



# Findings 2

## SUMMARY OF 1-YEAR OUTCOMES

### DETOXIFICATION 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.

#### Detoxification cohort: Follow-up rates

Of the 81 people recruited within the detoxification modality, 93% (n=75) were located, and 77% (n=62) successfully completed a 1-year interview. One individual died within the follow-up period, four people withdrew from the study, eight people were located but not successfully interviewed, and an additional six participants were not located. These 19 people 'lost' to follow-up were excluded from the comparative analysis to allow for valid assessment across the two time periods. This is the second paper in the ROSIE Findings series and it provides a snapshot of the outcomes for people in the detoxification modality one year after treatment intake.

#### KEY MESSAGES

- Treatment completion rates were high; 68% of participants successfully completed their intake detoxification treatment programme.
- (Illicit) drug abstinence rates (i.e. excluding alcohol) increased from 8% at treatment intake to 45% at 1-year. Abstinence from **all drugs** (including prescribed drugs) increased from 5% at treatment intake to 39% at 1-year.
- Participants' use of heroin, as well as methadone (non-prescribed), benzodiazepines (non-prescribed), cocaine and alcohol reduced at 1-year, in terms of the numbers reporting use, their frequency of use and the average quantity of each drug consumed.
- Overall, a higher proportion of participants reported no involvement in crime at 1-year (74%) compared to treatment intake (19%). Levels of involvement in crime reduced across six of the 12 categories of offences.
- Decreases in the number of participants who had injected (from 48% to 23%) and in the frequency of injecting were reported at 1-year.
- Improvements in physical health symptoms were observed at 1-year, in particular those associated with opiate withdrawal. The most notable improvements in mental health were observed in anxiety-related symptoms.
- The mortality rate for the cohort was 1.2% (1/81).
- Increase in contact with a range of medical and social care services were reported.
- At 1-year follow-up, 73% of participants were in some form of treatment; 42% were on prescribed methadone.

#### Detoxification Modality

Structured detoxification is a process whereby individuals are systematically and safely withdrawn from opiates, under medical supervision. The most common method of opiate detoxification in Ireland is to use methadone and slowly taper the dose down to zero over a period of time. Structured detoxification programmes are provided in both inpatient and outpatient facilities and can vary in duration from approximately 4-12 weeks.

ROSIE study recruitment was carried out in the three dedicated inpatient facilities for problem drug users in Ireland; two statutory facilities located within hospital settings in Dublin (i.e. a purpose-built unit and a ward off the psychiatric wing of a large city hospital) and a non-statutory unit located outside Dublin city. In addition, recruitment was carried out in one community-based outpatient facility, providing a supervised, structured programme. Finally, recruitment also occurred in the detoxification programme provided within Mountjoy Prison – the Medical Unit.

In summary, 56% (n=45) of the ROSIE detoxification cohort were recruited from inpatient settings, 27% (n=22) from outpatient settings and 17% from the prison setting (n=14).

## 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 Death 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 62 individuals recruited within the detoxification 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 significant<sup>1</sup> 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 (this paper) presents 1-year outcomes for individuals recruited within the detoxification modality.
- ROSIE Findings 3 will present 1-year outcomes for individuals recruited within the abstinence modality.
- ROSIE Findings 4 will present 1-year outcomes for individuals recruited within the methadone modality.

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

<sup>1</sup> 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 the detoxification participants (n=81) are presented in Table 1. The treatment entrants were typically males, on average 26 years-of-age and largely reliant on social welfare payments. Less than half the cohort were parents of children under 18 years-of-age, the majority of whom (62%) did not have their children in their care. Most of the entrants had spent some time in prison, and 11% were homeless in the 90 days prior to treatment intake interview.

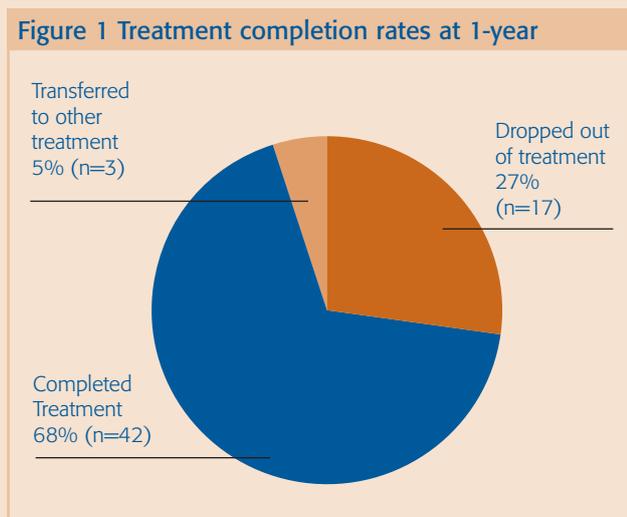
Gender (% male)	77
Average age (yrs)	26
<sup>a</sup> Early school leavers (%)	37
<sup>b</sup> Specified main source of income (%)	
Social welfare	73
Employed	15
<sup>b</sup> Homeless (%)	11
Ever in prison (%)	70
Parents (%)	47

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

<sup>b</sup> In the 90 days prior to treatment intake

## Treatment Completion Rates

Figure 1 shows that the treatment completion rate was high; the majority of participants (68%) successfully completed their intake treatment. Just over one-quarter of the cohort dropped out of treatment before programme completion and 5% of participants transferred to another treatment-type before finishing the intake detoxification programme.



## Treatment Status at 1-year

One year after treatment intake, 73% of participants reported being in some form of drug treatment. Forty-two percent of participants were on a methadone programme and approximately one-third (34%) of the cohort were attending one-to-one counselling (see Table 2). Almost one-quarter (24%) of participants were attending group work; this category includes Narcotics Anonymous (NA) meetings, aftercare programmes, and structured day programmes.

Table 2 Treatment category at 1-year interview

<sup>a</sup> Treatment at 1-year	%	n
Currently in Treatment	73	45
Methadone maintenance/reduction	42	26
Detoxification programme	2	1
Residential rehabilitation	5	3
One-to-one counselling	34	21
Group Work	24	15

<sup>a</sup> 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, cannabis 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 85% (n=53) at treatment intake to 40% (n=25) at 1-year. The average number of days in which heroin, benzodiazepines (non-prescribed), cocaine, cannabis and alcohol were used in the 90 days prior to interview reduced. Non-significant reductions were observed in the proportions who reported crack cocaine and in the frequency of its use. The consumption levels of heroin, methadone (non-prescribed), benzodiazepines (non-prescribed), cocaine and alcohol decreased 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 heroin use, in terms of the proportions of participants using the drug (79% at treatment intake compared with 39% at 1-year), and the frequency of use.

Importantly, there was no increase in the reported use of any other substances coinciding with the decrease in heroin consumption.

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

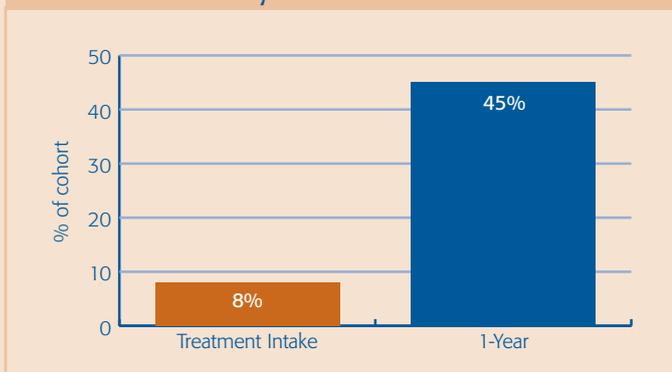
	% Used				Mean days used				Mean daily quantity used			
	Intake		1-year		Intake		1-year		Intake		1-year	
	%	n	%	n	Mean	sd	Mean	sd	Mean	sd	Mean	sd
Heroin (grams)	79	49	39	24*	38.3	32.3	14.1	27.2 †	0.5	0.6	0.1	0.3 †
<sup>a</sup> Methadone (mls)	49	30	11	7*	10.3	21.4	6.1	21.4	20.5	28.8	5.3	19.1 †
<sup>a</sup> Benzodiazepines (mgs)	51	31	21	13*	16.4	27.6	4.8	16.7 †	31.0	58.9	8.1	31.9 †
Cocaine (grams)	56	35	24	15*	12.2	23.1	3.3	11.9 †	1.6	3.4	0.6	1.4 †
Crack cocaine	15	9	5	3	1.3	5.0	0.6	3.1	nc	nc	nc	nc
Cannabis (joints)	65	39	37	22*	37	39.7	20.1	34.6 †	5.6	11.5	7.0	38.7
Alcohol (units)	61	38	40	25*	15.4	23.1	6.2	10.9 †	8.6	9.8	4.4	8.1 †

\* 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. <sup>a</sup> Refers to the use of non-prescribed drugs.

### Drug Abstinence Rates

At treatment intake only 8% (n=5) of participants reported that they had not used any non-prescribed drugs (excluding alcohol) in the preceding 90 days. By 1-year interview this had increased to 45% (n=28) of participants. Figure 2 illustrates this increase in illicit drug abstinence rates. Abstinence from **all drugs**, including prescribed methadone also increased from 5% (n=3) at intake to 39 % (n=24) 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 <sup>a</sup> from €96.70 at treatment intake (sd=110.50) to €21.30 at 1-year (sd=49.30)
- A reduction in the average daily cocaine powder spend <sup>b</sup> from €171.10 at treatment intake (sd=374.4) to €37.60 at 1-year (sd=94.7)
- A reduction in the average daily crack cocaine spend <sup>c</sup> from €30.50 at treatment intake (sd=104.2) to €1.70 at 1-year (sd=13.1)
- No changes in the average daily cannabis spend <sup>d</sup> (€2.20 at intake and €2.50 at 1-year).

<sup>a</sup> Based on a bag of heroin (0.113 grams) costing €20

<sup>b</sup> Based on 1 gram of cocaine powder costing €110 at intake €66 at 1-year

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

<sup>d</sup> 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=21) at treatment intake to 7% (n=4) 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 shop, theft from a vehicle, theft of a vehicle, and handling stolen goods reduced over this period.

Overall, a higher proportion of participants reported no criminal involvement in the 90 days prior to interview at 1-year (74%) compared to treatment intake (19%).

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

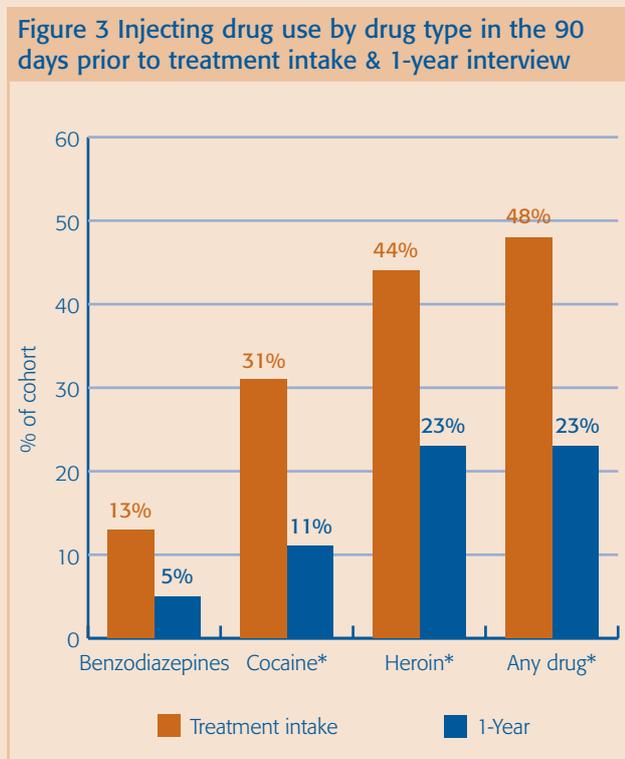
	% committed			
	Intake		1-year	
	%	n	%	n
Selling/supplying	49	26	11	6*
Theft from a person	15	8	2	1*
Theft from a house/home	6	3	0	0
Theft from a shop etc.	17	9	2	1*
Theft from a vehicle	13	7	2	1*
Theft of a vehicle	15	8	2	1*
Handling stolen goods	30	16	4	2*
Fraud/forgery/deception	9	5	0	0
Assault	6	3	4	2
Criminal damage	6	3	0	0
Soliciting	4	2	2	1
Breach of the peace	8	4	0	0

\* McNemar test revealed statistically significant changes

## Risk Behaviour Outcomes

The reduction in participants' drug use was accompanied by a reduction in the numbers who reported injecting drug use. At treatment intake 48% (n=30) of the cohort injected a drug in the 90 days prior to interview compared with 23% (n=14) at 1-year. A statistically significant decrease in injecting was reported across two of the three most commonly injected substances; cocaine and heroin (see Figure 3).

Participants also reported a decrease in the frequency of injecting drug use, as indicated by changes in the average number of days and average times per day individuals reported injecting in the 90 days prior to treatment intake and 1-year interview. At treatment intake participants reported injecting on average 18.6 days (sd=29.1) out of the previous 90, this reduced to 6.8 days (sd=20) at 1-year follow-up. Similarly, at treatment intake individuals reported injecting on average 2.4 times per day (sd=4.7) compared with 0.9 times per day (sd=2.5) at 1-year.



\* McNemar test revealed statistically significant changes

The proportion of participants who reported an overdose in the previous 90 days reduced from 5% (n=3) at treatment intake to 0% at 1-year. The death of one participant recruited within the detoxification modality was suspected to be due to an overdose (communication with family and service provider). This has yet to be independently confirmed.

There were no changes in participants' injecting-related risk behaviours. At treatment intake low rates of borrowing, lending, and reusing used injecting equipment, and sharing of injecting paraphernalia (e.g. spoons and filters) were reported. With the exception of an increase in 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	0	0	4	2
Lent used needles/syringes	2	1	2	1
Reused own needles/syringes	13	7	13	7
Used filters/spoons after someone	5	3	4	2

## 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 seven of the 10 physical health symptoms reduced from treatment intake to 1-year (see Table 6). No increase was observed in the proportions reporting the remaining three symptoms; tiredness/fatigue, nausea, and difficulty breathing.

As expected, all the symptoms associated with opiate withdrawal (stomach pains, joint/bone pains, muscle pains, and tremors/shakes) reduced from treatment intake to 1-year.

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

	% reported			
	Intake		1-year	
	%	n	%	n
Poor appetite	78	46	54	32*
Tiredness/fatigue	79	46	72	42
Nausea (feeling sick)	42	25	31	18
Stomach pains	58	34	29	17*
Difficulty breathing	36	21	22	13
Chest pains	42	25	17	10*
Joint/bone pains	49	29	25	15*
Muscle pains	47	28	20	12*
Numbness/tingling arms/legs	36	21	14	8*
Tremors/shakes	36	21	3	2*

\* 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 panic attacks). 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, no interest in things, and feeling lonely), results were not 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	77	44	53	30*
Suddenly scared for no reason	48	28	24	14*
Feeling fearful	50	28	37	21
Nervous/shaking inside	61	34	32	18*
Panic attacks	39	22	21	12*
Feeling hopeless about future	64	36	45	25
Feelings of worthlessness	66	37	48	27
No interest in things	64	36	52	29
Feeling lonely	62	34	47	26
Thoughts of ending life	33	18	11	6*

\* McNemar test revealed statistically significant changes

### Service Contact

There was an increase in participants' contact with three social care services (social services, employment/education services, and housing/homeless services) from treatment intake to 1-year. In addition, although not statistically significant, participants' reported a decrease in contact with hospital A&E departments and social welfare services, over the time period (see Table 8).

**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	8	5	15	9
Treated in A & E	20	12	16	10
Seen GP	36	21	47	28
Outpatient appointment	13	8	23	14
Contact with social services	2	1	16	10*
Employment/education services	13	8	57	35*
Social welfare services	49	30	36	22
Housing/homeless services	19	12	37	23*

\* McNemar test revealed statistically significant changes

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

Less than one-quarter of the cohort (23%, n=19) 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 differences (at treatment intake) in key variables between the two groups. Participants who were interviewed at 1-year were significantly more likely to have used both cocaine and alcohol at treatment intake, and reported using cocaine on significantly more days. Table 9 also shows that individuals followed-up were more likely to rate their need for treatment at intake, as being very important.

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 showed that treatment setting and the number of drugs used at treatment intake had a significant effect on whether participants were interviewed at 1-year. In this regard, participants recruited in the prison setting were less likely to complete 1-year interview.

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

	'Lost' (n=19)	Interviewed (n=62)
Gender (% male)	74	77
Mean age (yrs)	25.4	26.6
Age left school (yrs)	13.8	15.3 <sup>‡</sup>
On social welfare (%)	53	79
Treatment setting		
Inpatient (%)	32	63
Outpatient (%)	21	29
Prison (%)	47	8
Time on waiting list (wks)	10.9	6.3
Rated treatment as very important(%)	79	98
Used heroin last 90 days (%)	63	79
Mean days used heroin	23.0	38.3
Used cocaine last 90 days (%)	26	56*
Mean days used cocaine	4.1	12.2 <sup>‡</sup>
Used alcohol last 90 days (%)	42	61
Mean days used alcohol	5.1	15.4 <sup>‡</sup>
Injected last 90 days (%)	50	65

<sup>‡</sup> Paired t-test showed statistical significance

\* Chi-square 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 a detoxification programme is followed by reduced drug use, reduced injecting, decreased involvement in crime, improved physical and mental health symptoms and increased contacts with social care services.

When compared with national and international research, the outcomes for ROSIE participants in detoxification treatment were good. Programme completion rates (68%) were high. Smyth *et al* (2005)<sup>1</sup> reported a programme completion rate of 42% (defined as planned discharges). Gossop *et al* (1986)<sup>2</sup> reported rates of complete withdrawal varying from 81% for inpatient participants and 17% for outpatient participants.

The decrease in heroin use among ROSIE participants was comparable with the reductions observed in Smyth *et al*'s study. At 1-year follow-up 39% of ROSIE participants were abstinent from all drugs including prescribed methadone. Smyth *et al* (2005) reported an abstinence rate of 23%, however, this was over a longer follow-up period, 2-3 years post-treatment intake. Within NTORS, Gossop *et al* (1999)<sup>3</sup> report that in residential programmes - which included detoxification programmes - abstinence rates from the target drugs, heroin, non-prescribed methadone, cocaine, amphetamines and benzodiazepines increased from 2.5% at treatment intake to 37% at 1-year follow up and just over half were abstinent from illicit opiates at 1-year. Within the Australian outcome study, ATOS, 52% of those who entered a detoxification programme at baseline were abstinent from heroin at 1-year (Teesson *et al*, 2006)<sup>4</sup>. The results of the ROSIE detoxification cohort at 1-year follow-up compare favourably with these international results. Table 3 shows that 61% of participants reported not using heroin in the 90 days prior to 1-year follow-up interview.

Forty-two per cent of the ROSIE participants were on a methadone programme at 1-year follow-up. In Smyth *et al* (2005) study 57% of participants were on methadone at 2-3 years post-treatment intake. The results from the ROSIE 3-year follow-up will provide information on whether the observed positive behaviour changes at 1-year are sustained over time.

Detoxification is not usually thought of as being treatment per se, or as being effective on its own, rather that it is part of a process that provides an opportunity to enable individuals to engage in further treatment such as residential rehabilitation. Additional analysis of the ROSIE data is needed to determine the effects of aftercare, or follow-on interventions post-detoxification, on treatment outcomes.

## References

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### This paper should be referenced as follows:

Cox, G., Comiskey, C., Kelly, P. (2007) *ROSIE Findings 2: Summary of 1-year outcomes: Detoxification Modality*. Dublin: National Advisory Committee on Drugs.

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