

## SCREENING AND DETECTION

### Screening for Alcohol Use in Criminal Justice Settings: An Exploratory Study

Simon Coulton<sup>1,\*</sup>, Dorothy Newbury-Birch<sup>2</sup>, Paul Cassidy<sup>3</sup>, Veronica Dale<sup>4</sup>, Paolo Deluca<sup>5</sup>, Eilish Gilvarry<sup>6</sup>, Christine Godfrey<sup>4</sup>, Nick Heather<sup>7</sup>, Eileen Kaner<sup>2</sup>, Adenekan Oyefeso<sup>8</sup>, Steve Parrott<sup>4</sup>, Tom Phillips<sup>5,9</sup>, Jonathan Shepherd<sup>10</sup> and Colin Drummond<sup>5</sup>

<sup>1</sup>Centre for Health Service Studies, University of Kent, Canterbury, UK, <sup>2</sup>Institute of Health and Society, Newcastle University, Newcastle, UK, <sup>3</sup>Teams Family Practice, Gateshead, UK, <sup>4</sup>Department of Health Sciences, University of York, York, UK, <sup>5</sup>Addictions Department, Institute of Psychiatry, King's College London, London, UK, <sup>6</sup>Northern Regional Drug and Alcohol Services, Newcastle, UK, <sup>7</sup>School of Life Sciences, Northumbria University, Northumbria, UK, <sup>8</sup>Division of Mental Health, St George's, University of London, London, UK, <sup>9</sup>Humber NHS Foundation Trust, Willerby, UK and <sup>10</sup>Violence Research Group, Cardiff University, Cardiff, UK

\*Corresponding author: E-mail: s.coulton@kent.ac.uk

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**Abstract** — **Aims:** To examine the feasibility and acceptability of alcohol screening and delivery of brief interventions within criminal justice settings. **Methods:** A quantitative survey of those aged 18 or over in English criminal justice settings (three custody suites within police stations, three prisons and three probation offices). **Measurements:** The Fast Alcohol Screening Test (FAST) and a modified version of the Single Alcohol Screening Question (M-SASQ) were compared with the Alcohol Use Disorders Identification Test (AUDIT) as the 'gold standard'. Participants completed a health status questionnaire (EQ5D), questions on service utilization and the Readiness to Change Questionnaire. Questions relating to the acceptability and feasibility of delivering brief interventions and about perception of coercion were included. **Findings:** Five hundred and ninety-two individuals were approached and 251 were eligible. Of these, 205 (82%) consented to take part in the study. The mean AUDIT score was 19.9 (SD 13.5) and 73% scored 8 or more on AUDIT. A higher percentage of those approached in the probation setting consented to take part (81%: prison 36%, police setting 10%). Those scoring AUDIT positive were more likely to be involved in violent offences (36.5 vs 9.4%;  $P < 0.001$ ) and less likely to be involved in offences involving property (27.7 vs 45.3%;  $P = 0.03$ ). Three quarters of the sample (74%) reported that they would not feel coerced to engage in an intervention about their alcohol use. FAST and M-SASQ had acceptable screening properties when compared with AUDIT with area under the curves of 0.97 and 0.92, respectively. **Conclusions:** The results confirm that there is a major problem with alcohol use in the criminal justice system and this impacts on health and criminal behaviour. Of the three criminal justice settings, probation was found to be the most suitable for screening. Participants were positive about receiving interventions for their alcohol use in probation settings.

## INTRODUCTION

Recent estimates suggest that 3.5% of all alcohol-attributable costs in high income countries are associated with direct law enforcement (Rehm *et al.*, 2009). In the UK, alcohol is recognized as a major factor in causing crime and anti-social behaviour. Over the course of 2009/2010, it was estimated that 990,000 alcohol-related criminal acts occurred within the UK (Flatley *et al.*, 2010). In a UK general population survey carried out in 2002, 23% of respondents identified drunken and rowdy behaviour as a problem and this increased to 33% in inner-city areas (Simmons and Dodd, 2003). Beyond offences specific to alcohol, excessive alcohol consumption plays a role in many other offences, most notably violence and public order offences. While the causal relationship between alcohol and violence is complex, the most recent British Crime Survey (Flatley *et al.*, 2010) reports that 50% of victims of violent crime describe their assailant as being under the influence of alcohol at the time of the offence and 30% of alcohol-related violence takes place in or around drinking establishments. Alcohol plays a role in one-third of incidents of domestic violence and rates of problematic alcohol use in perpetrators of domestic violence are between two and seven times that of the general population (Logan *et al.*, 2001). While drink driving has declined in the UK in the past 20 years, it was still associated with 5% of all road accidents and a third of road traffic fatalities across Europe (Anderson and Baumberg, 2006).

In the UK, it is estimated that 90% of the prison population has a co-morbid substance use and mental health

problem and around two-thirds of men and women have established problematic alcohol use (Newbury-Birch *et al.*, 2009b), defined as consuming alcohol at levels that impact on normal physical and psychological health and encompassing hazardous, harmful and dependent consumption. A recent survey in Scotland (MacAskill *et al.*, 2011) suggested that 73% of male prisoners have an AUDIT score indicating problematic alcohol use and 36% have possible alcohol dependence. A similar pattern is seen in other high-income countries. Further, one-third of those in police custody have committed an alcohol-related offence (Man *et al.*, 2002) and 40% of prisoners claim that alcohol played a role in the offence committed (Parkes *et al.*, 2011). Alcohol misuse also places a major burden on the probation services and it is estimated that 50% of offender manager cases show problematic alcohol use (Hill, 2006). There is, therefore, the possibility that identifying those with problematic alcohol use and then delivering appropriate evidence-based interventions might impact on their physical and psychological health and their subsequent offending behaviour.

A wide array of screening methods have been developed to identify problematic alcohol use, including verbal instruments (Mayfield *et al.*, 1974) and questionnaires such as the Alcohol Use Disorders Identification Test (AUDIT) (Saunders *et al.*, 1993), Fast Alcohol Screening Test (FAST) (Hodgson *et al.*, 2002) and Michigan Alcohol Screening Test (MAST) (Selzer, 1971). All of these have an acceptable level of sensitivity and specificity in identifying problematic alcohol use compared with more intensive quantity–frequency measures of excessive drinking and, in addition,

questionnaire methods are significantly more effective and cost-effective than biochemical markers associated with alcohol consumption (Coulton *et al.*, 2006).

In busy settings, a number of shorter questionnaire variants have been developed. A recent American study demonstrated that a single item measure of alcohol consumption, the Single Alcohol Screening Question (SASQ), had 86% sensitivity and 87% specificity for identifying alcohol use disorders in primary care (Williams and Vinson, 2001; Canagasaby and Vinson, 2005). Evidence from primary care settings indicates that practitioners are more likely to adopt shorter screening instruments in practice and the reduction in sensitivity may be offset through more widespread application (Anderson *et al.*, 2004).

While there exists a strong evidence base for brief interventions to reduce problematic alcohol use in non-treatment seeking populations in a variety of health and non-health settings (Bien *et al.*, 1993; Freemantle *et al.*, 1993; Agosti, 1995; Wilk *et al.*, 1997; Poikolainen, 1999; Moyer *et al.*, 2002; Ballesteros *et al.*, 2004; Whitlock *et al.*, 2004; Bertholet *et al.*, 2005; Kaner *et al.*, 2007), there is a paucity of evidence of effectiveness within criminal justice settings. What evidence exists relates to specific types of offending such as domestic violence (Hopkins and Sparrow, 2006), drink driving (Watt *et al.*, 2008) and assaults (Fleming *et al.*, 2000).

As part of a multi-centre randomized controlled trial of brief interventions for problematic alcohol use in criminal justice populations, we conducted a survey within a variety of criminal justice settings. The aim of the study was to answer a number of questions regarding the feasibility and acceptability of screening and delivering brief interventions in this population. These included: identifying what locations alcohol screening and brief interventions should best be delivered in—police custody suites, prisons or probation services; estimating the prevalence, demography, engagement in criminal activity and service utilization profiles of problematic alcohol users; estimating the screening properties of shorter tools—FAST and a modified version of the M-SASQ modified to reflect standard UK units of alcohol compared with AUDIT; exploring motivation to change drinking behaviour and ascertaining any preferences for treatment. We explored whether problematic alcohol users in the criminal justice system would feel coerced if offered an alcohol intervention.

## METHODS

The survey was conducted between September and November 2007 in nine locations, four in north-east England and five in London and the south of England. Potential participants were surveyed in three custody suites within police stations, three prisons and three probation offices. Ethics permission was sought and granted by the NHS Research Ethics Committee, 07/MRE12/18.

Staff in each location were trained in conducting the survey and research staff were available in case of questions or queries. Staff in each location assessed participants for eligibility and those who were eligible completed the survey immediately after consent. Potential participants were considered eligible if they were aged 18 years or more, alert and

orientated, resident in England and able to read and write English sufficiently to complete the survey. Eligible participants were asked to provide full consent prior to embarking on the survey.

The order of presentation of FAST and M-SASQ was randomized in advance by a secure remote randomization service using a block randomization procedure stratified by criminal justice setting. Sealed survey envelopes with either FAST followed by M-SASQ or *vice versa* were distributed to each centre.

## INSTRUMENTS USED IN THE ANALYSIS

Demographic variables included age, gender, ethnicity, marital status and education. Data were also collected on the participant's relevant offence category.

Screening tools consisted of the M-SASQ and FAST. The M-SASQ is a single item screening tool that asks 'How often do you have X or more standard drinks on one occasion?' where X is six for females and eight for males, with monthly, weekly or almost daily considered as a positive screen (Canagasaby and Vinson, 2005). FAST (Hodgson *et al.*, 2002) is a four-item, two-stage screening tool with established sensitivity and specificity in health settings (Hodgson *et al.*, 2002). The first question of FAST is similar to M-SASQ but where a response of weekly or almost daily is considered a positive screen. Those who respond less than monthly or monthly are then asked a further three questions derived from AUDIT: frequency of inability to remember events due to drinking, frequency of a failure to do as expected due to drinking and expression of concern by a doctor or health professional. A total score of 3 or more is indicative of a positive screen. The 'gold-standard' comparison for the screening instruments was the AUDIT (Saunders *et al.*, 1993) with a score of 8 or more indicating a positive screen for hazardous alcohol use and a score of 16 or more indicating harmful or possibly dependent consumption (Saunders *et al.*, 1993). AUDIT has been established as a valid and reliable screening tool in adult populations and is more reliable than established screening tools in UK offender populations (Newbury-Birch *et al.*, 2009b). While a small study has questioned the test re-test reliability of AUDIT in prison populations (Maggia *et al.*, 2004) it is the most widely used tool for identifying problematic alcohol use in alcohol programmes in offender settings in the UK (Parkes *et al.*, 2011). All screening tools were presented with a visual guide to interpret a standard drink, where a standard drink was the equivalent of 8 g of ethanol.

In addition, participants were asked to complete the Euroquol (EQ5D) (Rabin and Charro, 2001), Readiness to Change Questionnaire (RCQ-TV) (Heather *et al.*, 1993) and a short service use questionnaire. The EQ5D is a short, five-item, health utility questionnaire widely used to assess an individual's overall health status on a scale from 0 to 1, where higher scores indicate better health status. The RCQ measures participants' motivation to change drinking behaviour on three sub-scales; pre-contemplation, contemplation and action and allows an individual to be assigned a specific stage of motivation to change. The service use questionnaire was derived from questionnaires used in other studies of a similar population (UKATT, 2005). It measured the

frequency of use of health, social care and criminal justice resources in the previous 6 months.

In order to explore the feasibility of intervening in this population, we asked participants how useful they would find a range of interventions: a chat about alcohol use now, 5 min of structured advice from a member of staff on how to reduce drinking and 20 min of counseling by a health professional in the next few days about alcohol use. In addition, we asked participants whether they had spoken to anyone about their drinking and whether they had received treatment for alcohol problems, ever and specifically in the last 6 months. Finally, the questionnaire asked clients about their willingness to receive an intervention related to alcohol use problems, and whether they would feel under pressure to comply because of their current circumstances.

### STATISTICAL ANALYSIS

All analysis was conducted in PASW18. For an overview of the sample, descriptive statistics are presented as means and standard deviations for continuous variables and proportions for categorical variables. In order to explore potential settings for screening and intervention, the proportion of those who were eligible and screened positive were derived for each setting. We explored differences between those that were AUDIT positive and AUDIT negative in terms of demographics, health status and service utilization using analysis of variance for continuous variables and a non-parametric equivalent when the assumption of normality was not met. Categorical variables were analysed using Chi-square statistics.

In order to explore the screening properties of M-SASQ and FAST vs AUDIT as a gold standard, a receiver operator characteristic (ROC) curve analysis was undertaken with AUDIT positive being defined as an AUDIT score of 8 or more. The sensitivity, specificity, positive predictive value and area under the curve (AUC), with 95% confidence intervals, were derived for each of the screening instruments compared with AUDIT.

### RESULTS

A total of 592 potential participants were approached: 120 in police custody suites, 420 in prison and 52 in probation offices. Randomization of the questionnaires was such that 297 (50.2%) received questionnaires with M-SASQ preceding FAST and 295 (49.8%) *vice versa*; this proportion was similar across settings. Of the 592 approached, 251 (42%) were eligible and a greater proportion was eligible in probation settings (92%) than either police custody (35%) or prison (35%). The major reason for ineligibility was not being alert and orientated due to intoxication due to alcohol or other drugs in police settings and being unable to read or write English in prison settings. A total of 205 (82%) of those eligible consented to be screened and this was higher in prison (94%) than either probation (88%) or police (29%) settings. When we considered the numbers consenting to be screened as a proportion of those originally approached, this was far higher in probation (81%) than either prison (36%) or police settings (10%).

Demographics of those eligible and consenting are provided in Table 1. The mean age was 31 years (SD 9.9), and the majority male (56.6%), white (79.5%) and single (64.9%). Only 14.6% was educated to degree level or above. The mean AUDIT score was 19.9 (SD 13.5) and 149 (73%) scored 8 or more on AUDIT. Of these, 38 (25.5%) were classed as hazardous alcohol users and 111 (74.5%) were classed as harmful or possibly dependent alcohol users with the AUDIT scores 16 or more.

Differences between AUDIT negative and AUDIT-positive participants were explored using the non-parametric analysis. Results are presented in Table 2. Those AUDIT positive reported significantly lower EQ5D scores (0.67 vs 0.94;  $P > 0.01$ ). In terms of service utilization in the previous 6 months, those who were AUDIT positive reported on average significantly more: attendances at emergency departments (1.74 vs 0.16;  $P < 0.001$ ), nights as a hospital inpatient (1.91 vs 0.04;  $P < 0.001$ ), hospital outpatient appointments (0.94 vs 0.18;  $P = 0.03$ ), social worker visits (0.39 vs 0.06;  $P = 0.01$ ), arrests (4.25 vs 1.02;  $P < 0.001$ ) and days in magistrate courts (3.18 vs 1.10;  $P < 0.01$ ). In terms of offence categories, those who were AUDIT positive were significantly more likely to have been involved in violent offences (36.5 vs 9.4%;  $P < 0.001$ ) and significantly less likely to be involved in offences involving property (27.7 vs 45.3%;  $P = 0.03$ ).

Table 1. Demographic profile of those eligible and consenting ( $n = 205$ )

| Variable                       |            |
|--------------------------------|------------|
| Mean age in years (SD)         | 31.1 (9.9) |
| Male $n$ (%)                   | 117 (56.6) |
| White $n$ (%)                  | 164 (79.5) |
| Single $n$ (%)                 | 154 (64.9) |
| Educated beyond age 16 $n$ (%) | 30 (14.6)  |

Table 2. Health status, service utilization in the past 6 months and offences by AUDIT status

| Variable                               | AUDIT positive | AUDIT negative | $P$ -value |
|--|----------------|----------------|------------|
| Mean EQ5D Score (SE)                   | 0.67 (0.03)    | 0.94 (0.03)    | <0.01      |
| Mean ED appointments (SE)              | 1.74 (0.24)    | 0.16 (0.07)    | <0.01      |
| Mean inpatient nights (SE)             | 1.91 (0.49)    | 0.04 (0.25)    | <0.01      |
| Mean outpatient appointments (SE)      | 0.94 (0.16)    | 0.18 (0.17)    | <0.01      |
| Mean GP appointments (SE)              | 3.37 (0.42)    | 2.16 (0.57)    | 0.38       |
| Mean GP home visits (SE)               | 0.12 (0.08)    | 0.09 (0.02)    | 0.52       |
| Mean practice nurse visits (SE)        | 0.70 (0.14)    | 0.48 (0.17)    | 0.17       |
| Mean nurse home visits (SE)            | 0.23 (0.18)    | 0.04 (0.02)    | 0.17       |
| Mean social worker visits (SE)         | 0.39 (0.13)    | 0.06 (0.04)    | <0.01      |
| Mean number of arrests (SE)            | 4.25 (0.48)    | 1.02 (0.14)    | <0.01      |
| Mean magistrate court appearances (SE) | 3.18 (0.31)    | 1.10 (0.17)    | <0.01      |
| Mean Crown court appearances (SE)      | 0.55 (0.15)    | 0.63 (0.31)    | 0.99       |
| Mean days in prison (SE)               | 20.7 (4.71)    | 17.7 (6.15)    | 0.79       |
| Offence categories %                   |                |                |            |
| Violence                               | 36.5           | 9.4            | <0.01      |
| Public order                           | 4              | 0              | 0.33       |
| Breach                                 | 22.3           | 13.2           | 0.23       |
| Property                               | 27.7           | 45.3           | 0.03       |
| Motoring                               | 10.8           | 7.5            | 0.6        |
| Drugs                                  | 12.2           | 22.6           | 0.08       |

Table 3. Sensitivity, specificity, positive predictive value and AUC for M-SASQ and FAST vs AUDIT score &gt;8

|                                    | M-SASQ            | FAST              |
|------------------------------------|-------------------|-------------------|
| Sensitivity (95% CI)               | 0.91 (0.87; 0.95) | 0.96 (0.93; 0.98) |
| Specificity (95% CI)               | 0.69 (0.63; 0.75) | 0.78 (0.72; 0.84) |
| Positive predictive value (95% CI) | 0.89 (0.85; 0.93) | 0.92 (0.88; 0.96) |
| AUC (95% CI)                       | 0.92 (0.87; 0.97) | 0.97 (0.95; 0.99) |

ROC curves were plotted for FAST and M-SASQ compared with the AUDIT score of 8 or more as a gold standard. FAST had a greater sensitivity (0.96 vs 0.91), specificity (0.78 vs 0.69), positive predictive value (0.92 vs 0.89) and AUC (0.97 vs 0.92) than M-SASQ, but these differences were not statistically significant (Table 3).

Of those who were AUDIT positive, 63% had sought advice about their alcohol use in the past and 55% had sought advice in the past 6 months. Advice from family members had been sought by 45% of those positive and 33% had sought advice from offender managers compared with 10% from the police and 12% from prison staff. When asked what they would consider useful in terms of intervention, 78% of AUDIT positives considered it would be useful to have immediate advice about alcohol use, 76% would be willing to receive 5 min of advice from a member of staff and 77% would be willing to receive 20 min of counseling by a specialist in the very near future. When asked whether they would feel coerced to engage in an intervention for their alcohol use, 125 (74%) responded no. In terms of readiness to change, the majority, 87 (54%) was in the contemplation stage with 47 (29%) in the action stage and 26 (16%) in the pre-contemplation stage.

## DISCUSSION

More participants were surveyed in prison settings than either police or probation settings and this reflected the differential throughput of participants in the settings taking part in the survey. The main aim of this study was to explore the feasibility and acceptability of alcohol screening and brief interventions in criminal justice settings. In order to explore this, we first wanted to identify the most appropriate setting to implement universal screening and interventions. While the prevalence of problematic alcohol use was similar across the three settings, differences were observed across the three settings in terms of the numbers approached who were eligible and the numbers eligible who were willing to consent. When we look at the numbers who screen positive as a proportion of those initially approached, probation services provide more optimal settings than either prison or police custody suites. Police custody suites were busy and often chaotic environments and screening at busy times was difficult in these environments, a finding echoed in other evaluations (Sharp and Atherton, 2006). A further disadvantage related to reasons for ineligibility, with large numbers of those in custody suites ineligible because of intoxication by alcohol or other substances and many in prison settings ineligible due to an inability to read or write English. Further, the enforced abstinence of the prison setting make them less appropriate for interventions aimed at resolving ambivalence

and increasing motivation to reduce consumption. The high prevalence of harmful and dependent alcohol consumption, and the confined environment, make prison settings better placed to implement more intensive, tailored intervention approaches. Those in probation settings were more likely to be eligible to be screened using an established, psychometrically valid screening instrument, they were more likely to consent and across all settings those who screened positive and had sought advice regarding their alcohol use, the source of advice was more likely to be offender managers than prison staff, suggesting that offender managers were perceived as a more legitimate source of advice regarding alcohol use issues. Encouragingly, as found elsewhere (Brown *et al.*, 2010), three quarters of participants said they would not feel coerced into receiving an intervention.

The performance of shorter screening instruments, FAST and M-SASQ, was tested using ROC curves and both shorter variants were found to have acceptable screening properties when compared with AUDIT and can be considered acceptable shorter screening instruments in these busy settings.

The prevalence of problematic alcohol use in this sample was, as anticipated by previous studies (Newbury-Birch *et al.*, 2009b; MacAskill *et al.*, 2011), far higher than in the general population, with 73% scoring positive on AUDIT and 53% scoring at harmful and possibly dependent levels. In terms of overall health, those AUDIT positive had significantly worse self-reported health status. In addition, they were also greater consumers of acute hospital services, particularly emergency departments and inpatient stays, but had similar use of primary care services as those AUDIT negative. Those AUDIT positive had more involvement with social services and had more arrests and days in court than those AUDIT negative. In terms of offences, those AUDIT positive were significantly more likely to have been involved in crimes involving violence and significantly less likely to have been involved in crimes involving property. There is clear evidence that this population has high levels of alcohol use problems and that this is associated with worse physical and mental health and increased criminal activity. Universal screening and brief interventions targeted towards this population have the potential not only for health gain and reductions in re-offending and the associated economic costs but also for reducing wider societal impact of their offending.

Those identified as having problematic alcohol use expressed positive attitudes towards receiving treatment, either very minimal, brief or extended brief interventions, and the majority of those positive were either in a contemplation or action stages of change with respect to their alcohol consumption.

This study adds to the evidence of a major problem with alcohol use in the English criminal justice system and the relationship between alcohol use, health, service use and offending behaviour. The study also provides some indication that probation settings may be the more appropriate setting to deliver screening and brief interventions in terms of the feasibility, operationalization and acceptability on the part of participants.

The reported study is not a study of effectiveness and there may still be concerns regarding the appropriateness of brief interventions for a population with severe and entrenched alcohol use problems. The next step in this programme of research will be to establish how effective and

cost-effective different intensities of brief interventions, delivered by offender managers in probation settings, are in reducing alcohol consumption and alcohol-related problems (Newbury-Birch *et al.*, 2009a).

When considering limitations to the study the sample is heterogeneous in terms of both settings and clients. Large numbers were ineligible in police settings because of intoxication and these may be of greater need of intervention. In addition, in prison settings, literacy and language were significant barriers. The study aimed at taking a pragmatic view of screening in different settings. The survey was conducted by actual staff in each setting as part of their usual practice and reflects what would occur if it was rolled out in practice. The remit of the study did not cover exploration of organizational factors that may hinder or facilitate screening in these different settings and further work may highlight different approaches to increase screening and intervention activities in a variety of criminal justice settings.

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