

Abstinence and drug abuse treatment: Results from the Drug Outcome Research in Scotland study

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Abstract

Aims: To identify the proportion of drug users contacting drug treatment services in Scotland who were able to become abstinent 33 months after having started a new episode of treatment and to identify which services were most closely associated with such abstinence.

Design: Follow-up survey of 695 of the Drug Outcome Research in Scotland respondents 33 months following recruitment into the study.

Setting: Scotland.

Participants: Injecting drug users who were initially contacted at drug treatment services and then followed up for 33 months post-recruitment.

Measurements: Self-reported drug use and service usage.

Findings: Although becoming drug free was the expressed goal of the majority of drug users recruited into the Drug Outcome Research in Scotland study, at 33 months following recruitment only 5.9% of females and 9.0% of males had been totally drug free (excluding possible alcohol and tobacco use) for a 90-day period in advance of being interviewed. There was considerable variation within this study in the proportion of drug users becoming drug free dependent upon the services they had been in contact with. The level of achieved abstinence in this Scottish study was substantially lower than that identified in the National Treatment Outcomes Research Study in England.

Conclusions: There is a need to establish why so few drug users in contact with the methadone programme in Scotland appear able to become drug free 33 months after having contacted this service. On the basis of the results presented in this paper there is a

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need to ensure that drug users seeking help in becoming drug free are able to access residential rehabilitation services although at the present time such services are relatively rare within Scotland.

Keywords: *Abstinence, drug abuse, treatment, recovery*

Introduction

There are many ways in which it is possible to evaluate the impact of drug abuse treatment services, including improvements in individuals' physical and mental health (Hubbard, Craddock, & Anderson, 2003), reductions in drug use (Gossop, Marsden, Stewart, & Rolfe, 2000), reductions in criminal behaviours (Farabee, Shen, Hser, Grella, & Anglin, 2001; Hough, Clancy, McSweeney, & Turnbull, 2003), perceptions of drug treatment services (European Association for the Treatment of Addiction, 2004), and sustained contact with drug treatment services (Gossop, Marsden, Stewart, & Rolfe, 1999; Rowan-Szal, Joe, & Simpson, 2000; Simpson, Joe, & Brown, 1997). One of the most stringent measures to apply in this context is the degree to which drug treatment services are able to assist dependent drug users in becoming drug-free. Because dependent drug use is a chronic, relapsing condition (McLellan, Lewis, O'Brien, & Kleber, 2000), to apply abstinence as a marker of success is to set the bar of evaluation of drug treatment services at its highest point. Nevertheless, research has shown that many drug users contacting drug treatment services are seeking to become drug free (McKeganey, Morris, Neale, & Robertson, 2004), and on that basis alone it is important to establish what proportion of drug treatment clients are indeed able to achieve this desired state following their contact with drug treatment services.

Utilizing abstinence as a measure of success, however, raises a number of important questions as to how abstinence in this context should be defined. For example, abstinence could be defined as a period of no drug use, no illegal drug use, no use of non-prescribed medication; it could be defined as involving a period ranging from a number of weeks, to a number of months or indeed to a number of years. Given the variety of ways in which abstinence can be defined it is important to establish at the outset the definition that has been used in the research reported in this paper. We have defined abstinence here in terms of the individual being totally drug free (other than alcohol or tobacco use) for a period of at least 90 days in advance of their research interview. This definition of abstinence has been chosen, in preference to the various other possible definitions, because the majority of drug users interviewed in the course of the Drug Outcome Research in Scotland study (which this paper is based upon) identified becoming drug free as their sole aim in having contacted drug treatment services in Scotland. Before proceeding further it will be helpful to provide some information on the Drug Outcome Research in Scotland study from which our data on abstinence are drawn.

The Drug Outcome Research in Scotland study (DORIS)

The DORIS study is a prospective follow-up study of a sample of drug users who initiated a new episode of drug abuse treatment in Scotland in 2001. At the outset to this study 1033 drug users were recruited from 33 drug abuse treatment agencies located across Scotland and encompassing the range of drug treatment modalities available at that time (substitute prescribing, non-substitute prescribing, counselling, residential rehabilitation and detoxification). Sampling at the various treatment agencies consisted of inviting the next available person(s) initiating treatment at the particular agency up to a quota set for the agency involved. In total, 89% of those approached to take part in the research agreed to do so. The final sample size for the DORIS study of 1033 respondents represented approximately one in twelve of all drug users starting drug abuse treatment in Scotland in 2001. Prior to joining the study, potential participants were given an information sheet describing the research and setting out the requirements of the study, including the need for subsequent interviews.

At the outset to this study, 28% of DORIS respondents were recruited from an agency providing substitute drugs other than methadone, 27% were recruited from an agency providing methadone, 20% were recruited from an agency providing non-clinical assistance (counselling and group work), 12% were recruited from an agency providing residential detoxification and 12% were recruited from an agency providing residential rehabilitation. 3% of clients were recruited from a needle exchange clinic. Of the sample, 69% (695) were male and 31% (312) were female. The median age of DORIS respondents was 27 years (range 16–53). Of the DORIS respondents, 57% were recruited from a community-based drug treatment service and 43% were recruited from a prison-based drug treatment facility. In terms of their drug use, 88% of DORIS respondents recruited into the study in 2001 had used heroin in the 90 days prior to their first interview and 78% had injected drugs in the past; with 60% having done so in the last three months. Of the respondents, 49% had overdosed in the past and 11% had done so within the last 90 days.

On recruitment into the study, and at each subsequent interview sweep, respondents were interviewed by one of a team of trained interviewers from the Centre for Drug Misuse Research who administered a standard instrument. This instrument sought information in such areas as current and recent drug use (legal, illegal and prescribed), relationships with peers and family members, mental and physical health, social circumstances—housing, employment, criminal activities and contact with the criminal justice system. Following the baseline interview, subsequent interviews took place at 8 months, 16 months and 33 months. At the 33-month interview we were able to successfully re-interview 67% (695) of the original cohort. DORIS respondents were paid a sum of £10 for taking part in each of the interview sweeps (as a result of a request from the Scottish Prison Service no payment was made to respondents interviewed within prison).

Previous publications from the Drug Outcome Research in Scotland study have reported on drug users' aspirations from drug treatment (McKeganey et al., 2004); the treatment needs of prison and community based drug users (Neale & Saville, 2004; Neale, Robertson, & Saville, 2005a); the provision of treatment within prison (McIntosh & Saville, in press); the employability of recovering drug users (Kemp & Neale, 2005); physical and sexual abuse amongst drug users contacting drug treatment services in Scotland (McKeganey, Neale, & Robertson, 2005); drug users' life problems and non fatal overdose (Neale & Robertson, 2005); drug users and assault (Neale, Bloor, & Weir, 2005b); and levels of hepatitis C amongst drug users contacting drug treatment services in Scotland (Bloor, Neale, & McKeganey, in press).

Statistical analyses

In relation to the key dependent variable, 'being totally drug free for a period of at least 90 days in advance of the research interview', univariate associations were investigated using two-sample *t*-tests for continuous variables and chi-squared tests for categorical variables. In these analyses, each potential covariate was considered in isolation and the results obtained were consequently unadjusted for the effects of any of the other variables considered. The variables explored for associations with abstinence were age, sex, relationship status, homelessness, whether the client had been in education or training or legal employment since their last interview, excessive weekly drinking (>14 units per week for women or >21 units per week for men), attempted suicide or self-harm since their last interview, any arrest since their last interview, whether they had committed any crime since their last interview, whether they had committed any acquisitive crime since their last interview, whether they rated their general health much better or somewhat better than a year ago. To measure the level of dependence on the part of DORIS respondents we have used the Severity of Dependence Scale (SDS) developed by Gossop and colleagues (Gossop et al., 1995). Following this univariate analysis we undertook a stepwise logistic regression analysis to identify those variables that were predictive of treatment outcomes, these variables were then controlled for in a multivariate analysis to identify whether the type of treatment provided still had an impact in predicting whether individuals had been able to achieve the 90-day abstinence period.

Associations with abstinence were explored using information about the agency from which respondents were recruited (their index agency) as well as information about the kinds of treatments that respondents had received in the period following their contact with their index agency (post-index agency treatment). Analyses were undertaken using SAS for Windows (version 8.2) and all statistical tests were considered significant at $p \leq 0.05$. Any variation in sample size evident in the results is due to missing data.

Results

In any study that involves the long-term follow-up of respondents there are important questions as to the comparability of the sample at the end of the study with that at the outset of the study. Baseline characteristics of the 695 participants who were interviewed at the 33-month point in the DORIS study were compared with those of the 338 participants who did not respond. On the basis of the univariate logistic regression analysis undertaken the only significant differences between the original sample and the 33-month follow-up sample was being homeless at baseline (those who were homeless at baseline were slightly less likely to be followed up at the 33-month point—odds ratio 0.68 CI 0.51 to 0.91 $p < 0.0094$) and being in prison at baseline (those in prison on recruitment were less likely to be interviewed at the 33-month interview sweep—odds ratio 0.56 CI 0.43–0.72 $p < 0.0001$).

The benefits of abstinence

At their 33-month follow-up interview 8.0% of drug users (5.9% of females and 9.0% of males) had been completely drug free for at least 90 days prior to their interview. This gender differences in abstinence rates is not statistically significant. The mean age of those who were completely drug free in the 90 days prior to their 33-month follow-up interview was 29 (5.6 standard deviation) while those who were not drug free had a mean age of 27.8 (6.4 standard deviation, p -value 0.0955).

In Figures 1 and 2 we have compared the totally abstinent and the non-abstinent clients within DORIS in terms of a range of outcome measures.

On the basis of the range of outcome measures presented in Figures 1 and 2 (arrested over the last 17 months, having committed any crime and any acquisitive crime over the last 17 months, having been in employment and education over the last 17 months, self-reported health over the last 17 months, attempted suicide/self-harm over the last 17 months) it is evident that those drug users who reported a 90-day period of abstinence were fairing better than those who were continuing in their drug use. To an extent this is as one would expect, nevertheless the comparison does underline the benefits for both the individual and the wider community of drug users having an extended period of abstinence.

In Table I we look at those variables that were associated with drug user abstinence.

On the basis of the data presented in Table I, respondents who had been totally drug free for a period of at least 90 days were more likely to have been on an educational course or in employment; less likely to have attempted suicide or self-harmed; less likely to have been arrested; less likely to be drinking excessively; less likely to have committed a crime or an acquisitive crime; and more likely to rate their health as much better or somewhat better. All of these associations were statistically significant at the 5% level. In Table II we look at the abstinent and drug-using clients in terms of the drug treatments they had received on

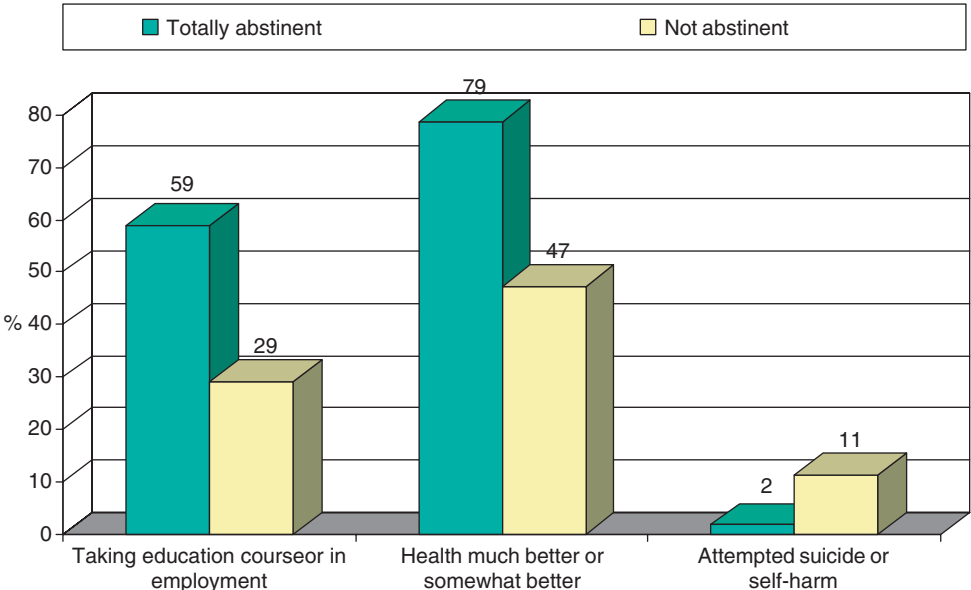


Figure 1. Totally abstinent vs. not abstinent at DORIS 4.

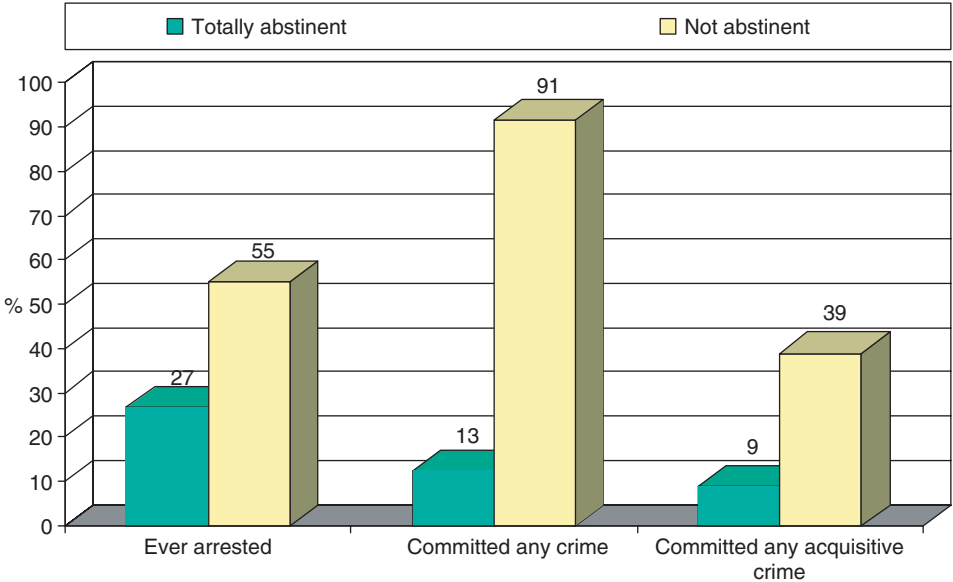


Figure 2. Totally abstinent vs. not abstinent at DORIS 4.

recruitment into the study (their index agency) and over the subsequent 33-month period (their post-index agency treatment).

Overall, 4.9% of DORIS respondents recruited from a prison-based drug treatment agency had been drug free for a period of at least 90 days at the

Table I. Characteristics of those who were totally drug free (apart from alcohol and tobacco).

Variable	Level	Abstinent at Doris 4—No	Abstinent at Doris 4—Yes	<i>P</i> -value
Sex	Female	193 (94.1%)	12 (5.9%)	0.1674
	Male	446 (91.0%)	44 (9.0%)	
Married/cohabiting	No	259 (89.9%)	29 (10.1%)	0.1012
	Yes	380 (93.4%)	27 (6.6%)	
Homeless	No	571 (91.5%)	53 (8.5%)	0.2106
	Yes	68 (95.8%)	3 (4.2%)	
Education course or employment	No	448 (95.1%)	23 (4.9%)	<0.0001
	Yes	185 (84.9%)	33 (15.1%)	
Excessive weekly drinking	No	518 (90.9%)	52 (9.1%)	0.0276
	Yes	121 (96.8%)	4 (3.2%)	
Attempted suicide or self-harm	No	567 (91.2%)	55 (8.8%)	0.0265
	Yes	72 (98.6%)	1 (1.4%)	
Ever arrested	No	288 (87.5%)	41 (12.5%)	<0.0001
	Yes	351 (95.9%)	15 (4.1%)	
Committed any crime	No	55 (52.9%)	49 (47.1%)	<0.0001
	Yes	584 (98.8%)	7 (1.2%)	
Committed any acquisitive crime	No	390 (88.4%)	51 (11.6%)	<0.0001
	Yes	249 (98.0%)	5 (2.0%)	
Health much better or somewhat better	No	341 (96.6%)	12 (3.4%)	<0.0001
	Yes	298 (87.1%)	44 (12.9%)	

33-month follow-up point. In the case of those drug users who were recruited from a residential rehabilitation service the proportion who had a 90-day drug-free period rose to 24.7%, while for those who were recruited from a community-based drug treatment agency only 6.4% had been drug free for the 90-day period.

In relation to drug users' post-index agency treatments, those who had experienced residential rehabilitation were again significantly more likely than their peers to have experienced a 90-day period of total abstinence. The comparison here is between 3.4% for those receiving post-index agency provision of methadone maintenance, 6.7% for those receiving methadone detoxification, 7.1% of those receiving non-methadone-based substitute prescribing, and 8.5% of those who received residential detoxification. Fully 29.4% of those who received residential rehabilitation post-recruitment into the DORIS study were drug free for the 90-day period in advance of their interview.

To try and identify whether these differences in abstinence rates across different treatments were attributable to the treatments provided rather than to other aspects of the clients world we have undertaken a multivariate analysis controlling for the four variables that were found to be independently significant predictors of abstinence on the basis of a stepwise logistic regression analysis. These four variables were whether the respondent was married or cohabiting, whether they were on an educational course or in employment, whether they had committed any crime, and whether their health was much better or somewhat better. On the basis of the multivariate analysis undertaken, important differences remained across the treatment types with those clients receiving residential

Table II. Abstinence and drug agency contact on the part of those who were totally drug free (apart from alcohol and tobacco).

Variable	Level	Abstinent at Doris 4—No	Abstinent at Doris 4—Yes	Univariate P-value	Odds ratio (95% confidence interval)*	Multivariate P-value*
Index agency	Prison	255 (95.1%)	13 (4.9%)	<0.0001	0.57 (0.24 to 1.37)	0.0055
	Residential rehab	64 (75.3%)	21 (24.7%)			
	Other	320 (93.6%)	22 (6.4%)			
Post-index agency—methadone maintenance	No	219 (84.2%)	41 (15.8%)	<0.0001	0.20 (0.09 to 0.44)	<0.0001
	Yes	420 (96.6%)	15 (3.4%)			
Post-index agency—methadone detox	No	415 (91.2%)	40 (8.8%)	0.3279	0.42 (0.18 to 0.97)	0.0428
	Yes	224 (93.3%)	16 (6.7%)			
Post-index agency—other substitute prescribing	No	223 (90.3%)	24 (9.7%)	0.2328	0.61 (0.28 to 1.34)	0.2171
	Yes	416 (92.9%)	32 (7.1%)			
Post-index agency—residential detox	No	457 (92.1%)	39 (7.9%)	0.7660	0.68 (0.31 to 1.51)	0.3463
	Yes	182 (91.5%)	17 (8.5%)			
Post-index agency—residential rehab	No	603 (93.6%)	41 (6.4%)	<0.0001	4.35 (1.46 to 12.94)	0.0082
	Yes	36 (70.6%)	15 (29.4%)			
Post-index agency—any other non-needle exchange treatment	No	74 (92.5%)	6 (7.5%)	0.8456	0.51 (0.16 to 1.68)	0.2690
	Yes	565 (91.9%)	50 (8.1%)			

Note: *Adjusting for married/cohabiting, education course or employment, committed any crime and health much better or somewhat better. Odds ratio for yes vs. no unless otherwise specified.

Table III. Severity of dependence.

Grouping	Number	SDS score at DORIS 1—Mean (SD)
Index agency residential rehab (with no methadone maintenance)	37	11.1 (3.2)
Methadone maintenance (index agency not residential rehab)	431	10.8 (3.8)

rehabilitation being significantly more likely than their peers to have achieved a 90-day period of total abstinence.

Levels of dependence

The finding that drug users who had experienced residential rehabilitation services were more likely to have achieved a 90-day period of abstinence than those who received methadone maintenance, or other treatment options, raises the question of whether the residential drug treatment clients had a lower level of drug dependence at the outset of the DORIS study compared with their peers receiving other treatment modalities. To establish whether this was the case we compared DORIS respondents' mean severity of dependence scores using the 15-point Severity of Dependence Score developed by Gossop and colleagues (1995). The data on this are summarized in Table III.

There were virtually no differences in the level of drug dependence between those DORIS respondents receiving residential rehabilitation and those receiving methadone maintenance. The greater proportion of residential rehabilitation clients achieving a 90-day period of abstinence, compared to clients receiving methadone maintenance, is unlikely to be explained, then, by reference to differences in DORIS respondents' pretreatment levels of drug dependence.

Discussion

As with all research it is important to understand the limitations of the DORIS study. The gold standard methodology for evaluating the effectiveness of health services is the randomized control design, preferably with a comparison or control group. Such studies are expensive and difficult to undertake—they also require the close co-operation of a wide range of service providers to agree to have their clients or patients randomly allocated to them. Nevertheless, within the drug treatment domain it is the longitudinal follow-up study of treatment cohorts that has predominated as the main method of evaluation. One of the shortcomings of the follow-up design, especially in the absence of a control or comparison group, is the difficulty of attributing any identified improvements in client behaviour to the provision of particular types of services. A further difficulty of research in this area is the fact that drug treatment agencies, like any other area of human activity, are subject to change within a relatively short period of time. This means that while one might be able to form an understanding of the operation

and the possible impact of particular services, these services are themselves liable to change over time. As a result, one needs to be cautious both in ascribing improvements in client or patient behaviour to specific service inputs and in the assumption that services remain in the form they were in at the point at which the research was carried out.

The research we have reported upon here did not entail a non-treatment comparison or control group. The reason for this is the impossibility of ensuring that the members of a non-treatment group did not avail themselves of some form of drug treatment during the period covered by the study—thereby rendering themselves inappropriate as members of a non-treatment comparison or control group. With these limitations in mind, however, the DORIS study has reported important data on the proportion of drug users who were able to become abstinent or drug free for a 90-day period following their contact with drug treatment services in Scotland. We found that while a large proportion of drug users identified abstinence as their sole goal in contacting drug treatment services, only a very small proportion (8%) were able to maintain a 90-day drug-free period in advance of their being interviewed for the 33 month DORIS follow-up. An immediate question one might ask in relation to this finding is whether one would have expected a larger proportion of drug users to have become drug free nearly three years after having initiated a new episode of drug treatment.

There have been very few studies in the UK that have followed cohorts of drug users over a sufficiently long period of time against which to judge the abstinence rates within the Scottish study. One of the few studies that have tracked a treatment sample of drug users for a reasonable period of time is the National Drug Treatment Outcome Study initiated in England in the early 1990s (Gossop, Marsden, & Stewart, 2001; Gossop et al., 1999, 2000). There is a difference in the definition of abstinence between the NTORS study and the DORIS research; drug users who had confined their drug use to substitute medication were regarded as drug free within NTORS. On the basis of this definition within NTORS, 35.9% of drug users in contact with residential rehabilitation services and 24.3% of those receiving methadone maintenance were drug free for a 90-day period two years after initiating a new episode of drug treatment. Within the Scottish study with the stricter definition of abstinence 29.4% of those in contact with residential rehabilitation services and 3.4% of those in contact with methadone maintenance services had a 90-day drug-free period nearly three years after having initiated a new episode of treatment. If we had defined abstinence in the same way as the NTORS researchers (to include the use of prescribed methadone) the proportion of drug users achieving the drug-free state within the Scottish study would have been 33.3% for those receiving residential rehabilitation and 11% for those receiving methadone maintenance. In both the English and the Scottish studies drug users in contact with residential rehabilitation services were more likely than those receiving other community-based treatments to achieve the 90-day drug-free period (however defined). While similar proportions of drug users in contact with residential rehabilitation

services in both studies were able to achieve the drug-free state, the proportion of drug users receiving methadone maintenance who were able to be drug free at the 33-month interview point was substantially lower in the Scottish study than in the English study (irrespective of whether one includes or excludes methadone within the abstinence definition).

It is important to stress that what we have identified here is an association between becoming drug free and different treatment modalities rather than a causal explanation of the route through which drug users in Scotland were able to become drug free. The distinction between causality and association is an important one. In explaining why a greater proportion of clients in contact with residential rehabilitation services in Scotland had been able to become drug free, compared to those in contact with methadone maintenance programmes, it is likely that a range of factors, both individual and contextual, will have been influential. For example, it may be that clients in contact with residential rehabilitation services were more motivated towards recovery than clients receiving other treatment modalities. We do not have data in the DORIS study reporting information on client levels of motivation. Equally, it may be that elements within the therapeutic programme of the different DORIS services may explain both the lower abstinence rates amongst Scottish drug users (compared to those within the NTORS study) and the finding of higher abstinence rates amongst residential rehabilitation clients compared to clients of other services within the DORIS research.

One element that might be influential here is the differential focus upon abstinence and harm reduction across different drug treatment agencies. In the case of the residential rehabilitation agencies within the DORIS study all of the agencies had a very clear abstinence focus. By contrast many of the community-based methadone maintenance programmes had more of a harm-reduction focus within which greater emphasis was placed upon encouraging drug users to develop greater stability within the context of their ongoing drug use. An emphasis upon harm reduction can, in certain circumstances, lead to a dilution in the focus upon abstinence. Robert Newman, for example, one of the leading harm-reduction clinicians within the United States, recently commented on the issue of abstinence in drug treatment services by noting that:

Addicts who embrace an ultimate goal of enduring abstinence should be assisted in every way possible, but they must be advised with brutal frankness of the low prospect of success—and the grim, potentially fatal, consequences of failure. (Newman, 2004)

By contrast, Mike Trace, one of the leading supporters of the harm-reduction within the UK, has observed that:

For most clients, independence and self-respect will be found in the successful steps made towards abstinence. (Trace, 2005)

The contrast between these statements is more one of emphasis than a clear divide. Nevertheless, one can see how some formulations of the harm-reduction approach may give rather less emphasis to the goal of drug users becoming drug free than other approaches with a clear abstinence focus. This, however, is only

a possible explanation of what may be happening here and should not in any sense be taken as an illustration of an empirically proven causal pathway. It is important to emphasize, however, that the greater abstinence rate on the part of those receiving residential rehabilitation within the DORIS study *cannot* be explained in terms of these services selecting clients who were less dependent than those who were being treated in the community.

Conclusions

This study has shown that, overall, only a small proportion of drug users in Scotland were able to become drug free 33 months after having initiated a new episode of drug treatment and that abstinence was more closely associated with residential rehabilitation services than with any of the other services included within the DORIS study. It has been frequently observed, by those commenting on drug treatment services in Scotland, that no one model of drug treatment is suitable for all drug users. It is undoubtedly true that different individuals will benefit from different packages of treatment to differing degrees at different times in the trajectory of their recovery. In Scotland at the present time, however, approaching 20,000 drug users are thought to be receiving methadone (Scottish Executive, 2005). By comparison there are relatively few residential rehabilitation services—indeed on the basis of information provided by the Scottish Executive only around 2% of drug users initiating drug abuse treatment in Scotland are provided with residential rehabilitation. On the basis of the data presented here, with all of the caveats that this study has identified an association rather than a causal relationship, there may well be a case for ensuring greater access to residential rehabilitation services within Scotland than is currently the case. Alongside this recommendation there is also a clear need to better understand why it is that such a small proportion of drug users receiving methadone maintenance within Scotland appear to be able to achieve a 90-day drug-free period. The fact that the figure for the Scottish study is so much lower than the equivalent figure for England based upon the NTORS study serves to underline the importance of examining the provision of methadone within Scotland.

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