



Findings 3

SUMMARY OF 1-YEAR OUTCOMES

ABSTINENCE MODALITY

Research Outcome Study in Ireland (ROSIE)

The Research Outcome Study in Ireland (ROSIE) is the first national, prospective, longitudinal, multi-site drug treatment outcome study in the country. The National Advisory Committee on Drugs (NACD) commissioned this research in 2002 as required by the National Drugs Strategy Action 99. The aim of the Study is to recruit and follow opiate users entering treatment over a period of time documenting the changes observed. The contract was awarded to Dr Catherine Comiskey and NUI Maynooth.

The ROSIE study follows participants from the point of commencing a new treatment episode (treatment intake) and monitors progress at time-anchored points; 6 months, 1-year and 3-years after treatment intake. Between September 2003 and July 2004, the ROSIE study recruited 404 opiate users on entry into three-index treatments; methadone maintenance/reduction (53.2%, n=215) structured detoxification (20%, n=81) and abstinence-based treatment (20.3%, n=82). In addition, a sub-sample of opiate users were recruited from needle-exchanges (6.4%, n=26). These modalities were part of the tender brief from the NACD as they were considered to represent the most widely implemented interventions for opiate users in Ireland.

Abstinence cohort: Follow-up rates

Of the 82 people recruited within the abstinence modality, 98% (n=80) were located, and 68% (n=56) successfully completed a 1-year interview. One individual died within the follow-up period, two people withdrew from the study, 21 people were located but not successfully interviewed, and an additional two participants were not located. These 26 people 'lost' to follow-up were excluded from the comparative analysis to allow for valid assessment across the two time periods. This is the third paper in the ROSIE Findings series and it provides a snapshot of the outcomes for people in the abstinence modality one year after treatment intake.

KEY MESSAGES

- Two-thirds of participants (66%) completed their index abstinence-based treatment programme; 27% dropped out before programme completion.
- Only 11% of individuals recruited within the abstinence modality were female.
- Abstinence from **all drugs** (including prescribed methadone and excluding alcohol) increased from 18% at treatment intake to 41% at 1-year.
- Cannabis was the only target drug where no reductions in the numbers reporting use at treatment intake and 1-year were observed.
- The most substantial reductions over the follow-up period was in participants' cocaine use, in terms of the proportions reporting use, the frequency of use and quantities consumed.
- Levels of involvement in crime reduced across six of the 12 categories of offences.
- Improvements were observed in nine of the 10 physical health symptoms, and five of the 10 mental health symptoms.
- The mortality rate of the cohort was 1.2% (1/82).
- Increases in contact with two health and social care services (GPs and employment/educations agencies) were reported.

Abstinence Modality

For the purpose of this study the abstinence modality is defined as being any structured programme which required individuals to be drug-free (including free from any pharmacological intervention) in order to participate in, and remain on, the programme. Such programmes provide intensive psychological support and a structured programme of daily activities which participants are required to attend. Treatment can occur in an inpatient (often referred to as residential rehabilitation) or an outpatient (i.e. structured drug-free day programmes) setting.

Inpatient abstinence-based treatment programmes can differ markedly in their underlying philosophy, programme structure, intensity and duration. Programmes may be either short-term (usually between 4-12 weeks) or long-term (usually between 3-12 months). ROSIE study participants were recruited from the three main types of residential rehabilitation programmes identified in the international literature; 12-step/Minnesota Model programmes, Christian houses, and a therapeutic community.

In summary, 85% (n=70) of the ROSIE abstinence cohort were recruited from inpatient and 15% (n=12) from outpatient settings.

METHODOLOGY

1. Study design

The 404 ROSIE study participants were recruited from both inpatient (hospital, residential programmes & prisons) and outpatient settings (community-based clinics, health board clinics & GPs). Participants had to be over 18 years, commencing a new treatment episode, prepared to consent to the tracking/follow-up procedures, and willing to provide locator information. Treatment agencies participating in the study were purposively (not randomly) sampled to reflect drug treatment in Ireland, and the known geographical spread of provision and range of services. In total, 44 agencies providing approximately 54 services located in rural, urban and inner-city areas of Ireland were involved in the study. In addition, a Research Advisory Group was established by the NACD to support and monitor the research project.

Participants were interviewed at the three time periods using a pre-prepared interview schedule which examined key outcome measures including

- Drug use (drug type, frequency, cost and quantity of drug use)
- General health (a 10-point physical & mental health assessment)
- Social functioning (employment, accommodation, involvement in crime)
- Harm (injecting behaviour & experience of overdose)
- Mortality (participant/contact feedback & checking non-followed-up participants against the General Mortality Register).

In addition to a lifetime measure, measures were taken of behaviours in the 90 days preceding interviews, except for injecting-related risk behaviour variables when 30 days was used. Individuals were asked about their use of 16 substances. This document focuses on the seven most frequently reported problem drugs – referred to as target drugs – (i.e. heroin, methadone (non-prescribed), benzodiazepines (non-prescribed), cocaine powder, crack cocaine, cannabis & alcohol) and reports changes in use patterns at 1-year.

2. Follow-up

Follow-up of participants was assisted by the provision of at least four contacts (locator information) for each person (including a drug treatment contact, family member, GP & others). A small remuneration was provided at 1-year follow-up to acknowledge the ongoing participation of the individual in the study.

3. Study limitations

1. Although the findings presented here highlight positive outcomes for study participants, they do not indicate a direct causal relationship between the treatment received and the outcomes observed.
2. The study did not randomly allocate participants to treatment settings/modality or employ a control group (drug users with similar profiles not attending the index treatment).
3. Any individual behaviour change is the result of the interaction of three factors, the person, the environment and the intervention, all of which can influence outcomes but could not be controlled for in this study.

4. Understanding this paper

Data are presented on the 56 individuals recruited within the abstinence modality who completed treatment intake and 1-year follow-up interviews. Only individuals who provided valid answers to each individual question at the two time periods were included in the analysis. Missing data were handled by excluding the cases from the particular analysis. Changes in categorical variables were analysed using the McNemar test. When the results of these tests were found to be statistically significant¹ an asterisk (*) was inserted into the frequency tables and/or graphs. Full details of these tests will form part of the ROSIE Study Technical Report on 12-month Outcomes. Percentages are rounded up. Comparisons of means were analysed using paired-sample t-tests (‡ indicates statistical significance).

5. ROSIE Findings Series

- **ROSIE Findings 1** reported on the 1-year outcomes for the followed-up population (n=305) across all modalities.
- **ROSIE Findings 2** presented 1-year outcomes for individuals recruited within the detoxification modality.
- **ROSIE Findings 3** (this document) reports 1-year outcomes for individuals recruited within the abstinence modality.
- **ROSIE Findings 4** (forthcoming) will present 1-year outcomes for individuals recruited within the methadone modality.

Further issue-based papers will be published in due course.

¹ Statistical significance can only be stated when tests have been carried out on the data to establish the degree of confidence with which we can infer that the differences in the observed findings are true and not due to sampling or other error. This is usually reported at a 5% level of probability which means where a p value is found to be less than or equal to 0.05 we can be confident that 95 times out of 100 the outcomes and differences observed are not due to chance.

Profile of Participants at Treatment Intake

The demographic characteristics of participants (n=82) in the abstinence modality are presented in Table 1. The treatment entrants were typically male, on average 27 years-of-age and primarily reliant on social welfare payments. Less than half the cohort were parents of children under 18 years-of-age, most of whom (77%) did not have their children in their care. The majority of entrants had spent some time in prison (72%), and 16% were homeless in the 90 days prior to treatment intake interview.

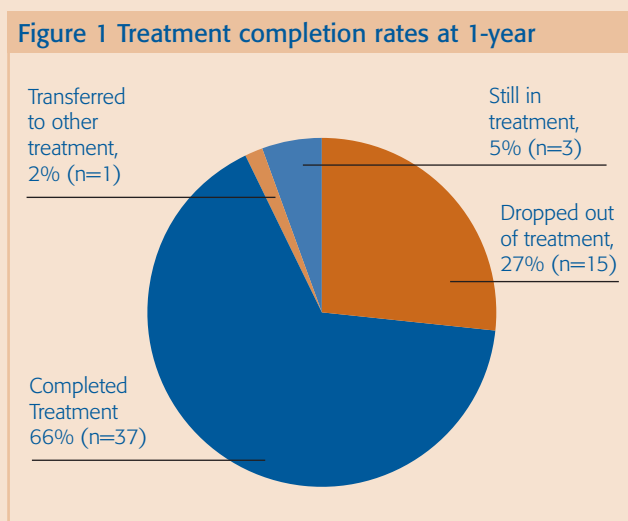
Gender (% male)	89
Average age (yrs)	27
^a Early school leavers (%)	30
^b Main source of income (%)	
Social welfare	70
Employed	30
^b Homeless (%)	16
Ever in prison (%)	72
Parents (%)	47

^a Defined as leaving school before 16 years, or before completion of three years of post-primary education (Education, Welfare Act 2000)

^b In the 90 days prior to intake interview

Treatment Completion Rates

Figure 1 shows that the treatment completion rate was high; the majority of participants (66%) successfully completed their index treatment. Over one-quarter of the cohort dropped out of treatment (27%) and 2% of participants transferred to another treatment type before completing the index abstinence-based treatment programme. Finally three individuals (5%) were still in their index treatment at 1-year.



Treatment Status at 1-year

One year after treatment intake, 64% (n=36) of participants reported being in some form of drug treatment. Less than one-quarter of the cohort were on a methadone programme (23%). No participants were in a structured detoxification programme and 5% (n=3) were in a (their index) residential rehabilitation abstinence-based treatment programme. Twenty-three per cent of the cohort attended one-to-one counselling and 37% were in group work - this category includes Narcotic Anonymous (NA) meetings, aftercare, programmes and structured day programmes.

Table 2 Treatment category at 1-year interview

^a Treatment at 1-year	%	n
Currently in Treatment	64	36
Methadone maintenance/reduction	23	13
Detoxification programme	0	0
Residential rehabilitation	5	3
One-to-one counselling	23	13
Group Work	37	21

^a Percentages do not sum to 100, as categories are not mutually exclusive

Drug Use Outcomes

The number of people who reported using heroin, methadone (non-prescribed), benzodiazepines (non-prescribed), cocaine powder, crack cocaine and alcohol in the 90 days prior to interview decreased between treatment intake and 1-year follow-up (see Table 3). Polydrug use in the 90 days prior to interview also reduced; from 66% (n=37) at treatment intake to 41% (n=23) at 1-year. The average number of days in which methadone (non-prescribed), benzodiazepines (non-prescribed), and cocaine were used in the 90 days prior to interview reduced and non-significant reductions were observed in the frequency of use of the remaining substances. In addition, non-significant reductions were observed in the proportions who reported cannabis and in the frequency of its use. The consumption levels of heroin, methadone (non-prescribed), cocaine and cannabis reduced over the time period, as indicated by changes in the mean daily quantity used in the 90 days prior to interview.

The most substantial reduction over the follow-up period was in cocaine use, in terms of the proportions of participants using the drug (46% at treatment intake compared with 14% at 1-year), the frequency of use and the quantities consumed.

Table 3 Drug use in the 90 days prior to treatment intake & 1-year interview

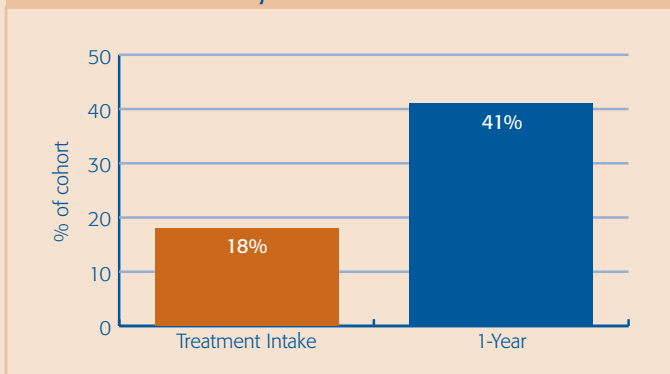
	% Used				Mean days used				Mean daily quantity used			
	Intake		1-year		Intake		1-year		Intake		1-year	
	%	n	%	n	Mean	sd	Mean	sd	Mean	sd	Mean	sd
Heroin (grams)	65	34	42	22*	27.4	32.1	16.6	29.3	0.8	1.0	0.3	1.0 †
^a Methadone (mls)	36	20	13	7*	9.2	21.3	2.8	12.8 †	14.9	29.6	5.2	14.9 †
^a Benzodiazepines (mgs)	37	20	15	8*	10.6	20.4	1.4	5.3 †	48.1	171.4	5.7	23.1
Cocaine (grams)	46	26	14	8*	9.9	18.5	2.0	7.9 †	1.0	1.7	0.3	0.9 †
Crack cocaine	21	12	5	3*	3.5	13.6	0.7	4.1	nc	nc	nc	nc
Cannabis (joints)	54	26	40	19	31.9	35.4	22.2	35.4	13.7	28.0	2.8	6.2 †
Alcohol (units)	60	30	36	18*	17.9	28.8	10.4	23.4	14.1	20.8	8.2	26.4

* McNemar test revealed statistically significant changes. † Paired t-test showed statistical significance. nc (not calculated) Crack cocaine was excluded from the analysis due to the inconsistency in the way data was reported. ^a Refers to the use of non-prescribed drugs.

Drug Abstinence Rates

At treatment intake 18% (n=9) of participants reported that they had not used any drugs (excluding alcohol and/or prescribed drugs) in the preceding 90 days. By 1-year interview this had increased to 41% (n=21) of participants (See Figure 2). Similarly, abstinence from **all drugs** excluding alcohol, including prescribed drugs such as methadone was also 18% at treatment intake vs. 41% at 1-year.

Figure 2 Illicit drug abstinence rates in 90 days prior to treatment intake & 1-year interview



Average amount spent on each drug

The aforementioned changes in reported drug use were accompanied by the following changes in the average amount individuals spent (€) on a typical drug using day, on four substances:

- A reduction in the average daily heroin spend^a from €114.60 at treatment intake (sd=149.0) to €47.50 at 1-year (sd=177.50)
- A reduction in the average daily cocaine powder spend^b from €109.20 at treatment intake (sd=190.90) to €18.20 at 1-year (sd=61.60)
- A non-significant reduction in the average daily crack cocaine spend^c from €62.40 at treatment intake (sd=244.40) to €9.00 at 1-year (sd=50.90)
- A reduction in the average daily cannabis spend^d from €5.40 at treatment intake (sd=10.80) to €1.00 at 1-year (sd=2.20).

^a Based on a bag of heroin (0.113 grams) costing €20

^b Based on 1 gram of cocaine powder costing €110 at intake €66 at 1-year

^c Based on 1 rock costing €50 and/or the cost of cocaine powder as above

^d Based on 1 ounce of cannabis costing €110 at intake €100 at 1-year (cost per joint, 39c at intake 35c at 1-year)

Crime Outcomes

There was a reduction in the percentage of participants involved in acquisitive crime, from 35% (n=19) at treatment intake to 13% (n=7) at 1-year.

The numbers of participants involved in the selling/supplying of drugs in the 90 days prior to interview decreased between treatment intake and 1-year (see Table 4). In addition, the proportion of participants who committed theft from a person, theft from a house/home, handling stolen goods, fraud/forgery/deception and assault also reduced over this time period.

Overall, a higher proportion of participants reported no criminal involvement in the 90 days prior to interview at 1-year (76%) compared to treatment intake (43%).

Table 4 Offending behaviour in the 90 days prior to treatment intake & 1-year interview

	% committed			
	Intake		1-year	
	%	n	%	n
Selling/supplying	35	19	9	5*
Theft from a person	19	10	4	2*
Theft from a house/home	13	7	0	0*
Theft from a shop etc.	17	9	9	5
Theft from a vehicle	8	4	0	0
Theft of a vehicle	7	4	0	0
Handling stolen goods	31	17	9	5*
Fraud/forgery/deception	19	10	2	1*
Assault	16	9	2	1*
Criminal damage	11	6	2	1
Soliciting	0	0	0	0
Breach of the peace	6	3	4	2

* McNemar test revealed statistically significant changes

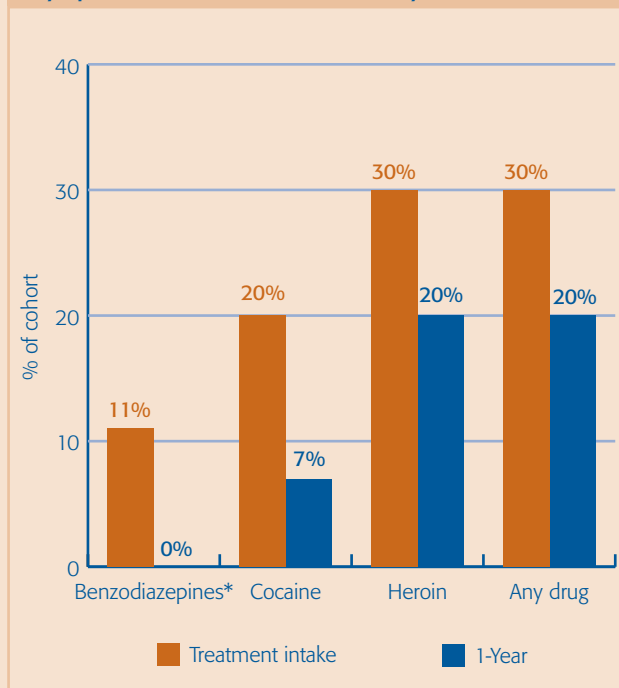
Risk Behaviour Outcomes

The reduction in participants' drug use was accompanied by a non-significant decrease in the numbers who reported injecting drug use. At treatment intake 30% (n=17) of the cohort injected a drug in the 90 days prior to interview compared with 20% (n=11) at 1-year. However a reduction in the proportions injecting one of the three most commonly injected substances, benzodiazepines, was observed; from 11% (n=6) at treatment intake to zero per cent at 1-year (see Figure 3).

Although there was no significant decrease in the frequency of injecting drug use (an average of 12.4 days out of 90 at treatment intake (sd=25.6) compared with 9.7 days (sd=24.9) at 1-year) reductions in the average times per day participants injected in the 90 days prior to treatment intake and 1-year interview were observed. At treatment intake participants reported injecting on average 1.3 times per days (sd=2.6) compared with an average of 0.4 times per day (sd=1.0) at 1-year.

The proportion of participants who reported an overdose in the previous 90 days remained the same over the two time periods at 4% (n=2).

Figure 3 Injecting drug use by drug type in the 90 days prior to treatment intake & 1-year interview



* McNemar test revealed statistically significant change

There were no changes in participants' injecting-related risk behaviours. At treatment intake participants reported low rates of borrowing, lending, reusing own injecting equipment, and sharing of injecting paraphernalia (e.g. spoons and filters). With the exception of a decrease in the numbers who reported borrowing, these behaviours remained the same over time (see Table 5).

Table 5 Injecting-related risk behaviour in the 30 days prior to treatment intake & 1-year interview

	% reported			
	Intake		1-year	
	%	n	%	n
Borrowed used needles/syringes	8	4	2	1
Lent used needles/syringes	2	1	2	1
Reused own needles/syringes	9	4	9	4
Used filters/spoons after someone	0	0	0	0

Health Outcomes

Improvements in both the physical and mental health symptoms of the cohort were evident over the relatively short time period. The numbers of participants who reported nine of the 10 physical health symptoms reduced from treatment intake to 1-year (see Table 6). A non-significant reduction was observed in the numbers who reported the remaining health symptom (chest pains).

Some of the most marked reductions were observed in the symptoms associated with opiate withdrawals (such as tremors/shakes, joint/bone pains, and muscle/pains).

Table 6 Physical health symptoms in the 90 days prior to treatment intake & 1-year interview

	% reported			
	Intake		1-year	
	%	n	%	n
Poor appetite	63	31	41	20*
Tiredness/fatigue	82	41	40	20*
Nausea (feeling sick)	49	24	18	9*
Stomach pains	42	21	14	7*
Difficulty breathing	35	17	17	8*
Chest pains	22	11	16	8
Joint/bone pains	57	28	14	7*
Muscle pains	50	25	12	6*
Numbness/tingling arms/legs	26	13	8	4*
Tremors/shakes	51	25	6	3*

* McNemar test revealed statistically significant changes

Table 7 illustrates that there were reductions in the number of participants who reported suffering from five of the 10 mental health symptoms. Most of these reductions were in anxiety related symptoms (i.e. feeling tense, suddenly scared for no reason, nervous/shaking inside and feeling fearful). Although there were reductions in the numbers who reported the remaining, largely depressive-type symptoms (i.e. feeling hopeless about the future, feelings of worthlessness, and no interest in things), none were statistically significant.

Table 7 Mental health symptoms in the 90 days prior to treatment intake & 1-year interview

	% reported			
	Intake		1-year	
	%	n	%	n
Feeling tense	88	37	40	17*
Suddenly scared for no reason	47	20	16	7*
Feeling fearful	76	29	29	11*
Nervous/shaking inside	59	24	29	12*
Panic attacks	24	11	22	10
Feeling hopeless about future	55	24	43	19
Feelings of worthlessness	62	26	40	17
No interest in things	65	28	47	20
Feeling lonely	76	32	55	23*
Thoughts of ending life	26	12	17	8

* McNemar test revealed statistically significant changes

Service Contact

There was an increase in participants' contact with two social care services (GPs and employment/education services) from treatment intake to 1-year (see Table 8). In addition, although not statistically significant, participants reported increased contact with housing/homeless services, social welfare services, and hospitals.

Table 8 Contact with health & social care services in the 90 days prior to treatment intake & 1-year interview

	% reported			
	Intake		1-year	
	%	n	%	n
Stayed overnight in hospital	7	4	9	5
Treated in A & E	9	5	13	7
Seen GP	30	16	60	32*
Out-patient appointment	20	11	20	11
Contact with social services	4	2	4	2
Employment/education services	8	4	52	26*
Social welfare services	40	19	45	21
Housing/homeless services	15	8	23	12

* McNemar test revealed statistically significant changes

Differences Between Those Interviewed at 1-year and Those 'Lost' to Follow-up

Given that almost one-third of the cohort (32%, n=26) did not complete the 1-year follow-up interview, analysis was undertaken to determine whether there were any differences between those interviewed at 1-year and those 'lost' to follow-up at treatment intake, which may bias the results in the current document.

Table 9 shows the difference (at treatment intake) in key variables between the two groups. Although not statistically significant participants interviewed at 1-year were more likely to be male, to be on social welfare, to have used heroin, cocaine and alcohol in the preceding 90 days, and to have injected a drug in the 90 days prior to treatment intake.

Analysis revealed that those lost to follow-up used cocaine on significantly more days (prior to treatment intake) than individuals interviewed at 1-year.

The intake characteristics and problems of participants interviewed at 1-year and those 'lost' to follow-up were compared using a logistic regression of key variables (age, gender, frequency of heroin use, quantity of heroin used, frequency of cocaine use, number of drugs used, number of days injecting drug use, frequency of alcohol use, previous treatment for drug/alcohol use, treatment setting). The results show that the samples did not differ significantly.

Table 9 Comparison of participant characteristics at treatment intake between those 'lost' to 1-year follow-up and those interviewed

	'Lost' (n=26)	Interviewed (n=56)
Gender (% male)	85	91
Mean age (yrs)	26.7	27.6
Age left school (yrs)	15.6	15.3
On social welfare (%)	65	71
Treatment setting		
Inpatient (%)	85	86
Outpatient (%)	15	14
Time on waiting list (wks)	4.6	5.2
Rated treatment as very important (%)	92	96
Used heroin last 90 days (%)	42	65
Mean days used heroin	22.0	27.4
Used cocaine last 90 days (%)	42	46
Mean days used cocaine	12.5	9.9 [‡]
Used alcohol last 90 days (%)	44	60
Mean days used alcohol	17.9	17.9
Injected last 90 days (%)	27	30

[‡] Paired t-test statistically significant

Conclusion

ROSIE is the first national study to have examined 1-year treatment outcomes for opiate users. The findings presented in this document demonstrate that participation in an abstinence-based treatment programme is followed by positive outcomes in drug use, involvement in crime, and physical and mental health symptoms. These improvements are in line with those observed in similar international studies.

The percentage of ROSIE participants followed-up and interviewed 1-year after treatment intake is comparable with the international literature. A total of 68% of the ROSIE abstinence cohort completed a 1-year interview. The UK NTORS follow-up rate was similar; Gossop *et al* (1999)¹ report a 1-year follow-up interview rate of 67.4% for individuals recruited within residential programmes. The Australia ATOS study, report a follow-up rate of 78% within the cohort of participants recruited from residential rehabilitation (Teesson *et al*, 2006)². However it should be noted that unlike the ROSIE study and the NTORS study, participants within ATOS were paid for their treatment intake interview which may have influenced the study retention rate.

In terms of treatment involvement at 1-year, the ROSIE cohort compared very favourably with NTORS and ATOS. At 1-year 64% of the ROSIE participants were in some form of treatment. Within NTORS residential rehabilitation cohort, Gossop *et al* (1999) report that 60% of participants received some form of treatment during the year and within ATOS, 49% of their residential rehabilitation cohort were in some form of treatment at 1-year (Teesson *et al*, 2006).

The ROSIE participants reported substantial reductions in the use of cocaine and methadone (non-prescribed) in terms of the numbers reporting use, the frequency of use and the quantities consumed. In addition, the numbers reporting the use of all other target drugs except cannabis reduced significantly. Fifty-eight per cent of the ROSIE participants had not used heroin within the 90 days prior to 1-year interview, this compares very favourably with NTORS where a heroin abstinence rate of 50.5% in the previous 90 days was observed. Within the Australian study the authors reported that 63% of the cohort had been abstinent from heroin within the last month. As in other studies (Gossop *et al*, 2000)³ disappointing improvements were observed in study participants' drinking behaviour. Although there was a significant reduction in the percentage of ROSIE participants who reported drinking in the 90 days prior to 1-year follow-up interview as compared with treatment intake interview, reductions in frequency and average daily quantity of alcohol used were non-significant.

The ROSIE cohort reported significant reductions in selling/supplying drugs and in acquisitive crime, comparable with international literature. The proportion of ROSIE participants selling/supplying drugs in the 90 days prior to interview reduced from 35% at treatment intake to 9% at 1-year follow-up. Within NTORS a similar proportion (33%) reported selling drugs at treatment intake but this only reduced to 17% at 1-year follow-up (Gossop *et al*, 1999). The proportion of ROSIE participants who reported involvement in acquisitive crime in the 90 days prior to interview reduced by 22 percentage points from 35% at treatment intake to 13% at 1-year follow-up. A similar reduction was reported by Gossop *et al* (1999); 51% were involved in acquisitive crime at treatment intake this reduced by 25 percentage points to 26% at 1-year follow-up.

In conclusion, results on outcomes at 1-year for individuals recruited in the abstinence modality compare very favourably with other international outcome studies. However, further research is required to assess if improvements observed at 1-year are sustainable in the long-term. The forthcoming results from the ROSIE 3-year follow-up will provide stronger evidence on the effectiveness of abstinence-based treatment programmes and will enable policy makers and planners to make more informed decisions.

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