Table 2 *Substance misuse services for older people who were invited to take part in the study*[2]

Service	Location
Addaction	Glasgow
Drug and Alcohol Services for London	Bexleyheath
Blenheim CDP	London
Addiction NI	Belfast
NORCAS/Phoenix Futures	Norwich
Aquarius	Birmingham
Welsh Centre for Action on Dependency and Addiction	Swansea
Foundation 66	London

2.1.3 Service users' views and experience of cognitive impairment screening

We also wanted to find out if older people attending substance misuse services felt that it was acceptable to be screened for cognitive impairment and their experience of screening. One-to-one interviews were carried out with older people (aged 55 and over) attending three older adult's substance misuse services in London, Belfast and Glasgow. Ethical approval was obtained from the University of Bedfordshire's ethics committee. Service users were recruited by substance misuse service practitioners. Practitioners were asked to approach suitable clients who were receiving treatment for an alcohol problem in their service. We defined suitable as "someone who is able to answer questions about their alcohol use, is likely to attend the interview at the arranged time and is unlikely to be unduly distressed by taking part in the study". We stressed that a suspicion of cognitive impairment was not a pre-requisite for participation in the study.

Practitioners were instructed to describe the study to potential participants and explain what would be expected of them using the participant information leaflet as a guide. They were asked to make it clear to service users that declining to take part would not affect their treatment and that

[2] These services have agreed to be identified in this report

anything disclosed in the interview would remain confidential unless the interviewer perceived that they or someone else were at risk of serious harm. Additionally it was made clear that they had *not* been chosen to take part in the study because there was a suspicion that they had cognitive difficulties.

In order to ensure that participants had experience of cognitive screening, we administered the cognitive impairment screening tool which was identified as being most appropriate for use in substance misuse services (see section 3.1). Practitioners were asked to advise potential participants that the tool could not be used to give a definitive diagnosis of cognitive impairment but could indicate whether they were experiencing cognitive difficulties at that time. If the cognitive screening tool indicated the need for further assessment then, with the service user's permission, the researcher would request that the substance misuse service arrange an appointment with their local NHS memory assessment service. To reduce distress, service users were advised that some types of cognitive difficulties can in certain circumstances be temporary, reversible or improved through tailored treatment and/or lifestyle changes, such as reduced alcohol consumption. This information was reiterated in the participant information leaflet.

Potential participants were also told that reasonable travel expenses would be reimbursed and that they would receive a £15 gift voucher to thank them for their time. Service users who indicated that they would like to take part were given the participant information leaflet. After seven days the practitioner phoned service users to answer any questions and ask if they would still like to take part. Service users who agreed to take part were asked to attend the service to be interviewed by a researcher.

Eight of the interviews were carried out by a research assistant who was also an assistant clinical psychologist from an NHS memory assessment service and was experienced in conducting screening for cognitive impairment. The remaining two interviews were conducted by the Principal Investigator who had received one hour of training on how to administer and score the cognitive screening tool.

To obtain background information, participants were also asked some questions about their life circumstances, health, alcohol use, experience of cognitive difficulties and views about cognitive impairment screening. The interview guide is attached in Appendix 1.

Tape recordings of the interviews were transcribed verbatim before being coded. Analysis was based upon the principles of grounded theory and

followed the National Centre for Social Research 'Framework' approach, involving a structured process of sifting, charting and sorting material according to key issues (Ritchie & Spencer, 1994).

2.2 IDENTIFIYING ALCOHOL PROBLEMS IN PEOPLE WITH COGNITIVE IMPAIRMENT (research questions 2 and 3)

2.2.1 Identification of Alcohol Screening Tools suitable for use in people with cognitive impairment

We wanted to identify alcohol screening tools suitable for people with cognitive impairment. In particular, we wanted to identify an alcohol screening tool for use in memory assessment services (MAS). In the United Kingdom there are currently 55 accredited MAS or services in the process of applying for accreditation with the Memory Services National Accreditation Programme and more than 300 unaccredited services (NHS The Information Centre for Health and Social Care, 2011). These services work under the remit of assessing, establishing early diagnosis, initiation and monitoring of treatment for individuals with suspected cognitive impairment (Passmore & Craig, 2004).

It is important to conduct alcohol screening in MAS because:

- Identifying that alcohol may be causing or contributing to cognitive impairment can help inform clinical decision making and improve treatment planning.
- MAS provide an excellent opportunity to identify previously undiagnosed alcohol misuse so that brief alcohol interventions can be offered or a referral made to substance misuse services.
- Screening provides an opportunity to increase knowledge and awareness of the negative effects of alcohol on cognition. For example, even moderate levels of alcohol use may increase disorientation in individuals with non-alcohol related cognitive difficulties.
- Alcohol is contraindicated with a number of medications used to treat dementia.

The research team felt that an alcohol screening tool suited for use in MAS should have the following characteristics:

- Addresses current quantity and frequency of alcohol use, features of alcohol dependence and alcohol-related problems.
- Validated in populations of older people and individuals with cognitive impairment.
- Require minimal abstract reasoning (e.g. hypothetical situations), accurate memory or ability to do calculations (e.g. mental arithmetic).
- Uses short, simple questions and does not take long to complete.
- Can be delivered with little training in administration and interpretation.
- Free to use.

Using these criteria, we assessed three alcohol screening tools; the Alcohol Use Disorders Identification Test or AUDIT (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993), CAGE (Ewing, 1984; Mayfield, McLeod, & Hall, 1974) and the Short Michigan Alcohol Screening Test – Geriatric Version or SMAST-G (Blow, et al., 1992; Blow, Gillespie, & Barry, 1998). These screening tools are attached in appendices 2, 3 and 4 respectively. The screening tools were chosen because they are often used to detect alcohol problems in older people.

2.2.2 Acceptability of Alcohol Screening to Older People Attending Memory Assessment Services and their Ability to Answer Screening Questions

We wanted to explore whether individuals with cognitive impairment had problems understanding or answering items in AUDIT, CAGE or SMAST-G and whether they thought it was acceptable to conduct alcohol screening in memory assessment services. Ethical approval was obtained from Stanmore NHS Research Ethics Committee.

Inclusion criteria for participants were: (1) they drank alcohol in the four weeks prior to interview (2) they attended the MAS in the eight weeks prior to interview (3) they had a diagnosis of mild cognitive impairment or dementia. Exclusion criteria were service users who did not have the capacity to consent to take part in the research (see below), service users who were thought to pose a safety risk to the interviewer and service users who did not speak English (the available resources were not sufficient for an interpreter).

A clinical psychologist and assistant clinical psychologist who work at Bedford MAS recruited participants to take part following their feedback appointments. To ensure that only individuals capable of providing informed and considered consent were included in the study, the psychologists

responsible for recruiting participants used the following criteria for assessing capacity:

- Ability to understand relevant information
- Ability to appreciate the situation and its likely consequences
- Ability to manipulate information rationally [i.e. to reason]
- Ability to evidence a choice

Having a poor memory per se was not sufficient grounds for saying that the participant could not consent.

If the psychologists determined that the service user was likely to have the capacity to consent (or refuse), they described the main elements of the study to the potential participant using the service user leaflet as a guide and then tested their knowledge and understanding of critical elements, for example by asking "what is the aim of the study" and "do you have to take part". If service users did not answer these questions correctly, attempts were made to raise their understanding to sufficient levels for them to make a meaningful choice about whether to participate or not. If the psychologists judged they had sufficient capacity, they were asked whether they would like to take part.

Those wishing to take part in the study, were given the participant information leaflet, a drinking diary and an alcohol unit measuring cup (a plastic cup designed to help measure alcohol units in spirits, wine and beer). After seven days, they were contacted by telephone by the assistant clinical psychologist who was also the researcher responsible for conducting the interviews. During the telephone call he reiterated the main elements of the study, explored their understanding of it and answered questions. He then made a final determination about capacity for consent and arranged to interview them.

Ten service users from Bedford memory assessment service with varying degrees of cognitive impairment were interviewed face-to-face. Interviews took place at the participant's home and were audiotaped with the participant's consent. The interviewer used cognitive based assessment (Jobe and Mingay 1989; Willis, Royston et al. 1991) whilst administering the screening tools to understand the participant's thought processes in answering the questions and gather their impression of the questions. Using this technique, he explored any difficulties they may have had in understanding the questions or particular words, and encouraged participants to identify any

concerns they had about the content of questions or phrasing. He also sought to identify any aspects of the questions that may not be appropriate for this population. The interviewer worked through each screening tool using probing questions and recording any difficulties that the participant had in understanding or answering each question based on their responses, body language and facial expressions. Following administration of each screening tool, the interviewer asked participants if they thought that the screening tool was acceptable. When all the screening tools had been administered, the participant was asked which tool they preferred and why. The screening tools were administered in a different order for each participant to reduce the likelihood that the preferred tool was influenced by the order in which they were administered. The completed drinking diaries were examined and the interviewer sought clarification where necessary. He asked the participants whether they found the drinking diary a useful aid to keep track of their weekly alcohol consumption and whether they found the alcohol unit measuring cup a useful way to calculate alcohol units.

At the end of the interview, participants were offered feedback on the findings, handouts for safe consumption of alcohol and some brief discussion/advice on the management of alcohol use within the context of cognitive impairment. Participants were given a £15 High Street gift voucher to compensate them for their time.

2.2.3 Current Practice in Alcohol Screening in Memory Assessment Services and Practitioners' Views on the Feasibility and Barriers to Screening

We also wanted to find out whether MAS were currently screening for alcohol misuse and, if not, whether they felt this was necessary and feasible. Ethical approval was obtained from South Essex Partnership University NHS Foundation Trust's Ethics Committee. A postal questionnaire (Appendix 5) was designed to explore current practice in screening for alcohol use in MAS and service manager's views on the feasibility of screening for alcohol in this setting. The questionnaire and a stamped addressed envelope for response was sent to the managers of all 54 MASs listed as accredited or pending accreditation in April 2013. If services had not responded within two weeks, they were telephoned and an additional copy of the questionnaire was posted or e-mailed where necessary.

To gain more in depth information on MAS practitioners' views on the feasibility and needs for alcohol screening in this setting, focus groups for

practitioners from two MAS services in Bedfordshire were facilitated by a trainee clinical psychologist. The sessions were audiotaped, transcribed verbatim and analysed using thematic analysis (Braun & Clarke, 2006) by the trainee psychologist who conducted the focus groups. Themes were discussed and agreed by the research team and one of the focus groups was also analysed by an assistant psychologist to ensure a reasonable level of inter-rater reliability.

2.3 ADAPTING ALCOHOL SCREENING AND TREATMENT FOR PEOPLE WITH COGNITIVE IMPAIRMENT (Research Question 4)

Finally, we wanted to find out what information existed in the literature on how screening and alcohol treatment might be adapted for people with cognitive impairment. Electronic databases (Entrez- PubMed, CINAHL, PsycINFO and IngentaConnect) were screened from 1990 to the present for English language publications using combinations of the following terms in the title: "(neuro)cognitive impairment", "(neuro)cognitive dysfunction", "(neuro)cognitive deficit", "alcohol" "substance" "treatment" and "screening". Unpublished reports were identified using the Google search engine and the same search terms.

3. FINDINGS

3.1 IDENTIFYING COGNITIVE IMPAIRMENT IN PEOPLE WITH ALCOHOL PROBLEMS (research questions 1 and 3)

3.1.1 Identification of the cognitive impairment screening tool most suitable for use in substance misuse services

One screening tool, the Montreal Cognitive Assessment (MoCA) (Nasreddine, et al., 2005) (Appendix 6) fulfilled all our selection criteria. The MoCA was the only short screening tool which we identified that was validated in a population of substance users. A study of the validity, accuracy and clinical utility of the MoCA in identifying cognitive impairment among people with substance users disorders (the majority of which were alcohol dependent), found that classification accuracy was strong and that it had acceptable sensitivity (83%) and specificity (73%) (Copersino, et al., 2009). A subsequent study found that people with substance use disorders (mostly alcohol dependency) identified by MoCA as having cognitive impairment were significantly less likely than unimpaired individuals to attend all their group therapy sessions (Copersino, et al., 2012) and the authors concluded that the capacity of the MoCA to predict a clinically relevant behaviour provides further support for its validity as a brief screening measure in this population.

3.1.2 Current practice in screening for cognitive impairment in older people' substance misuse services and practitioners' views on screening

Seven of the eight older people's substance misuse services responded to our survey. However, one service had recently had a complete changeover of staff which meant that they felt they had insufficient experience to take part.

The remaining six services felt that there was a need to consider cognitive difficulties in their service.

> *Over the years we have had a number of referrals where we have been unsure regarding a person's cognitive functioning. For a number of reasons it is important. Firstly in older people their cognitive difficulties may be more organic or related to dementia, or be the result of long term alcohol use. The clinical response to these may be very different and the resources we try to access will depend on this outcome.... [It] is important to consider how we use interventions - is a cognitive behavioural approach going to work? How is the person absorbing*

information and retaining it? When carrying out [alcohol] assessments memory may be affected so we may not be getting a clear picture of need, and therefore a responsive care plan. Practitioners need to be better trained in recognising cognitive difficulties and responding appropriately.

Services were regularly encountering clients with cognitive impairment. One practitioner had a caseload of 27 people, ten of whom had obvious memory impairment or an existing diagnosis of cognitive impairment. One service reported an average of one client a month presenting with an existing diagnosis of cognitive impairment and another practitioner reported that cognitive impairment was recorded in the case notes of 3% of her clients. None of the respondents reported that their service was screening for cognitive impairment but all felt that it would be feasible and beneficial to do so. A number of practitioners drew attention to the fact that clients cannot be referred for cognitive assessment in memory assessment services for a full assessment unless they were abstinent from alcohol, "which is not always realistic". One practitioner said that she thought that screening would be particularly useful in determining whether a client was functioning sufficiently to engage in alcohol treatment.

Practitioners identified a number of challenges to working with clients with cognitive impairment:

- Memory and retaining information (e.g. forgetting appointments, forgetting who their worker is and why they are there to see them, retaining information from the previous session or recalling events which took place during the previous week, difficulty obtaining an accurate alcohol history).
- Confusion about which service they are engaged with.
- Difficulty determining whether the individual has the capacity to consent to treatment/information sharing and to make the choice to continue to drink despite obvious harm.
- Low mood and frustration.
- Embarrassment and fear of the consequences of being diagnosed with cognitive impairment which can mean that they try to hide the problem or are reluctant to engage in treatment.
- A perception amongst clients that cognitive impairment is irreversible or an inevitable part of ageing.
- Prejudice towards people with cognitive impairment which can make it difficult to find mutual aid support and other services.
- Working with clients with cognitive impairment is more time consuming.

- A perception that clients with cognitive impairment are unable to fully engage in cognitive behavioural therapy based programmes.
- Lack of information sharing amongst professionals.
- Self-identified lack of understanding and training amongst substance misuse practitioners.

The following quotes illustrate some of these challenges.

> *We worked with a service user aged 65 for some time who could not remember who his worker was. We would visit and he would always appear very confused as to why we were there and what we were doing. We ensured to always have ID and at each appointment, went through an introduction and aim of the service. However it did raise the issue of how he would actually retain any of the alcohol behaviour change information*

> *Often they talk about being depressed by their situation and while feeling isolated are reluctant to talk about any impairment for fear of possible consequences. One particular client of mine while being very unhappy with his ability to concentrate and making the link with his heavy alcohol use, often says that he feels it is too late to address the issue. He feels his age determines that he will slow down cognitively in any case.*

Practitioners had developed a number of ways to adapt alcohol treatment to meet the needs of clients who had cognitive impairment.

- Developing a strong therapeutic relationship.
- Use of International Treatment Effectiveness Project mapping[3] and visual aids.
- Large and visible notes left in the client's home (e.g. on a fridge or wall), reminding them in their own words of what they had agreed to do before the next session.
- Leaving a whiteboard in the client's home for messages about visits and goals.
- Linking clients with local services such as day centres or befriending services to deal with the social isolation of clients with cognitive impairment.
- Using a calendar/diary and telephone calls to remind them of appointments.

[3] A care planning approach - http://www.nta.nhs.uk/uploads/nta_itep_implementing_psychosocial_interventions_for_adult_drug_misusers_rb34.pdf

- Providing transport for those unable to drive.
- Giving a photo of their worker to the client with the worker's name, job and contact details and reintroducing the service and worker every visit.
- Involving family members and carers in assessment and treatment.
- Providing written information and visual exercises, for example, using drawings to show how much clients are currently consuming and writing down a target for the week to take home with them.
- Adapting treatment to the client's pace and setting very small goals, only one at each session.
- Concentrating on a motivational and strengths focussed approach.
- Extensive cross-service liaison to ensure a holistic approach, information sharing and joint problem solving.
- Helping the client to structure their day and develop routines (people with cognitive impairment often find it difficult to organise and make productive use of their time).
- Life review therapy[4].

The following case studies were provided by a practitioner to illustrate the value of cross-service liaison. All names have been changed.

Case Study 1 - Mrs Brown

Female, aged 74
Drinking two bottles of wine a day

The alcohol issues were identified after Mrs Brown's husband, for whom she had been caring, died. Mrs Brown had a good support network around her from her family, home care team, local hospice and district nurse. Members of this support network noticed that Mrs Brown's memory was an issue, for example, she would go out shopping and return home without the family car. They arranged for Mrs Brown to see her GP who then made a referral to the local Mental Health Team. Mrs Brown was identified as having short-term memory loss and was assigned a community psychiatric nurse who was concerned that her alcohol use was contributing to her memory loss. A referral was made to the substance misuse assessment and referral team, who then referred Mrs Brown to the older person and disability counsellor in the substance misuse service. The counsellor visited Mrs Brown when she was already attending a day hospital organised by the mental health team to

[4] A way of talking about and sharing the important events and memories in an individual's life.

assess her memory function. During visits, Mrs Brown would not always remember who the worker was. However, if the worker wore a bright raincoat, Mrs Brown was able to remember. After a period of reduced drinking, she suffered a relapse when she stopped attending the day hospital. She was re-introduced to the day hospital to continue her package of support and Mrs Brown has now been alcohol free for 4 months. Her family are managing her finances and take her shopping. This has been found to be a good way for Mrs Brown to remain alcohol free. She states she was aware of her drinking when her husband was ill, but that she does not use alcohol any more. She now regularly attends the day hospital and additionally attends a memory clinic. The alcohol worker continues to provide support.

Case study 2 - Mr Smith

Male aged 74
Drinking 6-8 bottles of whisky a week

Mr Smith's drinking increased when his wife died four years ago. At that time he lived in his own home, found it difficult to cope and got into financial difficulty as his wife had attended to all their bills. The family home was repossessed and Mr Smith moved into a warden-supervised complex for older people. It was brought to the substance misuse service's attention that Mr Brown's drinking was getting 'out of control' and was a cause of concern for the warden. The warden had observed that Mr Brown's memory problems were causing him distress. For example, he could not remember his pin number when he visited the bank. Every time he was given a new pin number, it would have to be changed and this was happening on a weekly basis. Mr Brown said that he only remembered the very first pin number he was given. Due to his poor memory, Mr Brown would forget to pay the bills. With the support of the older person's contact team, Mr Brown was settled into a care home. During the substance misuse worker's visits, Mr Brown stated that he is now alcohol free, goes shopping with care staff and is very happy. He had his first pin number reinstated, which has made a considerable difference to him and reduced the distress he was experiencing trying to access money. He has received additional support from care staff and his social worker to resolve financial issues and is consequently feeling much happier and settled.

3.1.3 Acceptability and experience of screening for cognitive impairment in older people attending substance misuse services

Characteristics of participants

Table 3 below describes the characteristics of the substance misuse service users who were interviewed and their cognitive impairment screening (MoCA) scores. All of the participants were White British.

Table 3 *Characteristics of substance misuse services who were interviewed in the study and their cognitive impairment screening (MoCA) scores.*

Interviewee No.	Age	Gender	Early /Late Onset[5]	Current Drinking	Cognitve impairment (MoCA) screening score (normal ≥26/30)	Lives Alone
1	60	M	Early	One drink a week	21	N
2	58	M	Late	42 units a week	24	N
3	59	M	Early	Abstinent 4½ yrs	23	N
4	56	M	Late	130 units a week	30	N
5	68	F	Late	Abstinent 7 weeks	26	N
6	55	M	Early	Abstinent 12 months	25	Y
7	57	M	Early	Abstinent 2 years	23	N
8	67	M	Late	Abstinent 1 year	27	N
9	75	F	Late	Abstinent 3 months	26	N
10	55	F	Late	Abstinent 3 years	8	Y

Experience of cognitive impairment and cognitive screening (MoCA) scores

It took approximately 10 minutes to conduct cognitive impairment screening with MoCA. Only four of the ten interviewees had a score which was considered within 'normal' limits, whilst one interviewee had a particularly low score (see Table 3). Those with a score which indicated possible cognitive impairment were offered a referral to their local memory assessment service. Only Interviewee 10 accepted referral but Interviewee 7 said that he would discuss his cognitive difficulties with his GP.

[5] A late onset drinker is someone who first developed an alcohol problem at or after the age of 40. An early onset drinker developed the alcohol problem before the age of 40.

Seven of the ten interviewees felt that they were currently experiencing a degree of cognitive impairment. Most described problems with short term memory.

> *I call it my 24 hour memory. Things that have happened or whatever in the past 24 hours, I can lose that quite easily. It does come back maybe a couple of days afterwards, something I should have done or whatever, but long term memory is fine. I can tell you about things 50, 55 years ago as if they were 15 minutes ago, and I can't remember 15 minutes ago in most situations...People would ask "will you do so and so", and I'd say "yeah I'll do that", and of course an hour later I've forgot all about it, and they come back at three o'clock and say "did you do so and so", and I can't even bloody remember what they asked. (Interviewee 3)*

> *I could see somebody and remember their name and then, literally, two or three minutes later forget, you know. And the same with other things. I can remember certain things one minute, and the next minute, what was it I was saying there....I do have memory failures. (Interviewee 1)*

> *I have a tremendous tendency, in fact short-term activities I constantly write to-do lists, so the house is plastered with post-its. As soon as I think of something I feel the need to write it because I know it'll pop out of my head. I walk from one room to another, and what I've thought in one room, by the time I get to the next room it's gone.* (Interviewee 2)

Some interviewees also experienced difficulties with attention, concentration and slowed thinking. One interviewee had been on a computer course at a time when he had been abstinent for 10 months, and expressed his frustration that it took longer to complete tasks.

> *I was not the stupidest person in that room but I know I was the slowest. When everybody else was leaving at four o'clock I was another half hour and at that stage I could have wept because I knew that my skills … if I had been prior to 1996 I could have maybe been teaching that course, I would have been flying through that course but at that point I knew.....I was very concerned with that, it shocked me to see how slow I was in doing a basic learning course.* (Interviewee 4)

One interviewee who had been abstinent for three years, was experiencing multiple cognitive deficits.

> *I'll give you my date of birth so you can work it out [gives DOB] I can't remember if I'm 56 this year or 57. See I can't even remember my age.*

It would take me ages to try and work it out... I'm not thick, but it's just trying to take everything in if you know what I mean, and sometimes I think I'm thick. Because people are speaking to me, and I cannot get my full sentence, and when I'm speaking I'm muddling up my words, and I have to stop, because my cousin will say "what are you talking about, what are you talking about".... Thankfully my cousin just lives round the corner, she has to come out shopping with me, because in the shopping centre, and when I'm shopping, so she keeps me right, and like oh what have I done with my passport [sic], what have I done with my keys.... And I've got to check that I've locked my door and where's my key? I can't remember my keys, my purse.... [Cousin's name] will say to me "remember me telling you last night about this". She'll say "you must remember, it's only"....She'll say "for god's sake, I only told you about half an hour ago". Things like that. And you feel really stupid... My cousin says I talk in riddles. I start at the end like say the end of the story, she'll be, I start at the end and finish. I start at the end instead of starting at the beginning, and then when I'm trying to explain something to her, it's like riddles, so she's like "I can't understand you, I don't know what you're talking about".... My handwriting, it's all over the place at times. (Interviewee 10)

This interviewee described how her cognitive impairment had caused difficulties with her family.

My son will say to me "I told you last night I was coming up". I say "no you never", and it starts an argument and I blame him.... My wee granddaughter was having a dancing show parade, and my son got me the ticket and I didn't show up. So he told me the date and all this, and obviously I forgot to write it down, so my wee granddaughter's very hurt obviously that her gran didn't show up, and that was hard to explain to my granddaughter that I couldn't remember. How can you explain to a nine year old that her granny forgot? (Interviewee 10)

In contrast to interviewee 10 who, despite abstinence, appears to be experiencing persistent cognitive deficits, other interviewees experienced cognitive difficulties which had since resolved.

Just short term when I was detoxing. I wouldn't remember programmes I'd watched the night before on the telly, stuff like that. I'd forget appointments. Well afterwards, for about six months after, I'd have difficulty in recalling what I said to people. When I go for messages [shopping] I forget things. I've seen myself going back to the shop three or four times. (Interviewee 7)

Discussions with professional about cognitive impairment

Four of the ten interviewees (interviewees 3, 8, 9 and 10) had undergone cognitive impairment screening previously, two at the same inpatient detoxification unit, one by "psychiatrists, counsellors and the hospital" and one by a psychologist at the Driver and Vehicle Licensing Agency. None recalled being told the outcome of the test. Interviewee 7 had an MRI when he was diagnosed with epilepsy and had "a dark patch in my prefrontal cortex which the specialist put down to alcohol".

Interviewee 10 had tried to discuss her cognitive difficulties with her GP.

> *I kept on trying to say that to my doctor, but he just puts it down to anxiety. It's not anxiety that makes you forget things like that, do you know what I mean? And I ended up giving up because he wasn't listening. I'm not blaming GPs, they've probably got quite a workload, but they need to sit and listen you know.* (Interviewee 10)

Views on being screened and reaction to screening results

Participants described a variety of feelings prior to cognitive screening including "nervous", "fear of failure", "needs to be done" and "daunting".

Only one interviewee, interviewee 10, who clearly had significant cognitive deficits, showed signs of distress during the screening process. At various times during the interview she said "I feel terrible, I feel like a nine year old", "I'll give myself a headache, that's the best I can do", "oh here I'm getting agitated", "I feel stupid" and "don't think I'm illiterate because I'm not".

All of the participants wanted to know the results of the screen. However, when initially asked, interviewee 10 replied "no because it's going to say I'm thick as a plank". When the interviewer told her that it was not an intelligence test, she changed her mind and asked for the result.

The service users' reactions upon hearing the tests results varied. For example, the following interviewees were resigned to the result.

> *Well, I would have liked to have done better, but I'm not surprised... I think it's just proven to me that my memory is bad, you know, and that was never in doubt to me.* (Interviewee 1)

> *Fine. I didn't expect to do extremely well because I know I've still got residual after effects. I mean I've been a drinker for 40 years so it's a long, long time and I don't expect there not to be some damage apparent.* (Interviewee 7)

Some interviewees were surprised that their score wasn't higher, whilst others were surprised that their score was as high as it was.

> *Slightly surprised. I thought I would have been average at least.* (Interviewee 2)

> *Well actually it sounds better than what I thought it was going to be. Looking at it, it sounds better than I thought it was going to be.* (Interviewee 3)

Some interviewees expressed relief that their score did not indicate cognitive impairment but, conversely, the interviewee whose score indicated the most significant level of cognitive impairment felt relief that her problems had been acknowledged.

> *Normal, thank god for that.... I was quite pleased. I was really pleased because I thought in a way it would have affected your memory.* (Interviewee 5)

> *Well it kind of helps me a wee bit, knowing that what I can identify was, will help to identify what's wrong if you know what I mean, and I'm not stupid and I'm not illiterate. Aye, and it helps me to try to help my son and my wee grandson understand why his granny forgets things...To me it helps to identify, you know, at least you know there is something, it's just, and what alcohol has actually done to your brain... to recognise that I can say to people that I'm not thick. I'm not stupid. That's what people presumed, perceived it as. She's thick. That's the way people look at you nowadays, and also as pathetic, and it's embarrassing. .... Well hopefully I can get help with, knowing that, it'll give me a wee kind of a boost now, well not boost, but it'll give me a wee bit more confidence knowing somebody's put a label to that, what's happened to me*. (Interviewee 10)

Views on screening

All of those interviewed thought that cognitive impairment screening should be carried out in substance misuse services. Some interviewees felt that it provided an opportunity to raise awareness of the effect of alcohol on the brain. Others felt that repeat screens could be used to demonstrate progress with alcohol treatment, and some felt that a low score would motivate people to address their alcohol problem.

I think the test is good so that you make people aware of you're not actually quite all here. At the moment you are impaired, you recognise this has happened, apart from any physical damage you're doing to yourself... So I think that awareness is important for people, watch this. It doesn't need to be judgemental in any way, just the recognition of you're holding yourself back here. (Interviewee 2)

To me it is sort of a tool that I would use to see how far mentally and physically I had either progressed or regressed. I enjoyed doing it... It sort of lets me know what level I'm at. (Interviewee 3)

However, a number of interviewees who had a normal test result said that they may have felt differently had their test score indicated cognitive impairment.

I think if I hadn't scored as I did, that would have been a downer for me... But to get a disappointment would be a big difference, being told, "I'd really suggest you ought to go to some additional service, or assistance," or whatever. I could imagine that being a downer, I think it would be for me. I'd almost prefer not to know... I'd find it upsetting because I'd find it demoralising. (Interviewee 8)

Well it's like being told you've got cancer....I would be quite worried because you read such a lot about it, famous people that you know have got it and you just think it's incredible that they can't remember this and it's frightening. (Interviewee 9)

Views on when and how screening should be delivered

A number of participants talked about how they thought cognitive impairment screening should be delivered; they felt that it should be conducted in the person's home (to decrease anxiety), it should be optional, carried out in a non judgemental way and that the practitioner should emphasise that alcohol-related cognitive impairment may be reversible in some people.

Some of the interviewees felt it was important that the screening was carried out at point in the treatment journey that was acceptable and appropriate for the individual.

I mean if I was in hospital now and you interviewed me in hospital, and I was only six or seven days away from the booze, my head's like a bloody beehive, so to me it's the wrong time to ask people questions. I

wouldn't have been able to concentrate enough to do it, even something as simple as that. (Interviewee 3)

Let's put it like this, after five weeks of counselling I'm happy to have done it. I wouldn't have done that on day one. (Interviewee 4)

However one interviewee who had previously been screened for cognitive impairment just before he was detoxed took a different view.

If that cognitive assessment series of questions was slipped in, especially if I was in a bad way, as I was right at the beginning, I wouldn't have even noticed it. It would have been another bunch of questions... I don't remember when it [previous cognitive screening] happened. I probably didn't care what my score was, I wasn't on the planet so to speak to be consciously thinking about it, because I had too many other problems. (Interviewee 8)

3.2 IDENTIFIYING ALCOHOL PROBLEMS IN PEOPLE WITH COGNITIVE IMPAIRMENT

3.2.1 Identification of Alcohol Screening Tools suitable for use in People with Cognitive Impairment

Table 4 overleaf shows how the AUDIT, SMAST-G and CAGE alcohol screening tools match the characteristics which we identified as desirable for people with cognitive impairment and necessary for screening in Memory Assessment Services (see section 2.2.1).

Table 4. *Extent to which CAGE, AUDIT and SMAST-G Alcohol Screening tools fulfil the criteria identified as being desirable for people with cognitive impairment and necessary for screening in Memory Assessment Services*

Screening Tool	Address current alcohol consumption, alcohol dependence and alcohol problems	Validated in older people	Validated in individuals with cognitive impairment	Suitability for use with people with cognitive impairment	Training required	Free to use
CAGE	No measure of level of alcohol currently being consumed.	Yes	No	Requires no abstract reasoning or mathematics. Very short (4 items) and questions relatively short/easy to understand. Long and short term memory required.	No	Yes
AUDIT	Yes	Yes	No	Item 5 requires abstract reasoning (what was normally expected). Items 2 and 3 require mathematics/ability to do mental averaging. Long and short term memory required. Tool relatively short but some items quite complicated (e.g. item 10). Item 8 enquires whether memory affected by drinking; could be difficult for participants to discriminate between memory problems caused by alcohol intoxication or other cognitive impairment.	No	Yes
SMAST-G	No measure of level of alcohol currently being consumed.	Designed specifically for use with older people	No	Items 7 and 9 require abstract reasoning (experienced a loss and made rules to manage drinking). No mathematics required, questions short/simple and doesn't take long to complete. Long and short term memory required.	No	Yes

3.2.2 Acceptability of Alcohol Screening to Older People Attending Memory Assessment Services and their Ability to Answer Screening Questions

Characteristics of participants

Table 5 below illustrates the characteristics of memory assessment service users who were interviewed during the study. All of the participants were White British.

Table 5 *Characteristics of memory assessment service users who were interviewed during the study*

Interviewee	Age	Sex	Diagnosis	Lives Alone	Family member/carer participated in interview
11	82	M	Alzheimer's disease	N	N
12	68	M	Mixed type dementia	N	N
13	76	M	Alzheimer's disease	N	Y
14	65	M	Vascular dementia	N	Y
15	80	F	Mixed type dementia	N	N
16	71	M	Alzheimer's disease	N	N
17	65	F	Mild cognitive impairment	N	Y
18	85	F	Mild cognitive impairment	N	Y
19	73	M	Mixed type dementia	N	Y
20	84	F	Mild cognitive impairment	Y	N

Difficulty understanding or answering questions from screening tools

The MAS service users experienced a number of difficulties with the alcohol screening tools. These could be categorised as follows:

- Difficulties caused by memory problems.
- Difficulty understanding questions or giving inappropriate answers.
- Giving conflicting answers and difficulty expressing themselves or finding the right words.

Table 6 uses excerpts from the interviews to illustrate these difficulties. It important to note that it is not possible to identify to what extent these difficulties were due to cognitive impairment.

During the interviews, the interviewer developed a number of ways to help participants overcome these difficulties, including:

- Taking time and ensuring that the individual was at ease.
- Allowing the participants to reminisce.
- Asking clients to explain what they understood by a certain phrase or question (e.g. "loss").

- Rewording questions in more simple terms when it was evident that the individual was having difficulty understanding them.
- Asking clients to elaborate when they gave a "yes" or "no" answer to ensure that they had understood the question.
- Repeating questions later in the interview using different wording to find out if the answers were the same.
- Giving examples when participants were having difficulties with abstraction (e.g. for the question "have you failed to do what was normally expected from you because of your drinking", the interviewer prompted "for example going to work or picking up your grandchildren").
- Using alcohol diaries and measuring cups.
- Spending time to work through the alcohol diary with the interviewee and calculate alcohol units.
- Helping the participant to do averaging of alcohol intake.
- Using props such as pictures of glass size.
- Giving the individual a copy of the questions to read during the screening if they wanted one, as well as reading out the questions.
- Allowing family member/carer to contribute to the interview with the permission of the individual being interviewed.

Table 6. *Excerpts from interviews with Memory Assessment Service users that illustrate difficulties with alcohol screening tools*

Difficulty	Examples
Difficulties with memory.	If you asked me now just to remember what I drank last Wednesday, I mean I can't begin to tell you. I can't recollect accurately what I did on previous days. (Interviewee 11) [talking about other MAS clients completing drinking diary] I mean if they wrote down perhaps how much they drank, say in the morning or afternoon or lunchtime...that would help, but then I think they'd forget to write down. (Interviewee 18)
Difficulty understanding questions or giving inappropriate answers	Interviewer: Does having a few drinks help to decrease your shakiness or tremors? Interviewee 17: Yes, perhaps so. Interviewer: How long have you had shakiness or tremors for? Interviewee 17: Well I haven't had shakiness or tremors really. ——————————————— Interviewer: Did the way that you drank alcohol change around

	about the time that you started having memory problems or when you received the diagnosis of dementia? Interviewee 16: Yes. Interviewer: How did that change would you say? Interviewee 16: I don't really know what you're asking me.
Conflicting answers	Interviewer: Have you ever made rules to manage your drinking? Interviewee 11: Well there's the rule about holding your drink! Interviewer: I recall earlier you spoke about the drinking rules of college buddies, where you said you weren't allowed to drink before midday. Interviewee 11: Yes, I had forgotten about that one. ——————————————— Interviewer: So how often have you had four or more cans of beer on a single occasion in the last year? Interviewee 16: How many times in the last year? Interviewer: Yes. Interviewee 16: It's every weekend. Interviewer: You said a second ago you only drink three usually. Interviewee 16: Yeah. Interviewer: So have you drunk four or more on any one occasion? Interviewee 16: No, not really, no.
Difficulty expressing self/finding right words	I don't feel that I, I can get the words. [later in the interview] I don't really know what I'm trying to say. (Interviewee 16)

Family/carer contribution

Half of the participants had a family member or carer, usually a spouse or partner, with them during the interview.

Family members/carers frequently interjected during the screening process to suggest that the participant was incorrect.

Wife of Interviewee 19: *Yes, I mean there are times when he has had more alcohol than he should have had. If I've been out for the evening and I've come back and you've maybe made inroads into another one. Don't shake your head, I'm sorry, my memory of it is probably clearer than yours. It's not as often as it used to be, and basically it is about two litres an evening... Bearing in mind it's a memory based thing, would it be useful to have two people fill in separate questionnaires, the same questionnaire independently of each other, because I think you would get a different picture very often... I'm sorry if I interrupted at times, but when I'm more aware of the facts day to day than you appear to be. So I think if you had the same form, based on the partner, you might get a more complete picture, or not, I don't know.*

Wife of Interviewee 13: *You had most of the wine because he kept coming over and filling yours up and you never said no because you couldn't remember you had one before and when we went down to [name of venue], you had two glasses of champagne, you had two glasses of white wine, you had two glasses of red.*

Interviewee 13: *Did I? As much as that? Oh well, it's surprising isn't it? It does add up.*

Wife of Interviewee 13: *I feel I'm a bit of a problem being here, I don't think you're giving an accurate answer because you can't recall well enough and I don't know, if that's what you're trying to get out of the questionnaire.*

Interviewee 13: *It's probably important we're here together...I think it would be useful to have their partner with them.*

Drinking diary

Participants were given a drinking diary prior to the interview to write down their drinks as they consumed them and this functioned as an aide memoire during the screening process. In some cases, a family member or carer had completed it due to difficulties with eyesight, handwriting or memory. Most participants found the drinking diary useful.

I think it would be easy for them [other MAS clients] to fill it in but I think they would have to do it on a daily basis and do it as ... you would need to have that in front of you, "ah, I'm just having a whisky, I'll put it down" rather than try and recall what you were doing, you'd need it as a sort of constant diary, possibly in an accessible place so that you could refer to it as and when. (Interviewee 13)

However, one interviewee did not think that it had been useful to him.

> *I'm not sure it would achieve a lot, if this is the end of the interview so to speak, I haven't had to refer to it at all and it's simply a record of the fact that I'm a moderate drinker I think... It's weird because I don't need to keep track, why do I want to keep track? Why would I want to know that?* (Interviewee 11)

Views on the screening process and screening tools

The screening tools took approximately 10 minutes to administer. The screening process did not appear to cause any of the participants' distress and all of them felt that being screened for alcohol problems in memory assessment services was acceptable. Some felt that they had benefited from being screened.

> *I've enjoyed it, it's made me think about the things I've tended to do.* (Interviewee 19)

> *I was surprised at the whisky being 4 units, that does surprise me, perhaps I ought to not drink whisky but a white wine or a glass of sherry seems fairly reasonable. (*Interviewee 13)

There was no clear preference for a particular screening tool but some interviewees preferred the "yes" or "no" answers in SMAST-G and CAGE to the multiple options in the AUDIT.

> *A lot of people would find it easier to give a "yes" or "no" answer to whatever questions they're given, half the time some of the questions are not, they don't quite understand them, they can still get a grasp of "yes" or "no" as the answer, it's only two questions, "yes" or "no".* (Interviewee 14)

> *[about AUDIT] It's more cumbersome, you've got people to start agonising about whether it's monthly or weekly or whatever and it's going to take much longer to do, particularly if you have a somewhat obsessive personality who sits there going, "is it weekly or monthly?" and time is ticking by.* (Interviewee 12)

3.2.3 Current Practice in Alcohol Screening in Memory Assessment Services and Practitioners' Views on the Feasibility and Barriers to Screening

Thirty five (64%) of the fifty four MAS that were sent the survey questionnaire, completed and returned it. The survey found that:

- All the services were asking clients about alcohol use, but only one service was using a standardised alcohol screening tool (AUDIT).
- The majority (77%) felt that a "significant minority" of their clients misused alcohol.
- The majority (83%) felt that routinely screening for alcohol problems was feasible in this setting.
- Barriers to screening included a lack of time and the difficulty in obtaining accurate information from individuals with cognitive impairment.
- The majority (77%) felt that providing "brief interventions (e.g. providing information or giving advice)" was feasible within MAS.
- Barriers to providing brief interventions included resource implications, a perception that interventions would have limited effectiveness with people with cognitive impairment and that it was not within the remit of the service.

The focus group participants included occupational therapists, psychologists, support workers and dementia nurse specialists from two MAS services in Bedfordshire. One focus group had four participants and the other had eight participants. Whilst the participants discussed a number of general issues about alcohol screening and intervention, only those issues which relate to cognitive impairment are included here.

Information gathering about alcohol

The practitioners that attended the focus groups said that they asked questions about current and past alcohol use but did not use an alcohol screening tool.

> *I would normally ask people how much alcohol they consume, and if they had ever been a heavy drinker in the past if they are not consuming significant amounts now.* (Dementia Nurse Specialist, Group 1)

> *I think that one of the things that the psychiatrist would normally do in the initial assessment, or other people in the initial assessments would do, is to ask about historical alcohol use as well. So whether, if they are not drinking much now have they done in the past, what's their pattern*

been over a longer period of time. And then lots of people ask about how many empty bottles there are at the end of the week, or how many bottles they are putting in their shopping trolley each week (Clinical Psychologist, Group 2)

Effect of cognitive impairment on ability to obtain accurate information about alcohol use

Practitioner's felt that cognitive impairment could in some cases, be a barrier to obtaining an accurate alcohol history.

If somebody's got a memory problem and we are asking them to report on something that is reliant on their memory, we may not get accurate information. (Dementia Nurse Specialist, Group 1)

I know a lot of them we are getting earlier in the referrals, but we are still seeing a lot of people who are kind of moderate to severe dementia. So asking them to fill in a form isn't going to work. (Occupational Therapist, Group 2)

One way of overcoming this problem (and that of underreporting of alcohol use for other reasons) was to obtain collateral information from friends and family who often attend the appointment with clients.

You rely on the family members to say "actually, no, you do have a lot". I had that the other week, where a woman was saying she only has a glass of wine. And the husband said "no, you have like a bottle say every 2 nights with a meal". And according to her, she only has a glass of wine with each meal. (Occupational Therapist, Group 2)

However, as one practitioner observed, asking the client questions about their drinking with someone else present could also have disadvantages.

The majority of the time we have a relative or a friend who knows the person quite well present. Which I suppose also could affect how much they are willing to disclose in front of that person. But we would get that person sort of nodding or shaking their head in the corner. (Dementia Nurse Specialist, Group 1)

How much is too much?

One of the disadvantages of asking questions about alcohol without using a screening tool was that practitioners found it difficult to decide what level of drinking was problematic.

I think that comes from not having set criteria about what is considered to be problematic levels of drinking....it is perhaps because we don't

have those set criteria, we are only noticing it as being problematic in particular cases and that is more subjective.... It could be worth looking at what our criteria are, rather than on a case-by-case basis. It could be helpful to think about how we make those decisions. (Clinical Psychologist, Group 2)

Because we all have our different views on what is normal and maybe, because we don't have any sort of screening tool at the moment, takes that objectivity out of it. It makes it subjective doesn't it... I think it [screening tool] would force us to look at it, it would force us to, sort of address whether this could be an issue for the person in a way that we may not be at the moment. (Dementia Specialist Nurse Group 1)

Effect of alcohol problems on ability to obtain accurate information about cognitive impairment

Practitioners told us that, if an ongoing alcohol problem or heavy alcohol use was identified, the individual would not normally have a full assessment for cognitive impairment until they were abstinent or had greatly reduced their drinking.

If it was a significant problem and actually it would impact on the assessment process, it is not going to give a true picture. So perhaps the alcohol needs to be treated and addressed first.... It's the level of alcohol and whether there is something else that needs to be done first. So, for instance, we had someone with depression was it last week or the week before and the doctor decided actually it was not sensible to go through the memory assessment process at this stage. Because the depression he felt was so significant, it wouldn't give us clear assessment results. (Occupational Therapist Group 1)

If it is quite a large amount, if they are agreeable to coming through the service, we ask them to abstain, at least a week before their appointment, so our doctor gets a proper reading of their memory. (Clinical Psychologist, Group 2)

What would generally happen is that [if alcohol misuse was identified at pre-assessment] the workers would come back and we would either discuss it as a team as to what course of action we want to take. We will give them a call or call the daughter and we can tell them about this particular place or this information but at this moment in time, it is not appropriate that they come through our service. (Occupational Therapist, Group 2)

However, clients were not always able to access alcohol treatment because practitioners in one of the focus groups told us that, until recently, the local substance misuse service would not accept referrals for people aged 65 and over.

> *There is nowhere to signpost or move on to. I see a gentleman at the moment who drinks a lot and it is about being in discussion with the local pub and various other family members and just keeping an eye to make sure he is OK, but there is very little other intervention that we can dip into.* (Support Worker, Group 2)

> *If they are quite [cognitively] impaired, then we would pretty much expect the family to sort of handle it in some way.* (Dementia Nurse Specialist, Group 2)

Other barriers to screening and intervening with alcohol problems in MAS

Practitioners pointed out that alcohol can be a sensitive topic which can make it challenging for them to ask service users about their alcohol use.

> *Just turning up with questions regarding their memory, people are on their guard, and then to go with another questionnaire about their alcohol use is just going to tip them over the edge.* (Occupational Therapist, Group 2)

> *Because they don't think they've got a memory problem and so they think their family have landed them in this and you know, I don't know what my family has been saying about me.* (Occupational Therapist Group 1)

Some practitioners felt that they did not have sufficient training or skills to intervene with clients with alcohol problems and there were issues about role legitimacy.

> *I feel OK to be able to ask people questions about alcohol use and understand about whether I think that might be affecting them, or whether I think that might be something harmful to their health in some way that might need some advice or support from other people, but I wouldn't feel I've got the right kind of training and skills to give much advice about how they then move forward with that. We can support people in mental health, but I don't feel I've got the right skills for alcohol use.* (Clinical Psychologist, Group 2)

> *I've never had any training, or particular experience. In fact if anything it's an area I've stayed away from because I've never found that I*

personally work very well with people that abuse alcohol. (Dementia Nurse Specialist Group 1)

I have heard in the wider CMHT it said that they are not commissioned for alcohol services, so that if individuals have alcohol problems, it's not really necessarily one to take on. (Assistant Psychologist Group 1)

Whilst time was a limiting factor, practitioners were generally in agreement that screening for alcohol problems in MAS would be beneficial.

My immediate feeling at the thought of filling in another questionnaire is "oh my god, we do so many bits of assessment, can we do another bit?" But I can imagine that it would be useful. (Clinical Psychologist, Group 2)

3.3 ADAPTING ALCOHOL SCREENING AND TREATMENT FOR PEOPLE WITH COGNITIVE IMPAIRMENT

Table 7 describes strategies identified in the literature which can be used to accommodate a person's cognitive limitations. Our literature review only found brief mention of how to modify alcohol treatment for people with cognitive impairment in journal articles; most articles e.g. (Bates, et al., 2002; Bates, et al., 2013) focused on improving cognitive functioning so that the individual was more likely to be able to benefit from alcohol treatment rather than modifying alcohol treatment itself. Most of the information came from the "grey literature" and was either written specifically for people working with substance misuse issues e.g. (Centre for Substance Abuse Treatment, 1998) or written for people working with anyone with cognitive impairment e.g. (Midwestern Brain Injury Rehabilitation Programme, 2011).

Table 7. *Cognitive deficits, problems arising and potential management strategies identified in a literature review*

Deficit	Problems Arising (Possible Indicators)	Management Strategies	References
Attention, concentration and speed of information processing	• Have difficulty concentrating and sustaining attention. • Be distractible and unable to screen out irrelevancies. • Find it hard to cope with more than one thing at once. • Change the subject often and inappropriately. • Switch off and appear not to listen. • Not remember what others have said. • Not complete things they start. • Have poor attention to details and make errors. • Get bored quickly. • No longer interested in previously enjoyed activities. • May withdraw socially. • Be slower at taking in and making sense of information. • Take longer to complete tasks or respond to questions. • Be unable to keep track of more than one thing at a time. • Be unable to keep track of lengthy conversations or instructions. • Have difficulty coping with complex information.	• Keep noise to a minimum and remove unnecessary distractions. • Allow longer time than usual to process information and reach decisions. • Break large amounts of information down into manageable chunks. • Present information slowly and one thing at a time. • Use short, simple sentences and do not ask compound questions. • Ask simple questions, repeat questions and ask the client to repeat back in their own words what has been said/summarise salient issues. • Give specific examples to illustrate words or phrases which may be too abstract such as "abstinent". • Ask the person to relate their whole life story; opportunities to ask about alcohol use will occur during the telling of the story. • When teaching problem-solving skills, provide specific, concrete examples of a strategy to avoid difficulties with abstraction. • When the individual is distracted, interrupt them and bring them back to the subject firmly but gently. • Plan how to approach a task with a simple	(Australian Government Department of Veterans' Affairs, 2013; Bates, et al., 2002; Centre for Substance Abuse Treatment, 1998; Midwestern Brain Injury Rehabilitation Programme, 2011; Norton & Halay, 2011)

Deficit	Problems Arising (Possible Indicators)	Management Strategies	References
		and step by step approach. • Change activities when necessary to maintain interest. • Allow for breaks and be sensitive to client's attention span and restlessness. • Give instructions visually and verbally. • Enlist the help of a 'therapy partner' – a family member or close friend who can help reinforce the therapy techniques between appointments. • Flash cards, art therapy techniques and audio and visual records may be useful. • Modify written material to make it concise and to the point. • Encourage the individual to take notes or at least write down keypoints for later review and recall. • Limit educational components to essential information to avoid confusion. • Present educational material in more than one media/method e.g. role play, brain storm, visual aids and practical demonstrations. • After group sessions, meet individually to review main points.	
Memory	• Find it hard to learn and remember new things. • Forget names. • Forget appointments. • Forget things people say, e.g. task instructions.	• Give reminders and repeat information. • Encourage the person to rehearse and repeat information. • Encourage practice of tasks and use aids.	(Australian Government Department of Veterans' Affairs, 2013;

Deficit	Problems Arising (Possible Indicators)	Management Strategies	References
	• Frequently lose things. • Repeat conversations. • Repeat disruptive behaviour that has been previously been challenged.	• Repeat information in head over and over, or say information out loud. • Make up a short story that gives meaning to the information. • Make a visual story out of what needs to be remembered. • Find a common theme for the things that the person wants to remember. • Divide large amounts of information into smaller ones. • Use rhyming words or acronyms. • Provide clients with notepads and encourage them to write down questions and thoughts as they occur. • Have a designated place for frequently lost items e.g. bowl for wallet, keys, mobile phone. • Link forgotten tasks (e.g. taking medication) with a regular activity during the day e.g. a meal. • Ask a friend to remind the individual about things or have them accompany them to appointments. • Establish a routine (e.g. the same time for appointments) to reduce memory load. • Utilise memory aids where possible. For example, provide the client with diagrammatic representations or written summaries, use calendars/diaries, or cue cards that can be carried in the individuals	Midwestern Brain Injury Rehabilitation Programme, 2011)

Deficit	Problems Arising (Possible Indicators)	Management Strategies	References
		wallet, and make the most of technology e.g. phone reminder alerts.	
Inadequate planning and organisation	• Not think ahead – not consider the end result of their actions. • Have difficulty working out the steps involved in a task. • Perform steps of an activity out of order – have a disorganised or random approach. • Not be able to analyse problems and identify a logical solution. • Have trouble organising their thoughts and explaining things to others. • Appear able when they explain the approach but fail in practice.	• Avoid giving the person open ended tasks. • Provide structure – list explicit logical steps to complete the task, prompt the next step. • Devise and use a routine. • Train the person to approach a new activity/task in a systematic manner e.g. break the task into small parts or steps and tick off as completed. • Learn new tasks one step at a time and build up sequence. • Reduce the demands on the person – do not expect open ended decision making but give the person several solutions from which to choose.	(Midwestern Brain Injury Rehabilitation Programme, 2011)
Perseveration, rigid and concrete thinking	• Get stuck on one idea or behaviour. • Talk about the same topic repeatedly. • Return to the preferred topic when doing nothing else. • Persist in behaviour even when no longer relevant or appropriate. • Have difficulty adapting to new situations. • Appear obstinate and resistant to opposing views, opinions or requests. • Not be able to switch from one activity to another in response to feedback. • Take statements literally.	• Listen the first time, provide clear feedback that you heard and understood. • Interrupt – remind the person gently that they have told you the information before. • Ignore future references to the topic – do not reinforce further repetition. • Distract the person back to the activity. • Introduce new ideas gradually. • Present things in concrete terms. • Try not to talk in abstract terms – use simple and direct language. • Make tasks personally and immediate	(Midwestern Brain Injury Rehabilitation Programme, 2011)

Deficit	Problems Arising (Possible Indicators)	Management Strategies	References
	• Have difficulty understanding abstract terms (e.g. hypothetical situations) • Have difficulty thinking in terms of the future – cannot regulate current actions in anticipation of consequences. • Not be able to see the other person's point of view. • Have difficulty reasoning. • Have a black or white attitude. • Be unable to maintain a flexible attitude in response to changing situations.	relevant. • Encourage the person to imagine how it would feel in other situations. • Explain any change in routine in advance, giving reasons.	
Reduction of insight or self awareness.	• Be unaware of problems in cognitive function or behaviour. • Fail to compensate for the problems. • Not accept responsibility for the consequences of their behaviour. • Have unrealistic goals, demands or expectations. • Reject or resist treatment or assistance. • Be impulsive and act without thinking of the consequences. This could lead to inadvertent rule breaking and errors. • Jump in before thinking. • Make rash decisions. • Relate inappropriately to others – be over familiar, tactless, approach strangers, make sexual advances inappropriately. • Spend money indiscriminately.	• Gently remind the person of deficits. • Give immediate feedback about performance. • Distract the person or ignore unrealistic statements – change subjects. • Explain why a proposed action is useful – reason through the steps. • Point out the possible negative consequences of the person's unrealistic plans. • Work with other agencies to ensure external limitations where necessary, e.g. refer to DVLA for driver's licence assessment, ensure guardianship or financial management structures. • Cue the person to slow down – to think before they act.	(Midwestern Brain Injury Rehabilitation Programme, 2011)

4. DISCUSSION

This study has shown a significant amount of undiagnosed cognitive impairment in older people with alcohol problems and that this can cause distress, family conflict and disability. Other studies have found that many cases of alcohol-related cognitive impairment go undetected (Thomson, Cook, Touquet, & Henry, 2002), for reasons that are likely to include low levels of knowledge and expertise amongst professionals (Anderson, Flanigan, & Jauhar, 1999; Hillman, McCann, & Walker, 2001), high levels of stigmatisation (Cox, et al., 2004), the variable presentation of cognitive difficulties (Jacques & Stevenson, 2000) and the complicating factors of acute withdrawal syndrome and associated physical ill health (Cox, et al., 2004).

The older people with alcohol problems that took part in this study wanted to know if they had cognitive impairment. However, memory assessment services which have been set up by the government to improve early diagnosis and support people with cognitive impairment, do not usually carry out full cognitive assessment in problem drinkers unless they are abstinent or have greatly reduced their drinking. This is because most people with alcohol-related cognitive impairment will show some recovery with abstinence/greatly reduced drinking, yet the focus of memory assessment services is on detecting progressive cognitive impairment such as that seen in Alzheimer's disease. This situation is made worse by the fact that individuals with cognitive impairment and alcohol problems, find it particularly difficult to stop or reduce their drinking and cognitive impairment is a barrier to successful alcohol treatment. For example, substance misuse practitioners who took part in this study told us that their clients with cognitive impairment would often forget appointments, find it difficult to retain information from the previous session and find it difficult to fully engage in cognitive behavioural therapy. Furthermore, because of the way that substance misuse services are commissioned and configured, some have an upper age limit, therefore there are areas where older people are unable to access specialist alcohol treatment. A report by the Healthcare Commission (2009) also found evidence that older people are denied access to alcohol services due to their age. This means that older people whose alcohol problems coexist with cognitive impairment are often unable to stop drinking but are also unable to get access to help, support and treatment for their cognitive impairment until they do so. Meanwhile their cognitive impairment could deteriorate further.

There are a number of ways that this issue could be addressed. First, memory assessment services could conduct a full cognitive assessment for people with alcohol problems who are unable or unwilling to stop drinking and

repeat the assessment if the individual subsequently reduces their drinking. Second, substance misuse services could screen their older clients for cognitive impairment. In this study we identified a cognitive screening tool (the Montreal Cognitive Assessment) that is quick and easy to administer and score in substance misuse services and which older service users found acceptable. However, substance misuse practitioners would need to be trained to discuss issues associated with carrying out cognitive screening with service users, how and when to administer the screening tool and give appropriate feedback. The findings of this study suggest that cognitive screening should be optional and carried out at a time that is right for the individual. It also suggests that hose being screened should be informed that the tool is not a test of intelligence and that some types of cognitive impairment may, in some circumstances, be reversible.

Once cognitive impairment is identified, alcohol treatment can be adapted to meet the individual's cognitive deficits. Whilst there is a need for more research into how to modify alcohol treatment for people with cognitive impairment, the literature and experience of substance misuse practitioners who took part in this study suggest that it is not an insurmountable barrier to successful alcohol treatment and that outcomes may be improved by implementing strategies based on identified cognitive deficits. For example, clients who are slower at taking in and making sense of information may benefit from an extended period of treatment, information given in more than one way (e.g. role play, visual aids and practical demonstrations) and being given concrete examples of coping strategies to avoid difficulties with abstraction. Since continued abstinence is particularly important for people with alcohol-related cognitive impairment, ongoing input from substance misuse services is important (McCabe, 2005). This report contains two case studies which illustrate how ongoing support from substance misuse services can be integrated into a multiagency care package. A high level of cross-service liaison is important because rarely does a single agency take responsibility for people with alcohol-related cognitive impairment and they are often "passed from pillar to post" (Boughy, 2007; Lennane, 1986; Price, Mitchell, & B, 1988)

Finally, this study has demonstrated that screening for alcohol misuse in memory assessment services is important but that most of these services are not using alcohol screening tools. This makes it difficult for practitioners to know when drinking is problematic and staff may not have the knowledge or skills to intervene when alcohol misuse is identified. In this study, we have demonstrated that alcohol screening tools (AUDIT, SMAST-G and CAGE) can be used with individuals who have cognitive impairment provided they receive assistance from the practitioner administering the tool. For example,

questions may require rewording, examples may need to be given for abstract terms and drinking diaries may be useful to overcome difficulties with memory. Collateral information from family members and carers may also be useful.

This study has limitations. The number of service users interviewed was small and they were all White British, therefore the findings may not be generalisable to other ethnics groups. Substance misuse services may have been more likely to ask clients to take part in the study if there was a suspicion of cognitive impairment, resulting in a sample with higher levels of cognitive impairment than would normally be expected, although other studies report similar levels (Bates, et al., 2002). Similarly, we asked substance misuse services to recruit service users who were "unlikely to be unduly distressed by taking part in the study", therefore our finding that most participants were not distressed by cognitive testing may be biased.

To conclude, the long-term effect of alcohol misuse and advancing age on cognitive impairment should not be underestimated. Yet substance misuse and memory assessment services are poorly equipped to identify and work with older people who have concurrent alcohol problems and cognitive impairment. There is a need for further training for practitioners and changes in policy to prevent affected individuals falling through gaps in services and being denied the help and support that they need.

Appendix 1 – Interview Guide for Substance Misuse Service Users

Demographics and relevant health	• Would you mind if I ask you a few questions about yourself
	  ○ Age
	  ○ Live alone or with others
	  ○ Current or previous employment/
	  ○ Have you ever been diagnosed with depression?
	  ○ Have you ever had a head injury?
	  ○ How would you describe your health in general?

Alcohol use	• Can you tell me a bit about your past and current alcohol use (explore any patterns of heavier drinking). • What have been the effects – positive and negative – of alcohol on your life? • Can you tell me what brought you to [name of service] • Are you drinking now? (if so, how much, if not when last had drink)
Cognitive difficulties	• Have you ever experienced problems with your memory? • Can you tell me a bit about that - when, how long for [temporary/ongoing] • To what extent do you think it is/was related to your alcohol use? • Has a friend or family member ever commented on your memory? • Have you ever been asked questions about your memory by a professional or been told that you may be experiencing cognitive difficulties? [if no skip to next section] • By who, when, in what circumstances? [if been told they are experiencing cognitive difficulties] • What happened when you were told you were experiencing cognitive difficulties?
Cognitive impairment screening	Now I would like to go through the cognitive screening tool with you, it takes about 10 minutes and as I said, the reason for doing it is not actually to find out whether you have cognitive difficulties, but to see what you think of the tool. ADMINISTER the MoCA Give them the result if they have asked for it. If they score below the cut off, reiterate it is only an indication that they may benefit from further assessment and that cognitive difficulties may be temporary, reversible or improved with tailored treatments and/or lifestyle changes. If it is above the cut off, tell them that it is only an indication that they aren't experiencing cognitive difficulties at this time. Now could I ask you some questions about the cognitive screening tool? • How would you have felt if you had been screened using the cognitive screening tool when you first attended the alcohol service? • [If they didn't want to know the result, ask them why]. • How did you feel when I told you the result? • (if result below the cut off) how would you have felt if the result had indicated possible cognitive impairment? • Do you think it is OK to screen people for cognitive difficulties in alcohol services? • What do you think are the pro's and con's of being screened? (using columns on a piece of paper)

	• Are there any ways in which [name con's that they have identified] could be avoided or reduced? • Do you think these con's should be made clear before people are screened for cognitive difficulties? • Do you think we should screen everyone who attends an alcohol service?
Miscellaneous	• Anything else you would like to tell me? • Anything you'd like to ask me?

Appendix 2 - AUDIT Alcohol Screening Tool

AUDIT	Scoring system					Your score
	0	1	2	3	4	
How often do you have a drink containing alcohol?	Never	Monthly or less	2 - 4 times per month	2 - 3 times per week	4+ times per week	
How many units of alcohol do you drink on a typical day when you are drinking?	1 -2	3 - 4	5 - 6	7 - 9	10+	
How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you failed to do what was normally expected from you because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you needed an alcoholic drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
Have you or somebody else been injured as a result of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested that you cut down?	No		Yes, but not in the last year		Yes, during the last year	

Scoring: 0 – 7 Lower risk, 8 – 15 Increasing risk, 16 – 19 Higher risk, 20+ Possible dependence

Appendix 3 – CAGE Alcohol Screening Tool

C - Have you ever felt you should **cut down** on your drinking?

A- Have people **annoyed** you by criticizing your drinking?

G - Have you ever felt bad or **guilty** about your drinking?

E - **Eye opener**: Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover?

Two "yes" answers to the CAGE test indicates problems with alcohol.

Appendix 4 – SMAST-G Alcohol Screening Tool

YES (1) NO (0)

1. When talking with others, do you ever underestimate how much you actually drink?
2. After a few drinks, have you sometimes not eaten or been able to skip a meal because you didn't feel hungry?
3. Does having a few drinks help decrease your shakiness or tremors?
4. Does alcohol sometimes make it hard for you to remember parts of the day or night?
5. Do you usually take a drink to relax or calm your nerves?
6. Do you drink to take your mind off your problems?
7. Have you ever increased your drinking after experiencing a loss in your life?
8. Has a doctor or nurse ever said they were worried or concerned about your drinking?
9. Have you ever made rules to manage your drinking?
10. When you feel lonely, does having a drink help?

TOTAL S-MAST-G SCORE (0-10) _____

Scoring: 2 or more "yes" responses indicative of alcohol problem.

Appendix 5 – Memory Assessment Service Survey

Screening and Interventions for Alcohol Misuse in Attendees at Memory Assessment Services: Current Practice and Feasibility

1. Which Memory Assessment Service do you work in? _____

2. Does your service routinely seek to determine whether or not users are misusing alcohol?

   i. Yes (go to question 3). □
   ii. No (go to question 4). □

3. How do you attempt to determine whether or not service users are misusing alcohol (please tick all that apply).

   i. By using a standard alcohol screening tool (please specify which tool you use e.g. AUDIT). □
   ii. By asking questions about alcohol without using a standard screening tool. □
   iii. By examining other information such as GP/health professional report, client's medical notes □
   iv. Other, please specify _____

4. To what extent do you think alcohol misuse might be an issue for clients attending your service?

   i. I don't think it is much of a problem □
   ii. I think that it affects a significant minority of clients. □
   iii. I think that it affects the majority of clients. □
   iv. I don't know how many clients it affects. □

5. Do you think it would be feasible to routinely screen for alcohol misuse in your service users attending your memory clinic for alcohol use?

   i. Yes (go to question 6) □
   ii. No (go to question 7) □

6. What challenges do you think you might encounter when routinely screening patients for alcohol problems? (Go to question 8)
_____
_____
_____

7. Why do you think screening for alcohol problems would not be feasible?
_____
_____
_____

8. Do you think it would be feasible to deliver brief interventions for patients with alcohol problems within your memory clinic? e.g. providing information or giving advice.

   i. Yes (go to question 9) □
   ii. No (go to question 10) □

9. What challenges do you think you might encounter when providing brief intervention for patients with alcohol problems? (Go to question 11).
_____
_____
_____

10. Why do you think delivering brief interventions for alcohol problems would not be feasible?
_____
_____

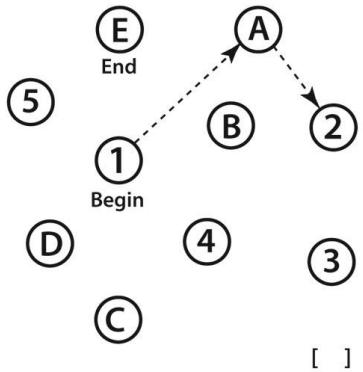
Is there anything else that you would like to tell us?
_____
_____
_____
_____

Appendix 6 – the Montreal Cognitive Assessment (MoCA) (Nasreddine, et al., 2005)

MONTREAL COGNITIVE ASSESSMENT (MOCA)
Version 7.1 Original Version

NAME :
Education : Date of birth :
Sex : DATE :

VISUOSPATIAL / EXECUTIVE



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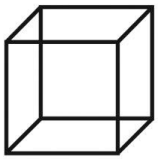


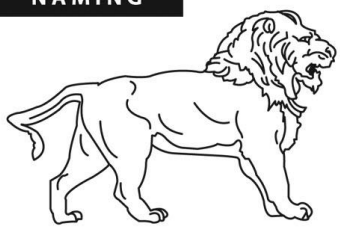
Copy cube [ ]

Draw CLOCK (Ten past eleven) (3 points)

[ ] Contour [ ] Numbers [ ] Hands

POINTS ___/5

NAMING



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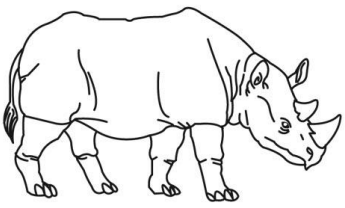

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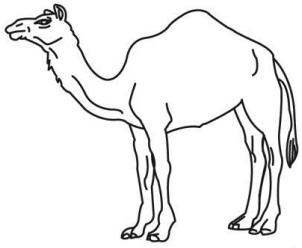

[ ]

___/3

MEMORY Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.

	FACE	VELVET	CHURCH	DAISY	RED
1st trial					
2nd trial					

No points

ATTENTION Read list of digits (1 digit/ sec.).

Subject has to repeat them in the forward order [ ] 2 1 8 5 4
Subject has to repeat them in the backward order [ ] 7 4 2 ___/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors
[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B ___/1

Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65
4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt** ___/3

LANGUAGE Repeat : I only know that John is the one to help today. [ ]
The cat always hid under the couch when dogs were in the room. [ ] ___/2

Fluency / Name maximum number of words in one minute that begin with the letter F [ ] _____ (N ≥ 11 words) ___/1

ABSTRACTION Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler ___/2

DELAYED RECALL

	FACE	VELVET	CHURCH	DAISY	RED	
Has to recall words **WITH NO CUE**	[ ]	[ ]	[ ]	[ ]	[ ]	Points for UNCUED recall only
Optional Category cue						
Optional Multiple choice cue						

___/5

ORIENTATION [ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City ___/6

 www.mocatest.org Normal ≥ 26 / 30

TOTAL ___/30
Add 1 point if ≤ 12 yr edu

Administered by: _____

References

Anderson, J. J., Flanigan, C. C., & Jauhar, P. J. (1999). Knowledge of alcohol-related problems in clinical staff in psychiatric community resource centres in Glasgow. *Health Bulletin, 57*(3), 162-164.

Australian Government Department of Veterans' Affairs. (2013). Assessment formulation and treamtent of common mental health problems amongst veterans - cognitve impairment. Retrieved December 2013

Bates, M. E. (1997). Stability of neuropsychological assessments early in alcoholism treatment. *Journal of Studies on Alcohol, 58*(6), 617-621.

Bates, M. E., Bowden, S. C., & Barry, D. (2002). Neurocognitive impairment associated with alcohol use disorders: Implications for treatment. *Experimental and Clinical Psychopharmacology, 10*(3), 193-212.

Bates, M. E., Buckman, J. F., & Nguyen, T. T. (2013). A Role for Cognitive Rehabilitation in Increasing the Effectiveness of Treatment for Alcohol Use Disorders. *Neuropsychology Review, 23*(1), 27-47.

Bates, M. E., & Convit, A. (1999). Neurosychology and neuroimaging of alcohol and ilicit drug abuse. In A. Calev (Ed.), *Assessment of neuropsychological functions in psychiatric disorders* (pp. 373-445). Washington, DC: American Psychiatric Press.

Bates, M. E., Pawlak, A. P., Tonigan, J. S., & Buckman, J. F. (2006). Cognitive impairment influences drinking outcome by altering therapeutic mechanisms of change. *Psychology of Addictive Behaviors, 20*(3), 241-253.

Blazer, D. G., & Wu, L. T. (2009). The epidemiology of at-risk and binge drinking among middle-aged and elderly community adults: National Survey on Drug Use and Health. *American Journal of Psychiatry, 166*(10), 1162-1169.

Blow, F. C., & Barry, K. L. (2002). Use and misuse of alcohol among older women. *Alcohol Research & Health, 26*(4), 308-315.

Blow, F. C., Brower, K. J., Schulenberg, J. E., Demo-Dananberg, L. M., Young, J. P., & Beresford, T. P. (1992). The Michigan Alcoholism Screening Test – Geriatric Version (MAST-G): A new elderly-specific screening instrument. *Alcoholism: Clinical and Experimental Research, 16*, 372.

Blow, F. C., Gillespie, B. W., & Barry, K. L. (1998). Brief screening for alcohol problems in elderly populations using the Short Michigan Alcoholism Screening Test–Geriatric Version (SMAST-G). *Alcoholism: Clinical and Experimental Research, 22 (Suppl)*.

Blume, A. W., Schmaling, K. B., & Marlatt, G. A. (2005). Memory, executive cognitive function, and readiness to change drinking behavior. *Addictive Behaviors, 30*(2), 301-314.

Boughy, L. (2007). *Alcohol related brain damage: A report of the learning captured from Carenza Care in North Wales*: Carenza Care.

Brandt, J., Butters, N., Ryan, C., & Bayog, R. (1983). Cognitive loss and recovery in long-term alcohol abusers. *Archives Of General Psychiatry, 40*(4), 435-442.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology *Qualitative Research in Psychology, 3*(2), 77-101.

Brower, K. J., Aldrich, M. S., Robinson, E. A. R., Zucker, R. A., & Greden, J. F. (2001). Insomnia, self-medication, and relapse to alcoholism. *American Journal of Psychiatry, 158*(3), 399-404.

Bush, K., Kivlahan, D. R., McDonell, M. B., Fihn, S. D., & Bradley, K. A. (1998). The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. *Archives of Internal Medicine, 158*(16), 1789-1795.

Centre for Substance Abuse Treatment. (1998). *Substance use disorder treatment for people with physical and cognitive disabilities*. Rockville (MD): Substance Misuse and Mental Health Services Administration.

Chiang, C. P. (2002). Wernicke Korsakoff's Syndrome in Argyll & Clyde: A literature review, needs assessment and recommendation for the prevention, treatment and provision of Wernicke Korsakoff's Syndrome. Unpublished Part II Submission to the Faculty of Public Health Medicine.

Copersino, M. L., Fals-Stewart, W., Fitzmaurice, G., Schretlen, D. J., Sokoloff, J., & Weiss, R. D. (2009). Rapid cognitive screening of patients with substance use disorders. *Experimental and Clinical Psychopharmacology, 17*(5), 337-344.

Copersino, M. L., Schretlen, D. J., Fitzmaurice, G. M., Lukas, S. E., Faberman, J., Sokoloff, J., et al. (2012). Effects of Cognitive Impairment on Substance Abuse Treatment Attendance: Predictive Validation of a Brief Cognitive Screening Measure. *American Journal of Drug & Alcohol Abuse, 38*(3), 246-250.

Cox, S., Anderson, I., & McCabe, L. (2004). *A fuller life: report of the expert group on alcohol related brain damage*. Stirling: Dementia Services Development Centre, University of Stirling.

Dent, O. F., Grayson, D. A., Waite, L. M., Cullen, J. S., Creasey, H., & Broe, G. A. (2000). Alcohol consumption in a community sample of older people. *AUSTRALIAN AND NEW ZEALAND JOURNAL OF PUBLIC HEALTH, 24*(3), 323-326.

Ding, J., Eigenbrodt, M. L., Mosley, T. H., Jr., Hutchinson, R. G., Folsom, A. R., Harris, T. B., et al. (2004). Alcohol intake and cerebral abnormalities on magnetic resonance imaging in a community-based population of middle-aged adults: the Atherosclerosis Risk in Communities (ARIC) Study. *Stroke (00392499), 35*(1), 16-21.

Donovan, D., Kivlahan, D. R., Kadden, R., & Hill, D. (2001). Cognitive impairment as a patient-treatment matching hypothesis. In R. Longabaugh & P. Wirtz (Eds.), *Project MATCH Hypothesis: Results and Causal Chain Anlayses* (pp. 62-81). Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.

Doweiko, H. F. (2006). *Concepts of chemical dependency* (7th ed.). Pacific Grove, California: Brooks/Cole Publishing Co.

Elleswei E. (2000). Caring for people with alcohol related brain injury. *Signpost, 4*, 12-13.

Ewing, J. A. (1984). Detecting alcoholism. The CAGE questionnaire. *JAMA: The Journal Of The American Medical Association, 252*(14), 1905-1907.

Fals-Stewart, W. (1993). Neurocognitive defects and their impact on substance abuse treatment. [Article]. *Journal of Addictions & Offender Counseling, 13*(2), 46.

Fals-Stewart, W. (1997). Ability of counselors to detect cognitive impairment among substance-abusing patients: An examination of diagnostic efficiency. *Experimental and Clinical Psychopharmacology, 5*(1), 39-50.

Fals-Stewart, W., & Lucente, S. (1994). Effect of neurocognitive status and personality functioning on length of stay in residential substance abuse treatment: An integrative study. *Psychology of Addictive Behaviors, 8*(3), 179-190.

Fernandez-Serrano, M. J., Perez-Garcia, M., & Verdejo-Garcia, A. (2011). What are the specific vs. generalized effects of drugs of abuse on neuropsychological performance? *NEUROSCIENCE AND BIOBEHAVIORAL REVIEWS, 35*(3), 377-406.

Goldman, M. S. (1990). Experience-dependent neuropsychological recovery and the treatment of chronic alcoholism. *Neuropsychology Review, 1*(1), 75-101.

Goldman, M. S. (1995). Recovery of cognitive functioning in alcoholics. [Article]. *Alcohol Health & Research World, 19*(2), 148.

Grohman, K., & Fals-Stewart, W. (2003). Computer-assisted cognitive rehabilitation with substance-abusing patients: effects on treatment response. *Journal of Cognitive Rehabilitation, 21*(4), 10-17.

Healthcare Commission. (2009). *Equality in later life: A national study of older people's mental health services*. London.

Hillman, A., McCann, B., & Walker, N. P. (2001). Specialist alcohol liaison services in general hospitals improve engagement in alcohol rehabilitation and treatment outcome. [Journal Article]. *COMPLEMENTARY THERAPIES IN MEDICINE, 9*(4), 420.

Horner, M. D., Harvey, R. T., & Denier, C. A. (1999). Self-report and objective measures of cognitive deficit in patients entering substance abuse treatment. *PSYCHIATRY RESEARCH, 86*(2), 155-161.

Jacques, A., & Stevenson, G. (2000). *Korsakof's syndrome and other chronic related brain damage in Scotland*. Stirling: Stirling Dementia Service Development Centre.

Karam-Hage, M. (2004). Treating insomnia in patients with substance use/abuse disorders. *Psychiatric Times, 21*(2), 55-57.

Kiluk, B. D., Nich, C., & Carroll, K. M. (2011). Relationship of cognitive function and the acquisition of coping skills in computer assisted treatment for substance use disorders. *Drug and Alcohol Dependence, 114*(2-3), 169-176.

Kumar, R., Dear, K. B. G., Christensen, H., Ilschner, S., Jorm, A. F., Meslin, C., et al. (2005). Prevalence of mild cognitive impairment in 60- to 64-year-old community-dwelling individuals: the Personality and Total Health through Life 60+ study. *Dementia & Geriatric Cognitive Disorders, 19*(2-3), 67-74.

Lennane, K. J. (1986). Management of moderate to severe alcohol-related brain damage (Korsakoff's syndrome). *The Medical Journal Of Australia, 145*(3-4), 136.

Manly, J. J., Bell-McGinty, S., Tang, M. X., Schupf, N., Stern, Y., & Mayeux, R. (2005). Implementing diagnostic criteria and estimating frequency of mild cognitive impairment in an urban community. *ARCHIVES OF NEUROLOGY, 62*(11), 1739-1746.

Mayfield, D., McLeod, G., & Hall, P. (1974). The CAGE questionnaire: Validation of a new alcoholism screening instrument. *The American Journal of Psychiatry, 131*(10), 1121-1123.

McCabe, L. (2005). *Alcohol-related brain damage: Knowledge and attitudes of frontline care staff*. Stirling: Department of Applied Social Science, University of Stirling.

McCrady, B. S., & Smith, D. E. (1986). Implications of cognitive impairment for the treatment of alcoholism. *Alcoholism: Clinical and Experimental Research, 10*(2), 145-149.

Midwestern Brain Injury Rehabilitation Programme. (2011). *Brain Injury Rehabilitation Programme Information/Resource Pack*. Bathhurst, NSW.

Myslinski, N. R. (1998). Now where did I put those keys? *World & I, 13*, 160-168.

Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., et al. (2005). The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society, 53*(4), 695-699.

NHS Information Centre. (2009). *Adult Psychiatric Morbidity in England 2007*. London.

NHS The Information Centre for Health and Social Care. (2011). *Establishment of memory services - results of a survey of PCTs final figures 2011*.

Norton, F., & Halay, L. (2011). Cognitive brain deficits associated with alcohol abuse: Treatment implications. *The American Association of Behavioural and Social Sciences Journal, 15*, 1-18.

Oscar-Berman, M. (1992). Alcoholism and asymmetries of brain function. *Alcohol Health & Research World, 16*(4), 273-279.

Passmore, A., & Craig, D. (2004). 'The Future of Memory Clinics'. *Psychiatric Bulletin, 28*, 375-377.

Pierucci-Lagha, A., & Derouesné, C. (2003). [Alcoholism and aging. 2. Alcoholic dementia or alcoholic cognitive impairment?]. *Psychologie & Neuropsychiatrie Du Vieillissement, 1*(4), 237-249.

Price, J., Kerr, R., & Williams, G. (1989). The Diet of Steady Drinkers with Special Reference to Social Variables. *British Journal of Addiction, 84*(2), 165-172.

Price, J., Mitchell, S., & B, W. (1988). A follow up study of patients with alcohol related brain damage in the community. *Australian Drug and Alcohol Review, 7*, 83-87.

Purser, J. L., Fillenbaum, G. G., Pieper, C. F., & Wallace, R. B. (2005). Mild cognitive impairment and 10-year trajectories of disability in the Iowa established populations for epidemiologic studies of the elderly cohort. *Journal of the American Geriatrics Society, 53*(11), 1966-1972.

Rinn, W., Desai, N., Rosenblatt, H., & Gastfriend, D. R. (2002). Addiction denial and cognitive dysfunction: A preliminary investigation. *JOURNAL OF NEUROPSYCHIATRY AND CLINICAL NEUROSCIENCES, 14*(1), 52-57.

Ritchie, J., & Spencer, L. (1994). Qualitative data analysis for applied policy research. In A. Bryman & R. G. Burgess (Eds.), *Analyzing qualitative data*. London: Routledge.

Rosenbloom, M., Sullivan, E. V., & Pfefferbaum, A. (2003). Using magnetic resonance imaging and diffusion tensor imaging to assess brain damage in alcoholics. *Alcohol Research & Health, 27*(2), 146-152.

Rourke, S. B., & Loberg, T. (1996). The neurobehavoiural correlates of alcoholism. In I. Grant & K. M. Adams (Eds.), *Neurospychological assessment of neuropsychiatric disorders* (pp. 423-485). New York: Oxford University Press.

Saunders, J. B., Aasland, O. G., Babor, T. F., De La Fuente, J. R., & Grant, M. (1993). Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption--II. *Addiction, 88*(6), 791-804.

Shelton, M. D., & Parsons, O. A. (1987). ALCOHOLICS' SELF-ASSESSMENT OF THEIR NEUROPSYCHOLOGICAL FUNCTIONING IN EVERYDAY LIFE. [Article]. *Journal of Clinical Psychology, 43*(3), 395-403.

Smith, D. E., & McCrady, B. S. (1991). Cognitive Impairment among Alcoholics - Impact on Drink Refusal Skill Acquisition and Treatment Outcome. *Addictive Behaviors, 16*(5), 265-274.

Smith, I., & Hillman, A. (1999). Management of alcohol Korsakoff's syndrome. *ADVANCES IN PSYCHIATRIC TREATMENT, 5*, 271-278.

Stavro, K., Pelletier, J., & Potvin, S. (2013). Widespread and sustained cognitive deficits in alcoholism: a meta-analysis. *ADDICTION BIOLOGY, 18*(2), 203-213.

Thomson, A. D., Cook, C. C. H., Touquet, R., & Henry, J. A. (2002). The Royal College of Physicians report on alcohol: guidelines for managing Wernicke's encephalopathy in the accident and Emergency Department. *Alcohol And Alcoholism (Oxford, Oxfordshire), 37*(6), 513-521.

Tinetti, M. E., Doucette, J., Claus, E., & Marottoli, R. (1995). Risk factors for serious injury during falls by older persons in the community. *Journal of the American Geriatrics Society, 43*(11), 1214-1221.

Tivis, R., Beatty, W. W., Nixon, S. J., & Parsons, O. A. (1995). Patterns of cognitive impairment among alcoholics: Are there subtypes? *Alcoholism: Clinical and Experimental Research, 19*(2), 496-500.

Volkow, N., & Wang, G.-J. (1995). Monitoring the brain's response to alcohol with positron tomography. [Article]. *Alcohol Health & Research World, 19*(4), 296.

Wadd, S., Lapworth, K., Sullivan, M., Forrester, D., & Galvani, S. (2011). *Working with older drinkers*: Tilda Goldberg Centre for Social Work and Social Care.