Irish Journal of Psychological Medicine (2014), **31**, 61–68. © College of Psychiatrists of Ireland 2013
doi:10.1017/ipm.2013.44

PERSPECTIVE

Is there more to psychosocial treatments in addiction than brief interventions?

E. Kelleher*

Department of Psychiatry, Trinity Centre for Health Sciences, St James' Hospital, Dublin, Ireland

Received 8 May 2013; Revised 9 July 2013; Accepted 23 July 2013; First published online 20 September 2013

Key words: Addiction, alcohol dependency syndrome, brief intervention, psycho-social, substance abuse, treatment.

Habit if not resisted soon becomes necessity
St Augustine

Introduction

Psychosocial interventions in the management of substance abuse, such as brief interventions (BI) and others, vary in their approach; however, all are based on the interaction between the therapist and the user to elicit change in the user's behaviour (Curran & Drummond). There has been much research and debate on psychosocial interventions over the years (Wanigaratne *et al*. 2005) and it is time to review their input. BI are time-limited interventions focusing on changing substance-misuse behaviour (McQueen, 2009) over a maximum of two to three sessions. They are particularly effective in the context of opportunistic screening for those not dependent on substances (Curran & Drummond), especially alcohol (SIGN, 2003), and are often praised for their cost-effectiveness. However, there are a range of other psychosocial interventions of longer duration that use structured psychological approaches to help those with drug dependency to change their behaviour, which may not have received much attention. The latter psychosocial interventions are usually part of a treatment plan in a specialist service (Department of Community, Rural and Gaeltacht Affairs, 2009). Such services are becoming increasingly required, given the rise of substance misuse and dependency nationally.

In Ireland, our *per capita* consumption of alcohol is among the highest in Europe (Global Status Report on Alcohol and Health, 2011) as is our rate of binge drinking (EU Citizens' Attitudes Towards Alcohol, 2010). Alcohol has well-documented health (Doll & Peto, 1981; Johannes, 1987) and social problems (Hope, 2008; Mongan *et al*. 2009) including subsequent mental illness and is estimated to cost the public health system 1.2 bn (Byrne, 2010) annually. Illegal drug use is prevalent in Ireland with one in four people having used an illicit drug at some point in their life (National Advisory Committee on Drugs and Drug and Alcohol Information and Research Unit, 2008). Of the 17 European countries, Ireland has the highest rate of heroin use (Substance Abuse and Mental Health Services Administration), and increasing numbers are dropping out of treatment (Department of Community, Rural and Gaeltacht Affairs, 2009). Irish teenagers consume higher volumes of alcohol compared to their european peers (Hibell *et al*. 2012). There are hugely damaging health and social effects caused by substance abuse, such as increased cancer (Johannes, 1987) and cirrhosis (Doll & Peto, 1981) in alcohol abusers, psychiatric comorbidity (Hope, 2008), increased HIV and hepatitis infection in injecting drug users (Mongan *et al*. 2009), drug- and alcohol-related crime (Regier, 1998) and anti-social behaviour (Clarke *et al*. 2001; Hope, 2008; Mongan *et al*. 2009), which can undermine the stability of individuals, families and communities.

Addiction services can provide certain psychosocial interventions that improve clinical outcomes, for example, reduced use/abstinence and fewer drug-related problems (Department of Community, Rural and Gaeltacht Affairs, 2009). The aim of this review is to provide insight into the effectiveness and evidence base of psychosocial treatments. To this end, it will:

1. Address the current theories as to how substance dependency develops.
2. Examine the psychological and social factors that underlie psychosocial interventions.
3. Describe the evidence base for a variety of psychosocial interventions provided by specialist addiction services including brief interventions, contingency management (CM), community

* Address for correspondence: E. Kelleher, Department of Psychiatry, Trinity Centre for Health Sciences, St James' Hospital, Dublin 8, Ireland.
(Email: eric.kelleher@tcd.ie)

reinforcement approach (CRA), motivational interviewing (MI), cognitive behavioral therapy (CBT) and social behavior and network therapy (SBNT), among others.
4. Discuss psychosocial interventions in the wider context of addiction treatment.

How substance dependency develops

Substance misuse is defined as the use of a substance for a purpose not consistent with legal or medical guidelines (World Health Organization, 1994) such as hazardous or binge drinking. Dependency is defined as a sense of compulsion to take a substance with difficulty in controlling its use, the presence of a physiological withdrawal state, tolerance, neglect of alternative interests and persistent use of the drug, despite harm to oneself and others (World Health Organization, 1994). Repeated use of a drug can lead to the development of tolerance in which increased doses are required to produce the same effects.

Developing substance misuse and dependence is multifactorial and influenced by the social environment, development and individual neurobiology. There is clear evidence that availability of drugs, peer drug use and also elements of family interaction, including parental discipline and family cohesion are significant risk factors for drug misuse (Frischer *et al*. 2005; Mongan *et al*. 2009). Although taking drugs at any age can lead to addiction, the earlier the drug use begins, the more likely it will progress to more serious abuse, particularly for those who leave school early compared with those who stay in education (Mongan *et al*. 2009). Teenagers in Ireland have high rates of substance misuse compared to their European peers (Hibell *et al*. 2012). While alcohol is often the first substance of abuse along with cannabis for young people (Department of Community, Rural and Gaeltacht Affairs, 2009), there has been a rapid rise in misuse of prescription and over the counter medications (OTCs). According to SAMHSA (Hope, 2008), in the United States, the non-medical use of pain relievers accounts for the largest number of first-time abuse among people aged 12 or older after marijuana.

In addition to environmental factors, genetic components may also influence the development of addiction. This is supported by work in twin, family and adoption studies (Kendler, 2012). Genetic factors influence liability to drug-abuse and act by not only increasing the risk for illness but also by increasing the pathogenic effects of adverse environmental experiences.

At a neurobiological level, chronic substance-abuse changes brain circuitry over time. Abuse of alcohol, nicotine, cannabis, opiates, stimulants and OTCs have all been shown to produce feelings of euphoria by increasing the levels of dopamine in the nucleus accumbens (Volkow, 2012) – a 'pleasure pathway', which is normally activated following basic rewards. More recent work now recognizes the crucial role of the mesostriatal (projections from the substantia nigra into the dorsal striatum) and mesocortical pathways in drug rewards and addiction. Neurotransmitters other than dopamine (e.g. cannabinoids, opioids) are also involved with drug rewards, and their relative contribution to a drug's rewarding effects is determined partly by their pharmacologic effects (e.g. endogenous opioids for heroin, alcohol, nicotine). Following chronic drug administration, the brain learns to preferentially derive pleasure from drug reinforcers and reduces their sensitivity to previously effective natural non-drug reinforcers such as spending time with family and friends (Volkow, 2012), leading to a cycle of drug abuse that is difficult to break free from. These findings are demonstrable in neuroimaging (Volkow *et al*. 1999).

There is also evidence that psychosocial behavioural interventions that activate and strengthen circuits involved in inhibitory control may further increase successful abstinence from drug taking (Volkow *et al*. 2004).

The psychological and social factors that underlie psychosocial interventions

Psychosocial treatments in addiction are based on behavioural, cognitive, motivational and social theories (NICE, 2007). Behavioural theories see substance misuse as a set of 'conditioned' behaviours. 'Classic' conditioning was based on Pavlov's experiments on dogs, where a dog was conditioned to respond (salivate) when a conditioned stimulus (bell) rang. Similar to heroin use, for example, certain stimuli such as peers' use, can become conditioned stimuli over time if paired with heroin. One behavioural model that uses this theory as its foundation is cue exposure (Drummond, 1990), where, for example, someone dependent on alcohol enters a pub (conditioned stimulus) and rather than following the automated response to buy an alcoholic drink, he responds differently, for example, he buys a non-alcoholic drink. Over time, the conditioned response, that is, automatically buying an alcohol drink would be extinguished.

Another behavioural theory is 'operant conditioning', which is the basis for CM (Moos, 2007). This is based on the belief that positively rewarded actions, for example, providing drug-free urines and receiving vouchers for goods or a 'take home' methadone are more likely to be repeated than those with no reward. The practice does not reward when goals are not met, for example, drug use.

https://doi.org/10.1017/ipm.2013.44 Published online by Cambridge University Press

Social theories underlie the CRA, CRA and family therapy (CRAFT), SBNT and behavioural couple therapy, among others. This aims to reinforce what the client finds rewarding in their social, occupational and leisure activities, thus increasing the reward of those values while decreasing the reward of drug use. People also learn behaviours by watching or imitating others, for example, and thus being with other substance users can make it difficult to avoid drug use. Therefore, avoiding them and engaging with positive social supports, for example, family/partner, can help modify behaviours.

Cognitive theories emphasize on how our cognitions change our behaviour and emotions. On the basis of Beck's model for addiction (Beck, 1993), cues in the environment, both internal and external, trigger beliefs, for example, 'I'll always be an alcoholic' that lead to automatic thoughts, for example, 'I can't go out until I've had a drink', which produce craving for a drug and then strategies to obtain them. Cognitive therapies work collaboratively with the individual to modify these dysfunctional beliefs and maladaptive thoughts to eventually change behaviour via behavioural techniques. There is an emphasis on intervening early after a lapse to prevent a full-blown relapse (Maude-Griffin, 1998).

The final theory and one that is most often found in practice (Department of Community, Rural and Gaeltacht Affairs, 2009) is the motivational model (Prochaska & DiClemente, 1983) of the stages of the user in changing their behaviour. Motivational treatments focus on the client's ambivalence about changing their behaviour, identify which stage they are at and facilitate progress towards action and maintenance. In the 'precontemplation' stage, the person does not perceive a problem with their drug use; in the 'contemplation' stage, he or she may be worried about their drug use, but does not want to change it; in the 'determination' stage, a commitment is made to change in the near future followed by 'action' where behaviour is changed; and followed in turn by 'maintenance' – trying to stick to it.

As will be described, many psychosocial treatments combine aspects of all of these.

The evidence for specific psychosocial interventions

Brief Interventions (BI)

BI are focused on changing problem behaviour. They are time limited and can range from 5 minutes to 1 hour and usually consist of two to three sessions of MI or counselling (McQueen, 2009). They are demonstrably better at reducing alcohol misuse compared with no intervention or simply providing a list of counsellors (SBIRT Research Collaborative, 2011). They are not effective for those dependent on alcohol in reducing their use (Bien *et al*. 1993; Moyer *et al*. 2002); however, they can be used to encourage those with more serious dependence to accept referral to a specialized addiction service (Ashton, 2005).

Miller & Sanchez (1994) propose six elements for a BI summarized by the acronym FRAMES: Feedback of Personal Risk related to their current usage patterns, Responsibility of the Patient to initiate behavioural change, Explicit Advice To Change, a Menu of Ways To Reduce Drinking, Empathetic Counselling Style and Self-Efficacy of the Patient are encouraged. BI can be provided in primary care (Moyer *et al*. 2002) and in emergency departments (Crawford *et al*. 2004; College of Psychiatrists, 2011) by non-addiction specialists.

They generally result in a 20–30% reduction in excessive drinking and associated problems. BI are also highly cost-effective (Curran & Drummond). They can also work for cannabis, benzodiazepines, amphetamines, opiates and cocaine, but the evidence is not as strong as for alcohol (SBIRT Research Collaborative, 2011). There is also evidence for their use in reducing risk behaviours with regard to sexual health in opiate users (NICE, 2007).

Community Reinforcement Approach (CRA)/ Contingency Management (CM)/Community Reinforcement Approach Family Therapy (CRAFT)

The theories behind CRA and CM have already been outlined. Psychosocial interventions such as CM have been shown to be particularly effective in the treatment of stimulant drug dependence, for example, cocaine, crack and amphetamine, especially when combined with an intensive behavioural therapy such as CRA (Roozen, 2004). This is important as, to date, there are no pharmacologic treatments for treating stimulant drug dependence (Lingford-Hughes, 2004). For cocaine-dependent clients in methadone maintenance, both cognitive therapy (CT) and CM are effective, but the combination of the two is no more effective than in isolation (Rawson, 2002).

There is strong evidence for the effectiveness of CM (Griffith, 2000) and CRA (Gruber, 2000) in the treatment of opioid addiction. There is also evidence that CM can reduce dropout rates from opioid-withdrawal programmes (Lingford-Hughes, 2004). It has an important role in the management of reducing risk for drug users, particularly those who inject drugs in rewarding those who go for health screening, that is, HIV and hepatitis screening (NICE, 2007).

CRA has shown at least short-term effectiveness in alcohol disorders (Azrin, 1982). There is also strong support for CRA in adolescents abstaining from

https://doi.org/10.1017/ipm.2013.44 Published online by Cambridge University Press

cannabis misuse (Dennis, 2004) and as a continuing care approach for adolescents after residential treatment (Godley, 2001). It has recently been demonstrated that CRA treatment can improve many aspects of life in approximately five sessions over a period of 4–6 weeks and can be tailored and adapted to individual goals, varying from life-long abstinence to moderation of substance use (Miller, 2001c).

CRAFT combines CRA with family therapy. It is designed to help family members of substance abusers engage the individual in treatment, using positive reinforcement and communication techniques, which can then develop into other psychosocial treatments (Meyers, 1998). The rates of success have varied.

Behavioural couple therapy (BCT) and Family therapy (FT)

BCT involves the spouse or partner expressing active support for the person who misuses drugs in reducing that use. Family interventions involve the participation of the family in supporting the individual with addiction and discussing their own interrelationships (Copello, 2005). In a review by NICE (2007), couple-based interventions were consistently associated with both abstinence at the end of treatment and at 6- and 12-month follow-up with primary heroin or stimulant dependence. Although multidimensional and functional FT are well established in the treatment of adolescent substance abusers, they have not demonstrated clear superiority to other treatment models (Waldron *et al*. 2001).

Social and Behavioral Network Therapy (SBNT)

SBNT comprises cognitive and behavioural strategies to help clients with alcohol problems build positive social networks that are supportive of change UKATT Research Team (2005). This novel therapy was initiated, given the high relapse rate (65%) to alcoholism after 1 year of alcohol treatment (Miller, 2001). The UKATT trial (2005) compared SBNT with standard motivational enhancement therapy (MET) for alcohol problems and found that they did not differ significantly and that SBNT cost more.

Motivational Interviewing (MI)/Motivational Enhancement Therapy (MET)

MI is an approach developed by Miller (Miller & Baca, 1983). It integrates Rogerian relationship-building principles with more active CBT strategies to combat ambivalence about abstaining from substance misuse. It incorporates five general principles: expressing empathy with the user, developing discrepancy between their substance use and how they would like their life to be, a non-confrontational approach, rolling with resistance, that is, avoiding arguments and reflecting resistance rather than opposing it, and supporting self-efficacy. A brief variant of MI is called MET.

There is robust evidence for MET in alcohol disorders as shown in Project MATCH (Project Match Research Group, 1997), a large multisite trial comparing MI with cognitive behavioural therapy (CBT) and twelve-step facilitation therapy (TSF). Results showed four sessions of MET to be as effective as 12 of either CBT or TSF, although all treatments led to reductions in use at 1- and 3-year follow-up.

MET combined with CBT is the most cost-effective psychosocial intervention with adolescent cannabis users (Dennis, 2004). Promising results have been reported as to the effect of the method for alcohol dependence, smoking cessation, drug addiction, and HIV-risk behaviours (Burke *et al*. 2003; Carey, 2003). A recent Cochrane review to assess the effectiveness of MI compared with no intervention for substance abuse showed that it had the strongest effect post intervention compared with long-term Cochrane Review (Smedslund *et al*. 2011). MI can be delivered by those outside of the health services, for example, within prisons (Forsberg, 2011).

Cognitive Behavioral Therapy (CBT)

The theory behind standard CBT in addiction has been outlined. Relapse-prevention CBT (RPCBT) uses several CBT strategies to enhance the client's self-control and prevent relapse. It highlights problems that the client may face and develops strategies that he/she can use to deal with high-risk situations (Miller & Baca, 1983; Carroll & Onken, 2005). Meta-analyses support CBT approaches in alcohol-use disorders (Miller & Wilbourne, 2002), and has additive effects when combined with acamprosate (Feeney *et al*. 2002) and disulfiram (Carroll, 1983).

Standard CBT and RPCBT are effective for people in methadone-maintenance treatment (MMT). In a review by Drummond & Perryman (2007), eight studies broadly supported efficacy of CBT in MMT in relation to reduced illicit drug use and increased compliance with MMT. However, a NICE review (2007) found no benefit for either RPCBT or CBT in comparison with control groups for abstinence and reduction in illicit drug use. However, there was evidence that standard CBT may be beneficial for a sub-sample who experienced high levels of psychiatric comorbidity.

Direct comparison of CM with either RPCBT or standard CBT showed that CM was superior in the treatment of cocaine dependence (NICE, 2007). Individual RPCBT appears to be effective in cannabis dependence (Stephens, 1994) while group CBT has

https://doi.org/10.1017/ipm.2013.44 Published online by Cambridge University Press

been found to be effective in adolescent substance misuse (Waldron *et al*. 2001).

Studies have demonstrated that cognitive behaviour therapy's effects are durable and that continuing improvement may occur even after the end of treatment (Carroll, 1994). Cognitive behaviour therapy is a comparatively complex approach, and training clinicians to implement this approach effectively can be challenging.

Psychosocial interventions in the wider context of addiction treatment

Psychosocial interventions, exclusive to BI, have a clear evidence base. For those dependent on some drugs of abuse (alcohol, cocaine, Cannabis), psychosocial interventions form the main treatment approach, and, for other drugs, for example, opioids, they are an important adjunct to MMT (NICE, 2007; Drummond & Perryman, 2007). They also play a significant role in encouraging drug users to go for health screening. For adolescents engaged in drug abuse for whom medication may be contentious (Waxmonsky & Wilens, 2005), early psychosocial interventions can prevent the development of long-term addiction.

This is not to minimize the importance of BI. They have a significant role to play in identifying and reflecting to drug misusers the consequences of their continued misuse and have shown demonstrable evidence in helping prevent misusers of alcohol in particular from developing dependency (SIGN, 2003). This improves the level of alcohol-related harm, which is cost-effective. In the United Kingdom, for every £1 spent on BI resulted in a saving of up to £10 for the health service (DH, 2009).

Although alcohol interventions have been well researched, psychosocial interventions for other drugs of abuse have been neglected (NICE, 2007). Given the increased range of substances abused, it is important to identify the key interventions that will provide cost-effectiveness in different settings by different therapists. Therefore, there is a clear need to invest in further research on psychosocial interventions (NICE, 2007; Curran & Drummond; Department of Community, Rural and Gaeltacht Affairs, 2009).

However, any psychosocial intervention in isolation is likely to be ineffective in tackling the complex problems that surround substance abuse in the Irish society. Many different sectors – legal, educational, social and medical-need to be coordinated. The national drugs strategy 2009–2016 (Department of Community, Rural and Gaeltacht Affairs, 2009) recognizes this approach. For example, key performance indicators for prevention include maintaining students in education and developing treatment referral pathways for those who come to the attention of the police/probation services. Rehabilitation mechanisms such as family and childcare support, improved housing, opportunities to return to work and education clearly enhance the support of the substance user in the community and their efforts at recovery. From a public health viewpoint, tighter controls on alcohol advertising, banning alcohol sponsorship of sporting events, minimum pricing of alcohol products and separation of alcohol industry-vested interests from policymakers should be strongly considered.

The type of psychosocial intervention provided, the location of the service and who delivers it are all factors that need further investment and development. Psychosocial interventions in Irish addiction services are primarily based on MI and CBT, the latter primarily in the east coast of Ireland. Yet we know that there are a range of other specialized psychological interventions that are effective and that addiction of, for example, opioids (Kelleher *et al*. 2005) is rising outside of Dublin. Therefore, there is a need for further upskilling of staff and the development of interventions that work in rehabilitation such as CRA and SBNT. For any psychosocial intervention to be successful, it is essential that those providing the intervention have an appropriate standard of training. The lack of formalization of training standards and competencies is in itself a further issue that needs to be addressed (Department of Community, Rural and Gaeltacht Affairs, 2009).

Nationally, addiction services are often reliant on general practitioners (GP) to provide treatment; however, their participation in providing MMT for opiate addiction has been slow owing to lack of supports for GPs locally and access to local addiction specialists and inpatient detoxification – services that are themselves underdeveloped (Faculty of Addiction Psychiatry, Irish College of Psychiatrists, 2009). This makes it harder for individuals, particularly adolescents, those on low incomes and the homeless in these areas to access services. The faculty of addictions of the Irish College of Psychiatrists has called for the establishment of a dedicated treatment agency to lead the development of treatment and rehabilitation nationally.

Fundamentally, there needs to be increased awareness of screening for addiction by all health-care staff and personnel who constantly come into contact with the consequences of alcohol and drug abuse. Such services, for example, Emergency Departments and Gardai can be trained in providing BI for alcohol abuse, which can reduce the number of individuals progressing to dependency and referral to specialist services made in other cases (Faculty of Liaison Psychiatry, Irish College of Psychiatrists, 2011). Overall, however, society's perception of those who engage in drug abuse and addiction needs to be challenged.

https://doi.org/10.1017/ipm.2013.44 Published online by Cambridge University Press

As a group they are often perceived as being unworthy or undeserving of attention (Faculty of Liaison Psychiatry, Irish College of Psychiatrists, 2011), for example, the lack of inclusion of addiction problems from Mental Health Services in *Vision for Change* (The faculty of addictions of the Irish College of Psychiatrists). Although, undoubtedly, medical specialties have an essential role in the treatment of addiction, there is a need for an integrated approach between those responsible for the political, legal, educational aspects of Irish society and medicine to bring about systemic or even cultural change in the treatment of those with drug abuse and addiction.

Conclusions

Psychosocial interventions have a clear evidence base in the prevention and treatment of substance misuse by themselves or as an adjunct to medication. They have been demonstrated to provide cost-effectiveness; however, further research is needed to tailor interventions to relevant types of substance abuse and users. All interventions should be seen as part of a response to the wider problems of substance abuse in Irish society.

Acknowledgements

This paper was awarded the College of Psychiatrists' faculty of addictions essay prize for 2012. The author would like to thank Drs John Cooney (St James' Hospital) and William Flannery for their assistance in preparing the manuscript for publication.

References

Ashton M (2005). The motivational hallo. *Drug and Alcohol Findings* **13**, 23–30.

Azrin NH, Sisson RW, Meyers R, Godley M (1982). Alcoholism treatment by disulfiram and community reinforcement therapy. *Journal of Behavior Therapy and Experimental Psychiatry* **13**, 105–112.

Beck AT, Wright FD, Newman CF, Liese BS (1993). *Cognitive Therapy of Substance Abuse*. Guilford Press: New York.

Bien TH, Miller WR, Tonigan JS (1993). Brief interventions for alcohol problems: a review. *Addiction* **88**, 315–335.

Burke BL, Arkowitz H, Menchola M (2003). The efficacy of motivational interviewing: a meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology* **71**, 843–861.

Byrne S (2010). *Costs to Society of Problem Alcohol Use in Ireland*. Health Service Executive: Dublin.

Carey KB, Carey MP, Chandra PS (2003). Psychometric evaluation of the alcohol use disorders identification test and short drug abuse screening test with psychiatric patients in India. *The Journal of Clinical Psychiatry* **64**, 767–774.

Carroll KM, Onken LS (2005). Behavioral therapies for drug abuse. *American Journal of Psychiatry* **162**, 1452–1460.

Carroll KM, Rounsaville BJ, Nich C, Gordon LT, Wirtz PW, Gawin FH (1994). One year follow-up of psychotherapy and pharmacotherapy for cocaine dependence: delayed emergence of psychotherapy effects. *Archives of General Psychiatry* **51**, 989–997.

Carroll KM, Nich C, Ball SA, McCance-Katz E, Rounsaville B (1998). Treatment of cocaine and alcohol dependence with psychotherapy and disulfiram. *Addiction* **93**, 713–728.

Clarke S, Keenan E, Bergin C, Lyons F, Hopkins S, Mulcahy F (2001). The changing epidemiology of HIV infection in injecting drug users in Dublin, Ireland. *HIV Medicine* **2**, 236–240.

Copello AG, Velleman RD, Templeton LJ (2005). Family interventions in the treatment of alcohol and drug problems. *Drug and Alcohol Review* **24**, 369–385.

Crawford MJ, Patton R, Touquet R, Drummond C, Byford S, Barrett B, Reece B, Brown A, Henry JA (2004). Screening and referral for brief intervention of alcohol-misusing patients in an emergency department: a pragmatic randomised controlled trial. *Lancet* **15**, 1334–1339.

Curran V, Drummond C (2005). Psychological treatments of substance misuse and dependence. Department of Trade and Industry. Office of Science and Technology. Foresight Brain Science, Addiction and Drugs Project.

Dennis M, Godley SH, Diamond G, Tims FM, Babor T, Donaldson J, Liddle H, Titus JC, Kaminer Y, Webb C, Hamilton N, Funk R (2004). The Cannabis Youth Treatment (CYT) Study: main findings from two randomized trials. *Journal of Substance Abuse Treatment* **27**, 197–213.

Department of Health (2009). *Signs for improvement: Commissioning interventions to improve alcohol related harm*. Department of Health: London.

Department of Community, Rural and Gaeltacht Affairs (2009). National Drugs Strategy (interim), 2009–2016. The Stationary Office: Dublin.

Doll R, Peto R (1981). *The Causes of Cancer: Quantitative Estimates of Avoidable Risks of Cancer in the United States Today*. Oxford University Press: New York.

Drummond DC, Perryman K (2007). Psychosocial interventions in pharmacotherapy of opioid dependence: a literature review. Background document prepared for third meeting of technical development group (tdg) for the WHO "guidelines for psychosocially assisted pharmacotherapy of opioid dependence" 17–21 September, 2007 Geneva, Switzerland.

Drummond DC, Cooper T, Glautier SP (1990). Conditioned learning in alcohol dependence: implications for cue exposure treatment. *British Journal of Addiction* **85**, 725–743.

European Commission (2010). *EU Citizens' Attitudes Towards Alcohol*. Commission of the European Communities, Brussels.

Faculty of Addiction Psychiatry, Irish College of Psychiatrists (2009). Submission by the Faculty of Addictions of the College of Psychiatry of Ireland to the Steering Group for the National Substance Misuse Strategy 2009–2012. College of Psychiatrists of Ireland.

Faculty of Liaison Psychiatry, Irish College of Psychiatrists (2011). Alcohol in the Emergency Department. College of Psychiatrists of Ireland.

Feeney GFX, Young RM, Connor JP, Tucker J, McPherson A (2002). Cognitive behavioural therapy with relapse prevention medication acamprosate: are short-term treatment outcomes for alcohol dependence improved? *Australian and New Zealand Journal of Psychiatry* **36**, 622–628.

Forsberg LG, Ernst D, Sundqvist K, Farbring CÅ (2011). Motivational Interviewing delivered by existing prison staff: a randomized controlled study of effectiveness on substance use after release. *Substance Use and Misuse* **46**, 1477–1485.

Frischer M, Crome I, Macleod J, Bloor R, Hickman M (2005). *Predictive Factors for Illicit Drug Use Among Young People: A Literature Review. Home Office Online Report 05/07*. Home Office: London.

Godley SH, Meyers RJ, Smith JE, Godley MD, Titus JC, Karvinen T *et al*. (2001). *The Adolescent Community Reinforcement Approach (ACRA) for adolescent cannabis users, Cannabis Youth Treatment Manual Series*. Vol. 4, DHHS Publication No. (SMA) 01-3489. Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration: Rockville, MD.

Griffith JD, Rowan-Szal GA, Roark RR, Simpson DD (2000). Contingency management in outpatient methadone treatment: a meta-analysis. *Drug and Alcohol Dependence* **58**, 55–56.

Gruber K, Chutuape MA, Stitzer ML (2000). Reinforcement-based intensive outpatient treatment for inner city opiate abusers: a short-term evaluation. *Drug and Alcohol Dependence* **57**, 211–223.

Hibell B, Guttormsson U, Ahlström S, Balakireva O, Bjarnason T, Kokkevi A, Kraus L (2012). *The 2011 ESPAD report: substance use among students in 36 European countries*. Stockholm: The Swedish Council for Information on Alcohol and Other Drugs (CAN) and the Pompidou Group of the Council of Europe.

Hope A (2008). Alcohol-related harm in Ireland. Dublin: Health Service Executive – Alcohol Implementation Group. Dublin: Health Services Executive.

Johannes RS, Kahane SN, Mendeloff AI, Kurata J, Roth HP (1987). Digestive diseases. *American Journal of Preventive Medicine* **3**, 83–88.

Kelleher MJ, Keown PJ, O'Gara C, Keaney F, Farrell M, Strang J (2005). Dying for heroin: the increasing opioid-related mortality in the Republic of Ireland, 1980–1999. *European Journal of Public Health* **15**, 589–592.

Kendler KS, Sundquist K, Ohlsson H, Palmér K, Maes H, Winkleby MA, Sundquist J (2012). Genetic and familial environmental influences on the risk for drug abuse: a national Swedish adoption study. *Archives of General Psychiatry* **69**, 690–697.

Lingford-Hughes AR, Welch S, Nutt DJ (2004). Evidence-based guidelines for the pharmacological management of substance misuse, addiction and comorbidity: recommendations from the British Association for Psychopharmacology. *Journal of Psychopharmacology* **18**, 293–335.

Lingford-Hughes AR, Welch S, Nutt DJ (2004). Evidence-based guidelines for the pharmacological management of substance misuse, addiction and comorbidity: recommendations from the British Association for Psychopharmacology. *Journal of Psychopharmacology* **18**, 293–335.

Maude-Griffin PM, Hohenstein JM, Humfleet GL, Reilly PM, Tusel DJ, Hall SM (1998). Superior efficacy of cognitive-behavioral therapy for urban crack cocaine abusers: main and matching effects. *Journal of Consulting and Clinical Psychology* **66**, 832–837.

McQueen J, Howe TE, Allan L, Mains D (2009). Brief interventions for heavy alcohol users admitted to general hospital wards. *Cochrane Review* **8**, CD005191.

Meyers RJ, Miller WR, Hill DE, Tonigan JS (1998). Community reinforcement and family training (CRAFT): engaging unmotivated drug users in treatment. *Journal of Substance Abuse* **10**, 291–308.

Miller WR, Baca LM (1983). Two-year follow-up of bibliotherapy and therapist-directed controlled drinking training for problem drinkers. *Behavior Therapy* **14**, 441–448.

Miller WR, Sanchez VC (1994). Motivating young adults for treatment and lifestyle change. In *Issues in Alcohol Use and Misuse by Young Adults* (ed. G. Howard), pp. 55–82. University of Notre Dame Press: Notre Dame, IN.

Miller WR, Wilbourne PL (2002). Mesa Grande: a methodological analysis of clinical trials of treatments for alcohol use disorders. *Addiction* **97**, 265–277.

Miller WR, Walters ST, Bennett ME (2001). How effective is alcoholism treatment in the United States? *Journal of Studies on Alcohol* **62**, 211–220.

Miller EJ (2001c). Practice and promise: the Azrin studies. In *A Community Reinforcement Approach to Addiction Treatment* (ed. R. J. Meyers, W. R. Miller), pp. 8–27. Cambridge University Press.

Mongan D, Hope A, Nelson M (2009). *Social Consequences of Harmful Use of Alcohol in Ireland*. HRB Overview Series 9. Health Research Board: Dublin.

Moos RH (2007). Theory-based active ingredients of effective treatments for substance use disorders. *Drug and Alcohol Dependence* **88**, 109–121.

Moyer A, Finney JW, Swearingen CE, Vergun P (2002). Brief interventions for alcohol problems: a meta-analytic review of controlled investigations in treatment seeking and non-treatment-seeking populations. *Addiction* **97**, 279–292.

Moyer A, Finney JW, Swearingen CE, Vergun P (2002). Brief interventions for alcohol problems: a meta-analytic review of controlled investigations in treatment-seeking and non-treatment-seeking populations. *Addiction* **97**, 279–292.

National Advisory Committee on Drugs, Public Health Information and Research Branch (2008). Drug use in Ireland & Northern Ireland 2006/2007: drug prevalence survey bulletin 2: Regional Drugs Task Force (Ireland) & Health and Social Services Board (Northern Ireland) results. National Advisory Committee on Drugs & Public Health Information and Research Branch: Dublin.

National Institute for Health and Clinical Excellence (NICE) (2007). Drug misuse: psychosocial interventions, London.

Prochaska JO, DiClemente CC (1983). Stages and processes of self-change of smoking: toward an integrative model of change. *Journal of Consulting and Clinical Psychology* **51**, 390–395.

https://doi.org/10.1017/ipm.2013.44 Published online by Cambridge University Press

Project Match Research Group (1997). Matching alcoholism treatments to client heterogeneity: project match post-treatment drinking outcomes. *Journal of Studies on Alcohol* **58**, 7–29.

Rawson RA, Huber A, McCann M, Shoptaw S, Farabee D, Reiber C, Ling W (2002). A comparison of contingency management and cognitive-behavioral approaches during methadone maintenance treatment for cocaine dependence. *Archives of General Psychiatry* **59**, 817–824.

Regier DA, Rae DS, Narrow WE, Kaelber CT, Schatzberg AF (1998). Prevalence of anxiety disorders and their comorbidity with mood and addictive disorder. *British Journal of Psychiatry* (Suppl. 34), 24–28.

Roozen H, Boulogne J, Tulder M, van den Brink W, De Jong CA, Kerkhof AJ (2004). A systematic review of the effectiveness of the community reinforcement approach in alcohol, cocaine and opioid addiction. *Drug and Alcohol Dependence* **74**, 1–13.

SBIRT Research Collaborative (2011). Screening, Brief Intervention and Referral to Treatment (SBIRT) in Behavioral Healthcare.

Scottish Intercollegiate Guidelines Network (SIGN) (2003). *The Management of Harmful Drinking and Alcohol Dependence in Primary Care*. National Clinical Guideline no. 74. SIGN: Edinburgh.

Smedslund G, Berg RC, Hammerstrøm KT, Steiro A, Leiknes KA, Dahl HM, Karlsen K (2011). Motivational interviewing for substance abuse. *Cochrane Database Syst Rev* (5): CD008063.

Stephens RS, Roffman RA, Simpson EE (1994). Treating adult marijuana dependence: a test of the relapse prevention model. *Journal of Consulting and Clinical Psychology* **62**, 92–99.

Substance Abuse and Mental Health Services Administration. *Results from the 2005 National Survey on Drug Use and Health: National Findings*, NSDUH Series H-30, DHHS Publication no. 2006. Office of Applied Studies: Rockville, MD.

UKATT Research Team (2005). Effectiveness and cost-effectiveness of treatment for alcohol problems: findings of the randomised United Kingdom Alcohol Treatment Trial (UKATT). *BMJ* **331**(7516), 541.

Volkow ND, Fowler JS, Wang GJ (1999). Imaging studies on the role of dopamine in cocaine reinforcement and addiction in humans. *Journal of Psychopharmacology* **13**, 337–345.

Volkow ND, Fowler JS, Wang GJ (2004). The addicted human brain viewed in the light of imaging studies: brain circuits and treatment strategies. *Neuropharmacology* **47**, (Suppl. 1), 3–13.

Volkow ND, Wang GJ, Fowler JS, Tomasi D (2012). Addiction circuitry in the human brain. *Annual Review of Pharmacology and Toxicology* **52**, 321–336.

Waldron HB, Slesnick N, Brody JL, Turner CW, Peterson TR (2001). Treatment outcomes for adolescent substance abuse at 4- and 7-month assessments. *Journal of Consulting and Clinical Psychology* **69**, 802–813.

Wanigaratne S, Davis P, Pryce K, Brotchie J (2005). *The Effectiveness of Psychological Therapies on Drug Misusing Clients*. National Health Service, National Treatment Agency for Substance Misuse: London, 12pp.

Waxmonsky JG, Wilens TE (2005). Pharmacotherapy of adolescents substance used disorders: a review of the literature. *Journal of Child and Adolescent Psychopharmacology* **15**, 810–825.

World Health Organization (1994). *Lexicon of Psychiatric and Mental Health Terms*, 2nd edn. World Health Organization: Geneva.

World Health Organization (2011). *Global Status Report on Alcohol and Health*. World Health Organization: Geneva.

https://doi.org/10.1017/ipm.2013.44 Published online by Cambridge University Press