



<b>Title</b>	Psychosocial Interventions for Problem Alcohol Use in Primary Care Settings (PINTA): Baseline Feasibility Data
<b>Authors(s)</b>	Klimas, Jan, Henihan, Anne Marie, McCombe, Geoff, Bury, Gerard, Cullen, Walter, et al.
<b>Publication date</b>	2015-05-18
<b>Publication information</b>	Klimas, Jan, Anne Marie Henihan, Geoff McCombe, Gerard Bury, Walter Cullen, and et al. "Psychosocial Interventions for Problem Alcohol Use in Primary Care Settings (PINTA): Baseline Feasibility Data." Taylor and Francis, May 18, 2015. <a href="https://doi.org/10.1080/15504263.2015.1027630">https://doi.org/10.1080/15504263.2015.1027630</a> .
<b>Publisher</b>	Taylor and Francis
<b>Item record/more information</b>	<a href="http://hdl.handle.net/10197/6614">http://hdl.handle.net/10197/6614</a>
<b>Publisher's statement</b>	This is an electronic version of an article published in Journal of Dual Diagnosis, 11(2): 97-106 (2015). Journal of Dual Diagnosis is available online at: <a href="http://www.tandfonline.com/doi/abs/10.1080/15504263.2015.1027630">www.tandfonline.com/doi/abs/10.1080/15504263.2015.1027630</a> .
<b>Publisher's version (DOI)</b>	10.1080/15504263.2015.1027630

Downloaded 2026-05-02 01:15:14

The UCD community has made this article openly available. Please share how this access benefits you. Your story matters! (@ucd\_oa)



© Some rights reserved. For more information

**Psychosocial Interventions for Problem Alcohol Use among People who Attend Primary Care for Substance Use Treatment (PINTA): Baseline Data from Feasibility Study**

Klimas, J. (PhD, MSc)<sup>1,3</sup>, Henihan, A.M. (PhD)<sup>2</sup>, McCombe, G. (PhD)<sup>2</sup>, Swan, D. (PhD)<sup>2</sup>, Anderson, R. (BSc)<sup>4</sup>, Bury, G. (MD, MB, BCh, BAO, MRCPGP, FRCPI)<sup>1</sup>, Dunne, C. (BSc, PhD, MBA)<sup>2</sup>, Keenan, E. (MRCPsych, MB, BCh, BAO)<sup>5</sup>, Saunders, J. (BA, BSc, MSc, PhD)<sup>2,6</sup>, Shorter, G.W.<sup>7</sup> (PhD), Smyth, B.P. (MRCPsych, MB, BCh, BAO)<sup>5,8</sup>, Cullen, W. (MD, MB, BCh, BAO, MRCPGP, MICGP)<sup>1\*</sup>

<sup>1</sup>UCD School of Medicine and Medical Science, Coombe Healthcare Centre, Dolphins Barn, Dublin 8, Ireland

<sup>2</sup> Graduate Entry Medical School, Faculty of Education & Health Sciences, University of Limerick, Limerick, Ireland

<sup>3</sup>Addiction & Urban Health Research Initiative, University of British Columbia, 611 Powell Street, Vancouver, BC, V6A 1H2, Canada

<sup>4</sup>Suite 201, 15, Harcourt Street, Dublin 2, Ireland

<sup>5</sup>Addiction Services, Health Services Executive, Dublin, Ireland

<sup>6</sup>CSTAR centre, University of Limerick (UL), Limerick, Ireland

<sup>7</sup>Bamford Centre for Mental Health & MRC All Ireland Trials Methodology Hub, University of Ulster, Londonderry, Northern Ireland

<sup>8</sup>Department of Public Health and Primary Care, Trinity College Dublin, Ireland

\*Address for correspondence: Prof Walter Cullen

School of Medicine and Medical Science

University College Dublin, Dublin, Ireland

Telephone: +353-1-4730893

Fax: +353-1-4544469

E-mail: [walter.cullen@ucd.ie](mailto:walter.cullen@ucd.ie)

*Short title:* Alcohol screening in substance use treatment

*Authors' emails:*

## **Psychosocial INTERventions for Problem Alcohol Use among People who Attend Primary Care for Substance Use Treatment (PINTA): Baseline Data from a Feasibility Study**

Abstract:

Objectives. Primary care is a key provider of long-term care for people who attend primary care for substance use treatment, especially those in methadone maintenance treatment. As many drink alcohol excessively, there is a need to address alcohol use to improve health outcomes. We examined problem alcohol use and its treatment among people who attend primary care for substance use treatment, using baseline data from a feasibility study of an evidence-based complex intervention to improve care.

Methods. Data on addiction care processes were collected by (1) reviewing clinical records (n=129) of people who attended 15 General Practices (GP) for substance use treatment, (2) administering structured questionnaires to both patients (n=105), and General Practitioners (GPs) (n=15).

Results. Clinical records indicated 24 (19%) were screened for problem alcohol use in the 12 months prior to data collection, with problem alcohol use identified in 14 (11%). Of those who screened positive for problem alcohol use, five received a 'brief intervention' by a GP, and none were referred to specialist treatment (SBIRT). Alcohol Use Disorders Identification Test (AUDIT) scores revealed the prevalence of hazardous, harmful and dependent drinking to be 23%, 5%, and 16% respectively; intraclass correlation coefficient (ICC) for the proportion of patients with negative AUDITs was 0.038 (Standard Error 0.01). The ICCs for SBIRT were 0.16 (SE= 0.014), -0.06 (0.017), and 0.22 (0.026) for screening, brief intervention and referral, respectively. Only 12 (11.5%) AUDIT questionnaires concurred with corresponding clinical

records that a patient had any/ no problem alcohol use. Regular use of primary care was evident, as 25% had attended their GP more than 12 times during the past three months.

Conclusions. Comparing clinical records with patients' experience of SBIRT can shed light on the process of care. Alcohol screening of people who attend primary care for substance use treatment is not routinely conducted. Interventions that enhance the care of problem alcohol use among this high-risk group are a priority.

*Key words:* alcohol, SBIRT, opioids, agonist treatment, methadone, family medicine, implementation

# **Psychosocial INTERventions for Problem Alcohol Use among People who Attend Primary Care for Substance Use Treatment (PINTA): Baseline Data from a Feasibility Study**

## **Introduction**

Problem alcohol use is common among people who attend primary care for substance use treatment (Ryder et al., 2009; Staiger, Richardson, Long, Carr, & Marlatt, 2013) and increases the likelihood of developing further complications (Darke & Zador, 1996) especially those related to chronic hepatitis C infection (Ostapowicz, Watson, Locarnini, & Desmond, 1998). It ~~reduces the effectiveness of~~ complicates the treatment of dependence (Bickel & Amass, 1993; Kreek, 1981) and delays successful recovery (Piz et al., 2011). Problem alcohol use is a considerable economic burden on health services (Tariq, van den Berg, Hoogenveen, & van Baal, 2009). The World Health Organisation estimated alcohol use disorders, depression and psychoses, ~~are amongst~~ cause the most ~~important causes of~~ disability globally, accounting for approximately one third of “years lost to disability” (World Health Organization, 2008). In Europe, Ireland has one of the highest use of heroin (EMCDDA, 2014), and co-morbid substance use disorders are common (EMCDDA, 2013). In Ireland, over 9000 people receive opioid agonist treatment (Farrell & Barry, 2010), and around 35% of people who ~~attend~~ receive it in primary care ~~for substance use treatment~~ have problematic alcohol use (Ryder et al., 2009).

Estimating the extent of the problem is further hindered by the common underreporting of alcohol problems and poor agreement between different data sources. Alcohol problems may be overlooked and underestimated in special specific patient groups, such as people with Hepatitis C infection or older adults (Roux et al., 2011; Towers et al., 2011). When compared with standardised patient reports, clinicians’ records have been shown to underestimate quality of care

for common outpatient general medical conditions (Kim et al., 2013; Luck, Peabody, Dresselhaus, Lee, & Glassman, 2000). Because it's possible that the records may under-report the true process of care delivered (Kim et al., 2013), data triangulation with validated questionnaires completed by patients and General Practitioners (GPs) seems warranted.

~~Despite the prevalence of substance use disorders, staff attitudes towards working with substance users across health services in Europe were found to be less positive than working with patients who had other health conditions~~

There is a wealth of international guidance to inform best practice in the management of alcohol use disorders by healthcare professionals in general medical settings (Babor & Higgins-Biddle, 2001; Center for Substance Abuse Treatment, 1994; Fiellin, Reid, & O'Connor, 2000; Gordon & Alford, 2012; McKnight-Eily et al., 2014). The advice recommends screening everybody using standardised brief instruments, confirming problem alcohol use with the Alcohol Use Disorders Identification Test - 'AUDIT' questionnaire (Babor & Higgins-Biddle, 2001), providing feedback on results in all cases identified as positive, counselling on minimising alcohol harm, encouraging a reduction in alcohol consumption and initiating referral to specialists when needed. GPs can play a key role in ensuring patients in methadone treatment receive alcohol screening, and, if they sScreen positive, either deliver a Brief Intervention, or Refer to Treatment (i.e., SBIRT) (Babor & Higgins-Biddle, 2001). Studies of SBIRT in addiction clinics have indicated positive effects (Darker et al., 2012; Feldman, Chatton, Khan, Khazaal, & Zullino, 2011). However, implementation of alcohol SBIRT in opioid agonist treatments has been slow (Field, Klimas, Barry, Bury, Keenan, Smyth, et al., 2013; Klimas et al., in Press) with

organisational, practitioner, and patient barriers hindering such practices (Klimas, Field, Barry, et al., 2012).

A recent postal survey of all GPs prescribing methadone in Ireland estimated 75% screen these patients for alcohol; a preceding interview study with patients identified a need for an intervention to improve care of problem alcohol use (Field, Klimas, Barry, Bury, Keenan, Lyons, et al., 2013; Field, Klimas, Barry, Bury, Keenan, Smyth, et al., 2013). The Problem Alcohol/ Drug Use Guideline Development Group (PADU-GDG) developed clinical practice guidelines for alcohol SBIRT among people who attend primary care for substance use treatment, identifying an ~~appropriate~~ implementation strategy and piloting an educational intervention to support ~~care of problem alcohol and drug users in primary care in Ireland~~ the strategy (Klimas, Cullen, & Field, 2014; Klimas, Lally, et al., 2014). These guidelines were derived from scientific evidence (Klimas, Tobin, et al., 2014), and (where evidence was limited), consensus among the PADU-GDG expert group. The advice included: (1) Definition of problem alcohol use among people who attend primary care for substance use treatment; (2) Screening / identification of problem alcohol use; (3) Brief intervention; (4) ~~Consider +~~ Referral to secondary care service; (5) Predictors of referral to specialist services; (6) Management of persistent problem alcohol use in primary care; (7) After care and relapse prevention.

Given the high prevalence of problem alcohol use amongst people who attend primary care for substance use treatment, this paper ~~aimed to examine~~ the problem ~~alcohol use among people who attend primary care for substance use treatment~~, using baseline data from GP's, patients and

their clinical records ~~gained~~collected as part of a feasibility study of an evidence-based complex intervention.

## Methods

### Setting

The study sites were 16 methadone prescribing GP practices, located in two of Ireland's Health Services Executive (HSE) regions; the Midwest, and Dublin Mid-Leinster regions. While Dublin leads in drug use and treatment estimates, ~~Although recent data estimate that over 14,000 people use illicit opioids in the latter region and that 85% of people seek treatment for opioid addiction in that region, it is increasingly recognised that~~ problem drug (especially poly-drug-use) use is increasing in prevalence in regions outside Dublin (O'Brien, Moran, Kelleher, & Cahill, 2000).

~~To prescribe methadone, GPs are subject to clinical audit and must complete special training, with GPs providing methadone treatment for 15 or more patients subject to more regular audit and advanced training (Keenan & Barry, 1999). GPs who prescribe methadone for less than 15 patients are referred to as "level 1 GPs" and those prescribing for 15 or more as "level 2 GPs". Initiation of methadone treatment and management of patients with more complex medical and psychosocial problems (including alcohol dependence), are only permitted by specialist addiction treatment services or by "Level 2 GPs can start people on methadone and treat more complex cases."~~

### Subjects

One hundred and forty nine practices were invited to participate (~~n=149~~) which included all practices in the two regions who were *either* involved in previous ~~related~~ research with our group

(Cullen, Bury, Barry, & O'Kelly, 2000; Cullen, Bury, Barry, & O'Kelly, 2003; Cullen, Bury, & Langton, 2000; Cullen, Bury, & O'Kelly, 2001; Cullen, O'Brien, O'Carroll, O'Kelly, & Bury, 2009; Cullen et al., 2006; Ryder et al., 2009; Swan et al., 2010), or affiliated with two of Ireland's six medical schools (Cullen, 2012; Ni Chroinin et al., 2012). Practices were eligible to participate if they were registered to prescribe methadone and had at least 10 patients currently receiving addiction-related care. Of the ~~149~~ 149 eligible practices that accepted the study invitation (n=19), we selected 16 practices using stratified random sampling. As only 12% of those invited to participate actually agreed to participate, the study had a strong volunteer bias. Previous research has shown that GPs who seek special training for addiction issues are more likely to have positive attitudes towards, and to be already involved in the care of this population (Strang, Hunt, Gerada, & Marsden, 2007). The PINTA feasibility study was designed to recruit half the allocated practices as part of an external pilot study (i.e., 16 of the final 32 practices needed to detect the statistically significant difference proposed). The stratification ratio, although planned to be equal in both regions, was changed to reflect the higher response rate in the Mid-Leinster region (with two practices recruited from the Midwest and 14 from Dublin Mid-Leinster).

Each participating practice had an intensive period of consecutive patient recruitment; this approach was found most effective in previous research in primary care (Swan et al., 2010). The researchers instructed the doctors to recruit 10 consecutive patients who were aged 18 or over, receiving addiction treatment /care (e.g., methadone), and attending a participating general practice for general medical care. Patients were excluded from the study if they had language difficulties (i.e., unable to speak, read and write English sufficiently well to complete study

questionnaires), were acutely intoxicated, and / or were cognitively impaired (including severe mental health illness) to the extent that they were unable to provide informed consent to participate.

Of the 16 randomised practices, three dropped out. One practice did not recruit any patients; one practice ceased communication with the study team due to long-term illness shortly after baseline data collection; and one practice did not ~~participate in the educational session~~ attend ~~training~~. Therefore, data are presented on 13 practices (129 charts and 105 patient reports), in this paper. Fifteen GPs (out of 16) ~~posted~~ returned their self-completed questionnaires ~~back to researchers~~. At recruitment, all practices were required to have at least 10 patients on methadone maintenance treatment, which was presumed sufficient to facilitate successful recruitment.

However, at the time data were collected, ~~one-six~~ practices recruited ~~only one patient and five practices recruited only under~~ six ~~or less~~ patients ~~on methadone maintenance treatment~~. Figure 1 illustrates the recruitment of practices.

<insert Figure 1 here>

### **Data collection**

Demographic details and data on primary/secondary outcome measures were collected by patients completing study instruments; in person (5%), or by phone (95%), and by reviewing clinical records. Each patient record was reviewed by one of four researchers independently. Most practices had electronic medical records, but used three different software packages. Health care professionals ~~at participating practices~~ completed a postal questionnaire on practice/professional details, experience of training, and ~~their~~ attitudes. The study protocol provides more details in this regard (Klimas et al., 2013).

*Shortened Alcohol and Alcohol Problems Perceptions Questionnaire* measured general practitioners' attitudes to alcohol problems with 10 statements, using a seven-point agreement scale from strongly agree to strongly disagree, e.g., "I feel I can appropriately advise my patients about drinking and its effects (Anderson & Clement, 1987)." Lower scores indicate more negative attitudes (from 10 to 70).

A four-item *Medical Outcomes Study, Social Support Survey* (MOS-SSS) measured patients' anticipated social support (Stewart, Hays, & Ware, 1988). Higher scores indicate higher levels of support (from four to 20).

*Urinalysis* data abstracted from clinical records included results of the last test (Positive/Negative/ Unknown/ If positive, what), and number of tests in the last month. [Due to the inconsistencies of urinalysis recording and frequency among practices, this data was not statistically compared with the patient self-reports.](#)

*SBIRT rates* as reported by GPs, patients and documented in the clinical records, in the last 12 months, were compared. Clinical records were abstracted to retrieve whether alcohol was i) Screened/ discussed, ii) P.A.U. (problem alcohol use) Identified, iii) Advised/ B.I. (brief intervention), and iv) Referred to other agency. The researchers used the following codes: Yes/ No/ Unknown/ If Yes, how.

GPs were asked the following Yes/ No questions about SBIRT: a) Do you screen for alcohol use? b) Do you discuss the risks of alcohol use with all patients receiving methadone? c) Do you perform brief interventions (i.e. brief advice and counselling) for problem alcohol use with patients receiving methadone? d) Do you refer patients receiving methadone to specialist care for problem alcohol use?

To ensure comparability between GP and patient reports, we asked patients similar questions, specifically: a) Have you ever been asked about your alcohol use by healthcare professionals? b) Did they advise you on safe drinking or talk to you about alcohol? c) Have you ever been referred to a specialist/ addiction counsellor for alcohol use? We are aware that having a 'discussion' is not the same as a [Brief Intervention](#). Therefore, rates and comparisons reported in Table 3 below should be taken with caution.

### **Human Subjects Protection**

Ethical approval was provided by the Irish College of General Practitioners' Research Ethics Committee. During the intensive, two-week period of consecutive patient recruitment, the GPs informed the potential participants of study objectives and procedures, gave them a study information leaflet and asked to sign an informed consent. Researchers collected signed consent forms from GPs and telephoned patients directly. The study was conducted in accordance with relevant ethical standards, the Helsinki Declaration of 1975, as revised in 2000.

### **Data analysis**

Means, frequencies and percentages were calculated using Statistical Packages for the Social Sciences (SPSS) version 20.0. To account for potential cluster effects in the future definitive trial, we calculated an intraclass correlation coefficient for the primary and secondary study outcomes, using ~~the data from~~ baseline patient questionnaires. We used the methods presented by Donner and Klar for binary and continuous variables. An estimate of the mean squares needed for calculation was calculated using the results of a one way ANOVA (Donner & Koval, 1982; Reading, Harvey, & McLean, 2000).

### **Results**

### **Sample characteristics**

The sample of patients that participated in the study was similar to the sample of patients receiving methadone in the national study reporting prevalence of problem alcohol use (Ryder et al., 2009) (see Table 1).

<insert Table 1 here>

Sixty-seven (64%) participants were male and the mean age of the sample was 40.7 years old (SD=8.9) years. Please see table two for detailed sample characteristic.

<insert Table 2 here>

### **Screening and intervention for problem alcohol use.**

The review of medical records found completed alcohol screens for 24 (19%) patients, of note, three (20%) GPs stated they used validated questionnaires. Of those screened alcohol positive, five had been delivered a psychosocial intervention by a general practitioner, and none had been referred to a specialist. Patient questionnaires with AUDIT (n=105) found 44% (n=46) prevalence of problem alcohol use (i.e., AUDIT >7); hazardous, harmful and dependent drinking was 23%, 5% and 16%, respectively. The intraclass correlation coefficient (ICC) for the proportion of patients with negative AUDITs was 0.038 (Standard Error 0.01). Reports from 12 (11.5%) AUDITs and clinical records agreed about problem alcohol use (see Table 2).

The healthcare professional questionnaires found that 12 (75%) GPs screened for alcohol use, 13 (81%) discussed the risks of alcohol use, and/or performed brief interventions with all patients

receiving methadone. The patient questionnaires found completed alcohol screening for 62 (59%) of the 105<sup>4</sup> recruited patients; 47 (36%) reported having a discussion about alcohol with their doctor or a healthcare professional. Please see table three for a comparison of data from clinical records and patients. The rates and comparisons reported in table three below should be taken with caution due to differences in SBIRT definitions and clinical record-keeping.

<insert Table 3 here>

### **Subsequent care of patients with alcohol use disorders**

Of the 46 charts of patients with positive AUDIT scores, four (9%) had evidence of being advised on reducing their alcohol consumption; none had been referred to a specialist. In contrast, 19 (15%) out of the 105 interviewed patients recalled a referral to a specialist treatment for alcohol use disorders. Nine (56%) GPs reported that they refer patients receiving methadone to specialist care for problem alcohol use. Of the 29 patients with AUDITs indicating hazardous (24) or harmful (5) drinking, 12 (50%) did not report a "discussion" with their GP about alcohol. Of the 17 patients with AUDITs indicating alcohol dependence, 12 (71%) did not recall a referral to specialist treatment. Electronic Medical Records documented fewer "discussions" (4) and referrals (1) to eligible patients. The intraclass correlation coefficients (ICC), and Standard Errors (SE) for the SBIRT rates were 0.16 (SE= 0.014) in respect of alcohol screening in general practice; -0.06 (0.017) in respect of brief interventions by GPs; and 0.22 (0.025) in respect of referral of patients with alcohol dependence to a specialist treatment, findings consistent with the ICC used to determine sample size for the future definitive trial (Kaner et al., 2013; Klimas et al.,

2013). Table four details the process of alcohol screening, brief intervention and/or referral to treatment (SBIRT) by category of AUDIT from patient telephonic questionnaires.

<insert Table 4 here>

## Discussion

~~This study~~ We examined the ~~approach undertaken by GPs to explore and respond to~~ management of problem alcohol use among people who attend primary care for substance use treatment in 2014. It showed that interviews with patients are likely to provide a higher estimate of ~~care~~ process measures SBIRT than ~~data from~~ electronic medical records (EMR).

The AUDIT questionnaires suggested that 44% of people who attend primary care for substance use treatment might have problem alcohol use, which is slightly higher than previous meta-analyses and cross-sectional surveys in primary care or specialty addiction settings (Hartzler, Donovan, & Huang, 2010; Ryder et al., 2009). Similar to preliminary evidence from a qualitative prequel to this study (Field, Klimas, Barry, Bury, Keenan, Smyth, et al., 2013), 59% patients reported being screened for problem alcohol use indicating willingness to report about alcohol or utility of the questions chosen for both studies. The chart reviews suggested that 11% of people who attend primary care for substance use treatment may have problem alcohol use; considerably lower than in the patients' questionnaires. Potential reasons for this are poor record keeping, underutilisation of validated questionnaires, or "fear of antagonizing patients over a sensitive personal issue" (Babor & Higgins-Biddle, 2001).

Patients' charts documented 19%, 3% and 2% rates of screening, brief intervention and referral to specialist services, respectively. In contrast, the GP questionnaires suggested that 75% of GPs screen for problem alcohol use, but only three used validated instruments – a finding consistent with previous studies (Field, Klimas, Barry, Bury, Keenan, Lyons, et al., 2013). This could

mean that they don't know about the validated questionnaires, such as AUDIT, or that these tests are too long in a consultation. ~~and s~~ Shorter versions, such as AUDIT-C or the Fast Alcohol Screening Test (FAST), are needed.

GPs reported 81% rates of brief interventions and 56% referred patients to specialist services.

With respect to illicit drug use, at least half of the sample ~~was~~ tested positive for drugs other than methadone. Higher than patient interviews, ~~T~~ this suggests substantial under reporting of drug use by patients during the ~~self-reported~~ telephone interviews ~~calls~~. Alternatively, it may possibly reflect significant prescribing of benzodiazepines to this group but this is not reported. In contrast to illicit drugs, patients reported higher drinking than what was recorded in their charts. This could be due to the way we explained the study to them, or their perception of alcohol as less harmful compared to illicit drugs, or better record keeping by GPs when it comes to illicit drugs (Roux et al., 2011).

There was a high disagreement between data from patients, their GPs and medical records about the provision of alcohol SBIRT. For example, only 18% GPs and charts agreed about problem alcohol use, which suggests that doctors don't feel a need to record alcohol in the medical records or that they treat all substance use disorders together and don't differentiate. Other literature would concur that clinician documenting of screening practices is inadequate (Kim et al., 2013). Patient and GP recollection may have biased these differences too. GPs generally report high rates of SBIRT, as documented in another postal survey of Irish methadone prescribers (N=202) which showed 75%, 49% and 27% rates of screening, brief intervention and referral to specialist services, respectively (Field, Klimas, Barry, Bury, Keenan, Lyons, et al.,

2013). This could reflect the “social desirability” effect of self-report measures, or an informal nature of the SBIRT provided in the daily practice.

Prevalence of problem alcohol use in the current study was slightly higher in comparison with similar studies in Ireland (Darker et al., 2012; Ryder et al., 2009), but not ~~so~~ much higher than meta-analyses [in other settings](#) elsewhere (Hartzler et al., 2010; Staiger et al., 2013). The baseline rates of screening, brief intervention and referral to treatment (SBIRT) reported by patients and abstracted from their matched charts were low, but not surprising given similar results from previous studies in the U.K. and U.S. (Anderson, Laurant, Kaner, Wensing, & Grol, 2004; Kaner et al., 2013; Klimas et al., 2013; Klimas et al., in Press; Muench et al., 2012; Muench et al., 2014). Several reasons might have influenced the low rates.

Implementation of alcohol SBIRT in general practice has been slow (CDC, 2014; Field et al., 2012). The [World Health Organisation](#) identified organisational, patient and provider barriers hindering healthcare innovation that have also been found in implementation initiatives for people who attend primary care for substance use treatment (Babor & Higgins-Biddle, 2001; Klimas, Field, Barry, et al., 2012). For example, lack of time, specialist training/ staff or attitudes. The striking similarity of implementation barriers across populations suggests a common global pattern of response to innovations in healthcare, but some factors are different for people who attend primary care for substance use treatment. A successful innovation often relies on recognition and handling of specificities of a target population. Physicians may think that SBIRT isn't effective for people who attend primary care for substance use treatment due to a lack of quality evidence to support it (Klimas, Field, Cullen, et al., 2012). Organisations

attempting to implement SBIRT into routine care struggle to obtain the ‘buy in’ from senior clinicians (Muench et al., 2012). Despite these barriers, patients do not object to ~~being asked about alcohol use screening~~ and ~~may even~~ see this as a sign that doctors care for them as an individual by addressing issues perhaps beyond the original reason for initiating a consultation (Field, Klimas, Barry, Bury, Keenan, Smyth, et al., 2013).

To date, there has been little guidance on treating problem alcohol use among people who also use other drugs. The prevalence of problem alcohol use found in this study highlights the need for GPs to screen all people who attend primary care for substance use treatment. ~~for problem alcohol use. The regular use of GP practices by people who attend primary care for substance use treatment demonstrates the importance of GPs in the facilitation of alcohol related change through advice on reducing alcohol consumption, or referral to a specialist treatment centre for those with alcohol dependence.~~ Earlier interviews with a sample of 35 GPs in the Dublin area highlighted lack of time, resources, and attitudes of GPs and of patients as the main barriers to effective implementation. GPs and patients identified the provision of additional nursing support, the presentation of guidelines in more convenient formats and raised awareness of problem alcohol use, and related issues, as the main strategies that would facilitate effective implementation (Cullen et al., 2005).

Limitations of this study include potential issues of bias, inconsistency in definitions across the three data sources and lack of generalisability that may arise from the recruitment process. GPs self-selected ~~themselves for the study~~. Only about 12% of those invited to participate actually agreed to participate. It would seem very likely that GPs who are more motivated and interested

in research and innovation will choose to ~~engage in research studies~~ participate. They may not represent ~~their wider colleagues~~ all GPs. They are also likely to adhere more closely to standard guidelines such as SBIRT. One would suspect to find substantially less evidence of SBIRT if GPs were selected randomly.

An additional source of bias is that data were extracted from clinical records. As chart abstraction has been shown to underestimate quality of care for common outpatient general medical conditions when compared with standardised patient reports (Luck et al., 2000), it is possible that the charts may under-report the true process of care delivered (Kim et al., 2013). We addressed this issue by triangulating charts data with validated questionnaires completed by patients and GPs (Anderson & Clement, 1987; Berner, Kriston, Bentele, & Harter, 2007).

~~As~~ While having a 'discussion' about alcohol is not the same as a BI, the rates and comparisons reported in the results should be taken with caution. The clinical guideline, used in this study, has been published in a local medical journal and disseminated at inter/ national conferences before our study commenced, which might have influenced the rate of SBIRT in Ireland. Despite these sources of potential bias, the sample of GPs who participated in the study was ~~similar~~ comparable to those GPs who participated in the national prevalence survey in terms of: level of training and area in which their practice was located (Ryder et al., 2009).

## **Conclusion**

General Practitioners (GPs) report quite good adherence to the standards of screening and brief interventions. About 40% of patients recall no previous conversations with their GPs regarding screening for alcohol problems and this should raise concerns. There is very little evidence in

patients' medical records of screening, brief intervention and referral activity despite the fact that 44% warranted these interventions based on their AUDIT scores.

Developing accessible services to provide people who attend primary care for substance use treatment with adequate care of problem alcohol use is a major challenge. Effective implementation of clinical innovations depends on adopting multi-faceted interventions that target different barriers to change (Grol, 2001). With increasing emphasis on the role of primary care in addiction treatment, further research to determine effectiveness of alcohol SBIRT for concurrent users of illicit drugs is clearly needed. Clear guidelines, education of practitioners, the provision of additional resources, if necessary, and the establishment of policy frameworks are essential for successful implementation.

## **Acknowledgements**

We thank the participating patients, General Practices and members of the PINTA steering committee for their support of this work. Data from this paper were presented at two conferences: the Addiction Health Services Research, October 16, Boston, MA; the Annual meeting of North-American Primary Care Research Network, November 22, NYC.

~~Authors' contributions: JK is lead researcher on the study. WC is Principal Investigator, conceived the study. JK and WC led preparation of the manuscript with a core group of authors (AH, GM, DS). All authors read and approved the final draft of this manuscript.~~

## **Disclosures**

RA has received payment for developing a psychosocial programme for Lundbeck A/S. called Brief cases in 2013-2014. Payments were for developing the programme and for implementation, training and educating primary care professionals. RA is an addiction counsellor, not a medical doctor. BPS received honoraria for speaking at conferences from Shire and Lilly. The other authors report no financial relationships with commercial interest.

## **Funding**

Health Research Board of Ireland funded the study (Grant ID: HRA-HSR-2012-14). JK's work on this paper was part-funded by "ELEVATE: Irish Research Council International Career Development Fellowship – co-funded by Marie Cure Actions (ELEVATEPD/2014/6)".

Table 1. Comparison of current sample with national alcohol prevalence survey

<b>Characteristic</b>	<b>Current study (n=105)</b>	<b>National survey (n=196) (Ryder et al., 2009)</b>
Mean age	40.7 years	32.2 years
Mean age of first drug use	19.8 years	17.0 years
Mean age of first injecting	20.9 years	20.0 years
% male	64%	72%
% (of those screened) who had positive AUDIT	44%	35%

AUDIT = Alcohol Use Disorders Identification Test

Table 2. Baseline sample characteristics ~~by study group~~

<b>Characteristic/ Category</b>	<b>Total (N=105)</b>
Male	67 (64%)
Mean Age (SD)	40.7 (8.9)
Unemployed	97 (92%)
Attends Level 1 GP	39 (37%)
Attends Level 2 GP	66 (63%)
Geographical area of GP:	
East	93 (89%)
West	12 (11%)
Housing:	
Rented	39 (37.1%)
Owned	9 (8.6%)
Family of origin	12 (11.4%)
Social housing	40 (38.1%)
Supported housing	4 (3.8%)
No fixed abode	1 (1%)
Life-time drug use:	
Heroin	103 (98%)
Illicit methadone	78 (74.3%)
Illicit benzodiazepines	77 (73.3%)
Cocaine	99 (94.3%)
Amphetamine	83 (79%)
Cannabis	98 (93.3%)
Heroin onset, mean (SD)	19.8 (5.1)
Ever injected drugs	79 (75%)
Mean age of first injection (SD)	20.9 (4.9)
Past 30-day drug use (self-reported):	Yes = 39 (37%)
Heroin	12 (11.4%)
Illicit methadone	1 (1%)

Illicit benzodiazepines	6 (5.7%)
Cocaine	2 (1.9%)
Amphetamine	0 (0%)
Cannabis	15 (14.3%)
Currently injecting	3 (2.9%)
Current drug use (urinalysis, n=129):	
Negative	8 (6.2%)
Positive (including methadone)	103 (79.8%)
Methadone only positives	42 (32.6%)
Unknown/ missing	18 (13.9%)
Receiving methadone	103 (98%)
Mean age of il-/licit methadone use onset - years (SD)	25.8 (8)
Mean methadone dose (SD)	67.7 (29.3)
Hepatitis C positive (HCV, n=103) <sup>1</sup>	52 (49.5%)
Mean AUDIT score (SD)	9.2 (8.2)
Low-risk drinking	59 (56.2%)
Hazardous drinking	24 (22.9%)
Harmful drinking	5 (4.8%)
Dependent drinking	17 (16%)
Readiness ruler (SD)	2.3 (3.4)
Social support (SD) <sup>2</sup>	15.8 (4.1)
Doctors' Attitudes (n=15) – SAAPPQ (SD)	54.3 (6.7)

[AUDIT = Alcohol Use Disorders Identification Test; SD = Standard Deviation, GP = General Practitioner, HCV = Hepatitis C, SAPPQ = Shortened Alcohol and Alcohol Perception Questionnaire](#)

<sup>1</sup>Test unspecified (e.g., antibody +ve, or PCR +ve)

<sup>2</sup> Four-item Medical Outcomes Study, Social Support Survey (MOS-SSS)

Table 3. Process of alcohol screening, brief intervention and/or referral to treatment in the past 12 months

Process	GP reports (n=16)  (% of total sample)	EMR (n=129)  (% of total sample)	Patient reports (n=105)  (% of total sample)	ICC (SE)
Screening	12 (75)	24 (19)	62 (59)	0.16 (0.014)
Brief Intervention	13 (81)	5 (3)	47 (36)	-0.06 (0.017)*
Referral to treatment	9 (56)	3 (2)	19 (15)	0.22 (0.025)

EMR= Electronic Medical Records, GP= General Practitioner, ICC = intracluster correlation coefficient. While the definitions of "brief intervention" and "screening" mean different things from the different data sources, comparative statistics were not calculated.

\* ICC was negative because the mean square within clusters was larger than the mean squares between clusters.

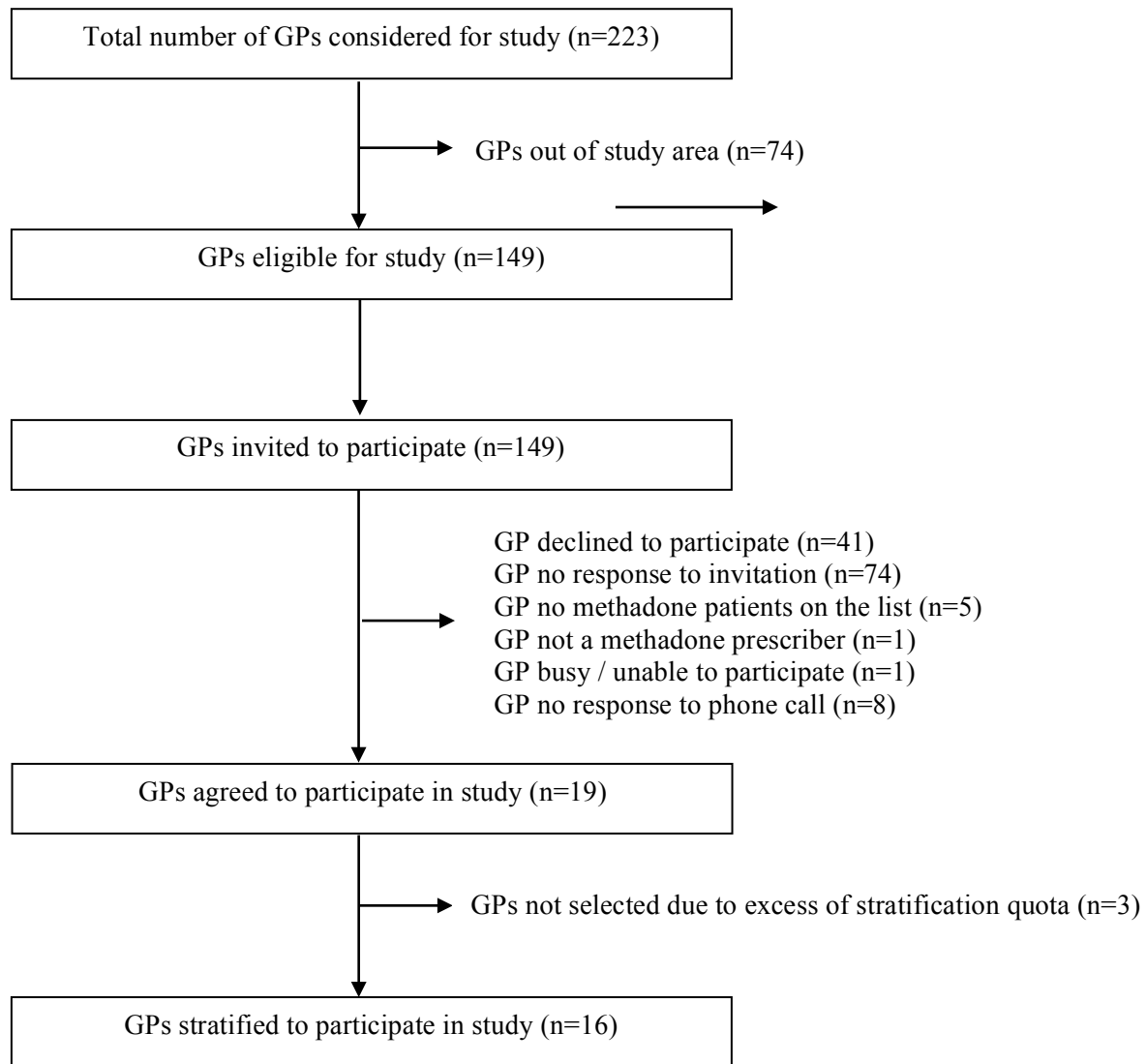
Table 4. Process of alcohol screening, brief intervention and/or referral to treatment (SBIRT) by category of AUDIT from patient telephonic questionnaires versus Electronic Medical Records (EMR)

	AUDIT low-risk n=59 (56.2%)	AUDIT hazardous n=24 (22.9%)	AUDIT harmful n=5 (4.8%)	AUDIT dependence n=17 (16.2%)	Total (n=105) <u>(100%)</u>
S	34 <u>(53.9)</u>	14 <u>(22.2)</u>	3 <u>(4.8)</u>	12 <u>(19.1)</u>	63 <u>(100)</u>
EMR:	5 <u>(26.3)</u>	6 <u>(31.6)</u>	2 <u>(10.5)</u>	6 <u>(31.6)</u>	19 <u>(100)</u>
BI	24 <u>(51)</u>	10 <u>(21.3)</u>	2 <u>(4.3)</u>	11 <u>(23.4)</u>	47 <u>(100)</u>
EMR:	0 <u>(0)</u>	1 <u>(25)</u>	1 <u>(25)</u>	2 <u>(50)</u>	4 <u>(100)</u>
RT	9 <u>(47.4)</u>	3 <u>(15.8)</u>	2 <u>(10.5)</u>	5 <u>(26.3)</u>	19 <u>(100)</u>
EMR:	0 <u>(0)</u>	0 <u>(0)</u>	0 <u>(0)</u>	0 <u>(0)</u>	0 <u>(0)</u>

S= Screening, BI= Brief Intervention, RT= Referral to treatment; AUDIT = Alcohol Use Disorders Identification Test; EMR = Electronic Medical Records

## Figures

Figure 1. Recruitment of general practices for the feasibility study



## References

- Anderson, P., & Clement, S.U.E. (1987). The aappq revisited: The measurement of general practitioners' attitudes to alcohol problems. *British Journal of Addiction*, 82(7), 753-759.  
doi: 10.1111/j.1360-0443.1987.tb01542.x
- Anderson, P., Laurant, M., Kaner, E., Wensing, M., & Grol, R. (2004). Engaging general practitioners in the management of hazardous and harmful alcohol consumption: Results of a meta-analysis. *J Stud Alcohol*, 65(2), 191-199.
- Babor, T.F., & Higgins-Biddle, J. (2001). *Brief intervention for hazardous and harmful drinking. A manual for use in primary care*. Geneva: WHO.
- Berner, M.M., Kriston, L., Bentele, M., & Harter, M. (2007). The alcohol use disorders identification test for detecting at-risk drinking: A systematic review and meta-analysis. *J Stud Alcohol Drugs*, 68(3), 461-473.
- Bickel, W.K., & Amass, L. (1993). The relationship of mean daily blood alcohol levels to admission mast, clinic absenteeism and depression in alcoholic methadone patients. *Drug and Alcohol Dependence*, 32(2), 113-118.
- CDC. (2014). *Planning and implementing screening and brief intervention for risky alcohol use: A step-by-step guide for primary care practices*. . Atlanta, Georgia: Centers for Disease Control and Prevention, National Center on Birth Defects and Developmental Disabilities.

- Center for Substance Abuse Treatment. (1994). *Simple screening instruments for outreach for alcohol and other drug abuse and infectious diseases*. Rockville (MD): Substance Abuse and Mental Health Services Administration.
- Cullen, W. (2012). Medical school and general practice - an enduring partnership. *Forum*, 29(2), 10-12.
- Cullen, W., Bury, G., Barry, J., & O'Kelly, F. (2000). Drug users attending general practice in eastern regional health authority (erha) area. *Irish Medical Journal*, 93(7), 214-217.
- Cullen, W., Bury, G., Barry, J., & O'Kelly, F.D. (2003). Hepatitis c infection among drug users attending general practice. *Irish Journal of Medical Science*, 172(3), 123-127.
- Cullen, W., Bury, G., & Langton, D. (2000). Experience of heroin overdose among drug users attending general practice. *British Journal of General Practice*, 50(456), 546-549.
- Cullen, W., Bury, G., & O'Kelly, F.D. (2001). Screening for hepatitis c (hcv) in specialist centres and in primary care. *Irish Medical Journal*, 94(1), 25-26.
- Cullen, W., O'Brien, S., O'Carroll, A., O'Kelly, F.D., & Bury, G. (2009). Chronic illness and multimorbidity among problem drug users: A comparative cross sectional pilot study in primary care. *BMC Family Practice*, 10, 25. doi: 1471-2296-10-25 [pii]
- 10.1186/1471-2296-10-25
- Cullen, W., O'Leary, M., Langton, D., Stanley, J., Kelly, Y., & Bury, G. (2005). Guidelines for the management of hepatitis c in general practice: A semi-qualitative interview survey of gps' views regarding content and implementation. *Irish Journal of Medical Science*, 174(3), 32-37.
- Cullen, W., Stanley, J., Langton, D., Kelly, Y., Staines, A., & Bury, G. (2006). Hepatitis c infection among injecting drug users in general practice: A cluster randomised controlled

- trial of clinical guidelines' implementation. *British Journal of General Practice*, 56(532), 848-856.
- Darke, S., & Zador, D. (1996). Fatal heroin 'overdose': A review. *Addiction*, 91(12), 1765-1772.
- Darker, C.D., Sweeney, B.P., El Hassan, H.O., Smyth, B.P., Ivers, J.-H.H., & Barry, J.M. (2012). Brief interventions are effective in reducing alcohol consumption in opiate-dependent methadone-maintained patients: Results from an implementation study. *Drug and Alcohol Review*, 31(3), 348-356. doi: 10.1111/j.1465-3362.2011.00349.x
- Donner, A., & Koval, J.J. (1982). Design considerations in the estimation of intraclass correlation. *Annals of Human Genetics*, 46(3), 271-277. doi: 10.1111/j.1469-1809.1982.tb00718.x
- EMCDDA. (2013). *Co-morbid substance use and mental disorders in europe: A review of the data*. Luxembourg: EMCDDA Papers, Publications Office of the European Union.
- EMCDDA. (2014). European drug report 2014. Retrieved June 30th, 2014, from <http://www.emcdda.europa.eu/edr2014>
- Farrell, M., & Barry, J. (2010). *The introduction of the opioid treatment protocol*. Dublin: Health Service Executive.
- Feldman, N., Chatton, A., Khan, R., Khazaal, Y., & Zullino, D. (2011). Alcohol-related brief intervention in patients treated for opiate or cocaine dependence: A randomized controlled study. *Substance Abuse Treatment, Prevention, and Policy*, 6(22), 1-8.
- Field, C.A., Klimas, J., Barry, J., Bury, G., Keenan, E., Lyons, S., . . . Cullen, W. (2012). Alcohol screening and brief intervention among drug users in primary care: A discussion paper. *Ir J Med Sci*, 181(2), 165-170. doi: 10.1007/s11845-011-0748-7

- Field, C.A., Klimas, J., Barry, J., Bury, G., Keenan, E., Lyons, S., . . . Cullen, W. (2013). *Attitudes and practices regarding the management of problem alcohol use among patients receiving opiate substitution treatment in primary care in Ireland: A cross sectional survey of GPs*. Paper presented at the Annual Symposium of the Society for the Study of Addiction, York, UK. [www.icgp.ie](http://www.icgp.ie)
- Field, C.A., Klimas, J., Barry, J., Bury, G., Keenan, E., Smyth, B., & Cullen, W. (2013). Problem alcohol use among problem drug users in primary care: A qualitative study of what patients think about screening and treatment. *BMC Fam Pract*, *14*(1), 98.
- Fiellin, D.A., Reid, M.C., & O'Connor, P.G. (2000). Screening for alcohol problems in primary care: A systematic review. *Archives of Internal Medicine*, *160*(13), 1977-1989. doi: ioi90552 [pii]
- Gordon, A.J., & Alford, D.P. (2012). Screening, brief intervention, and referral to treatment (sbirt) curricular innovations: Addressing a training gap. *Substance Abuse*, *33*(3), 227-230. doi: 10.1080/08897077.2011.640156
- Grol, R. (2001). Successes and failures in the implementation of evidence-based guidelines for clinical practice. *Medical care*, *39*(8), II46-II54.
- Hartzler, B., Donovan, D.M., & Huang, Z. (2010). Comparison of opiate-primary treatment seekers with and without alcohol use disorder. *Journal of substance abuse treatment*, *39*(2), 114-123. doi: S0740-5472(10)00102-9 [pii]
- 10.1016/j.jsat.2010.05.008
- Kaner, E., Bland, M., Cassidy, P., Coulton, S., Dale, V., Deluca, P., . . . Drummond, C. (2013). Effectiveness of screening and brief alcohol intervention in primary care (sips trial):

- Pragmatic cluster randomised controlled trial. *British Medical Journal*, 346. doi:  
10.1136/bmj.e8501
- Keenan, E., & Barry, J. (1999). Managing drug misuse in general practice. Republic of Ireland has set up scheme to regulate methadone prescribing by gps. *British Medical Journal*, 319(7223), 1497.
- Kim, T.W., Saitz, R., Kretsch, N., Cruz, A., Winter, M.R., Shanahan, C.W., & Alford, D.P. (2013). Screening for unhealthy alcohol and other drug use by health educators: Do primary care clinicians document screening results? *Journal of Addiction Medicine*, 7(3), 204-209. doi:10.1097/ADM.1090b1013e31828da31017.
- Klimas, J., Anderson, R., Bourke, M., Bury, G., Dunne, C., Field, C.A., . . . Cullen, W. (2013). Psychosocial interventions for problem alcohol use among problem drug users (pinta): Protocol for a feasibility study in primary care. *Research Protocols*, 2(2), e26. doi: 10.2196/resprot.2678
- Klimas, J., Cullen, W., & Field, C.A. (2014). Problem alcohol use among problem drug users: Development and content of clinical guidelines for general practice. *Ir J Med Sci*, 183(1), 89-101. doi: 10.1007/s11845-013-0982-2
- Klimas, J., Field, C.-A., Cullen, W., O'Gorman Clodagh, S.M., Glynn Liam, G., Keenan, E., . . . Dunne, C. (2012). Psychosocial interventions to reduce alcohol consumption in concurrent problem alcohol and illicit drug users. *Cochrane Database of Systematic Reviews*, (11).  
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD009269.pub2/abstract>  
doi:10.1002/14651858.CD009269.pub2

- Klimas, J., Field, C.A., Barry, J., Bury, G., Keenan, E., Lyons, S., . . . Cullen, W. (2012). Commentary on ‘the research translation problem: Alcohol screening and brief intervention in primary care – real world evidence supports theory’. *Drugs: Education, Prevention, and Policy*, *19*(1), 88-90. doi: doi:10.3109/09687637.2011.577462
- Klimas, J., Lally, K., Murphy, L., Crowley, L., Anderson, R., Meagher, D., . . . Cullen, W. (2014). Development and process evaluation of an educational intervention to support primary care of problem alcohol among drug users. *Drugs and Alcohol Today*, *14*(2), 76-86.
- Klimas, J., Muench, J., Wiest, K., Croff, R., Rieckman, T., & McCarty, D. (in Press). Alcohol screening among opioid agonist patients in a primary care and opioid treatment program. *J Psychoactive Drugs*.
- Klimas, J., Tobin, H., Field, C.A., O’Gorman, C.S., Glynn, L.G., Keenan, E., . . . Cullen, W. (2014). Psychosocial interventions to reduce alcohol consumption in concurrent problem alcohol and illicit drug users. *Cochrane Database Syst Rev*, *12*, CD009269. doi: 10.1002/14651858.CD009269.pub3
- Kreek, M.J. (1981). Metabolic interactions between opiates and alcohol. *Annals of New York Academy of Sciences*, *362*, 36-49.
- Luck, J., Peabody, J.W., Dresselhaus, T.R., Lee, M., & Glassman, P. (2000). How well does chart abstraction measure quality? A prospective comparison of standardized patients with the medical record. *American Journal of Medicine*, *108*(8), 642-649.
- McKnight-Eily, L.R., Liu, Y., Brewer, R.D., Kanny, D., Lu, H., Denny, C.H., . . . Collins, J. (2014). Vital signs: Communication between health professionals and their patients about

- alcohol use—44 states and the district of columbia, 2011. *MMWR Morbidity Mortality Weekly Report*, 63(1), 16-22.
- Muench, J., Jarvis, K., Boverman, J., Hardman, J., Hayes, M., & Winkle, J. (2012). Tilling the soil while sowing the seeds: Combining resident education with medical home transformation. *Substance Abuse*, 33(3), 282-285. doi: 10.1080/08897077.2011.640088
- Muench, J., Jarvis, K., Gray, M., Hayes, M., Vandersloot, D., Hardman, J., . . . Winkle, J. (2014). Implementing a team-based sbirt model in primary care clinics. *Journal of Substance Use*, 0(0), 1-7. doi: doi:10.3109/14659891.2013.866176
- Ni Chroinin, D., Kyne, L., Duggan, J., Last, J., Molphy, A., O'Shea, D., . . . Cullen, W. (2012). Medicine in the community: A unique partnership. *Clinical Teacher*, 9(3), 158-163. doi: 10.1111/j.1743-498X.2012.00527.x
- O'Brien, M., Moran, R., Kelleher, T., & Cahill, P. (2000). National drug treatment reporting system, statistical bulletin 1997 and 1998. National data and data by health board area. Dublin: Health Research Board.
- Ostapowicz, G., Watson, K.J., Locarnini, S.A., & Desmond, P.V. (1998). Role of alcohol in the progression of liver disease caused by hepatitis c virus infection. *Hepatology*, 27(6), 1730-1735. doi: S0270913998002560 [pii]
- 10.1002/hep.510270637
- Piz, L., Maremmani, A.G.I., Rugani, F., Pacini, M., Rovai, L., Dell'Osso, L., & Maremmani, I. (2011). Requiring stabilized heroin addicts to stop successful agonist opioid treatment before liver transplantation can shift patients over a cross-acting (alcohol) substance abuse. *Heroin Addiction and Related Clinical Problems*, 13(4), 35-38.

- Reading, R., Harvey, I., & McLean, M. (2000). Cluster randomised trials in maternal and child health: Implications for power and sample size. *Archives of Diseases in Childhood*, 82(1), 79-83.
- Roux, P., Cohen, J., Lascoux-Combe, C., Sogni, P., Winnock, M., Salmon-Ceron, D., . . . Carrieri, M.P. (2011). Determinants of the underreporting of alcohol consumption by hiv/hcv co-infected patients during face-to-face medical interviews: The role of the physician. *Drug and Alcohol Dependence*, 116(1-3), 228-232. doi: 10.1016/j.drugalcdep.2010.09.025
- Ryder, N., Cullen, W., Barry, J., Bury, G., Keenan, E., & Smyth, B.P. (2009). Prevalence of problem alcohol use among patients attending primary care for methadone treatment. *BMC Family Practice*, 10, 42. doi: 1471-2296-10-42 [pii]
- 10.1186/1471-2296-10-42
- Staiger, P.K., Richardson, B., Long, C.M., Carr, V., & Marlatt, G.A. (2013). Overlooked and underestimated? Problematic alcohol use in clients recovering from drug dependence. *Addiction*, 108(7), 1188-1193. doi: 10.1111/j.1360-0443.2012.04075.x
- Stewart, A.L., Hays, R.D., & Ware, J.E., Jr. (1988). The mos short-form general health survey. Reliability and validity in a patient population. *Medical care*, 26(7), 724-735.
- Strang, J., Hunt, C., Gerada, C., & Marsden, J. (2007). What difference does training make? A randomized trial with waiting-list control of general practitioners seeking advanced training in drug misuse. *Addiction*, 102(10), 1637-1647. doi: 10.1111/j.1360-0443.2007.01929.x
- Swan, D., Long, J., Carr, O., Flanagan, J., Irish, H., Keating, S., . . . Cullen, W. (2010). Barriers to and facilitators of hepatitis c testing, management, and treatment among current and

former injecting drug users: A qualitative exploration. *AIDS Patient Care STDS*, 24(12), 753-762. doi: 10.1089/apc.2010.0142

Tariq, L., van den Berg, M., Hoogenveen, R.T., & van Baal, P.H. (2009). Cost-effectiveness of an opportunistic screening programme and brief intervention for excessive alcohol use in primary care. *PLoS One*, 4(5), e5696. doi: 10.1371/journal.pone.0005696

Towers, A., Stephens, C., Dulin, P., Kostick, M., Noone, J., & Alpass, F. (2011). Estimating older hazardous and binge drinking prevalence using audit-c and audit-3 thresholds specific to older adults. *Drug and Alcohol Dependence*, 117(2-3), 211-218. doi: 10.1016/j.drugalcdep.2011.02.008

World Health Organization. (2008). *The global burden of disease: 2004 update*. Geneva: World Health Organization.

JK: [jan.klimas@ucd.ie](mailto:jan.klimas@ucd.ie)  
AMH: [annemarie.henihan@ul.ie](mailto:annemarie.henihan@ul.ie)  
GM: [geoff.mccombe@ul.ie](mailto:geoff.mccombe@ul.ie)  
DS: [davina.swan@ul.ie](mailto:davina.swan@ul.ie)  
AR: [rolandea@eircom.net](mailto:rolandea@eircom.net)  
GB: [gerard.bury@ucd.ie](mailto:gerard.bury@ucd.ie)  
CD: [colum.dunne@ul.ie](mailto:colum.dunne@ul.ie)  
EK: [eamon.keenan@hse.ie](mailto:eamon.keenan@hse.ie)  
JS: [jean.saunders@ul.ie](mailto:jean.saunders@ul.ie)  
GWS: [gw.shorter@ulster.ac.uk](mailto:gw.shorter@ulster.ac.uk)  
BPS: [bobby.smyth@hse.ie](mailto:bobby.smyth@hse.ie)  
WC: [walter.cullen@ucd.ie](mailto:walter.cullen@ucd.ie)