NACD
National Advisory
Committee on Drugs

ROSIE
Research Outcome Study in Ireland
Evaluating Drug Treatment Effectiveness

Findings 1

SUMMARY OF 1-YEAR OUTCOMES

The Research Outcome Study in Ireland evaluating drug treatment effectiveness (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 study 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 in 2002. Dr Gemma Cox was Project Manager from July 2003 until July 2006.

The Study recruited 404 opiate users entering treatment. The outcomes at 1-year for drug use, involvement in crime, injecting-related risk behaviour, physical and mental health among others are presented in this paper. Statistically significant[1] differences are given emphasis in this document. Behaviour changes relate to the 90 days prior to interviews, unless otherwise stated.

CONTENTS

KEY MESSAGES

- 75% (n=305) of the ROSIE study population successfully completed a 1-year follow-up interview.

- Overall, significant reductions in heroin and other drug use were observed in the followed-up study population 1-year after treatment intake.

- One year after treatment intake 27% of the followed-up population were abstinent from all drugs (excluding alcohol).

- Extensive reductions in criminal activity were observed in the followed-up population 1-year after treatment intake.

- The mortality rate for the study population at 1-year was low (0.5%, n=2)

- Extensive reductions in injecting drug use were observed in the followed-up population 1-year after treatment intake. However, no changes were observed in injecting-related risk behaviour.

- Notable reductions were observed at 1-year in physical and mental health complaints for the followed-up population.

- Increased contact with health and social care services were also observed at 1-year for the followed-up population.

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.

Authors: Dr Gemma Cox, Dr Catherine Comiskey, Paul Kelly and Jennifer Cronly

SUMMARY ALL OUTCOMES

DRUG USE OUTCOMES

- **Heroin use:** There was a reduction in the overall percentage of followed-up individuals reporting heroin use, from 81% at treatment intake to 48% at 1-year. There were also reductions in the frequency of heroin use (from an average of 42.6 days out of 90 at treatment intake to 15.8 at 1-year); the average quantity of heroin consumed in a typical drug using day (from of 0.9 grams at treatment intake to 0.3 grams at 1-year) and the average amount spent (€) on heroin in a typical drug using day (from €75.20 at treatment intake to €24.10 at 1-year).

- **Other drug use:** Reductions were seen in the percentage of individuals reporting the use of all (six other) target drugs at 1-year. More specifically among the followed-up population (n=305)

  - The reported use of non-prescribed methadone reduced from 44% at treatment intake to 14% at 1-year.

  - The reported use of cocaine reduced from 45% at treatment intake to 21% at 1-year.

  - The reported use of non-prescribed benzodiazepines reduced from 43% at treatment intake to 23% at 1-year.

  - The reported use of cannabis reduced from 66% at treatment intake to 53% at 1-year.

  - The reported use of crack cocaine reduced from 16% at treatment intake to 6% at 1-year.

  - The reported use of alcohol reduced from 57% at treatment intake to 47% at 1-year.

- Reductions in the frequency (mean days) of use of all drugs, except alcohol, were observed for the followed-up population.

- The overall percentage of individuals reporting poly drug use in the population decreased from 78% at treatment intake to 50% at 1-year.

- **Drug abstinence:** Increases in the percentage of individuals reporting abstinence from all drugs (excluding alcohol) were observed for the followed-up population, from 7% at treatment intake to 27% at 1-year.

CRIME OUTCOMES

- Reductions in the percentages reporting acquisitive crimes (from 31% at treatment intake to 14% at 1-year) and selling/supplying drugs (from 31% at treatment intake to 11% at 1-year) were observed.

- The number of participants committing 11 of the 12 categories of offences at 1-year decreased.

RISK BEHAVIOUR OUTCOMES

- A decrease in reported injecting drug use was observed for the followed-up population (from 46% at treatment intake to 29% at 1-year). A reduction was observed across all drug types injected.

- Reductions were also observed at 1-year in the average number of days participants reported injecting (from 20.8 days out of 90 at treatment intake to 9 days) and the average number of times per day (from 1.8 at treatment intake to 0.8).

- Levels of injecting risk behaviour were very low at treatment intake and no significant changes were observed at 1-year follow-up.

- There were no significant changes in overdose rates.

HEALTH OUTCOMES

- A reduction in 5 of the 10 physical health symptoms was observed for the followed-up population.

- A reduction in 7 of the 10 mental health symptoms was observed for the followed-up population.

SERVICE CONTACT

- An increase in contact with 3 of the 8 health and social care services was observed for the followed-up population.

PROFILE OF STUDY PARTICIPANTS AT TREATMENT INTAKE

- 25% of the study population was female.

- The average age of participants was 28 years (median 27, range 18-57 years).

- 28% of the population left school before the age of 15 years.

- 21% had been employed over the three months prior to interview.

- 77% had social welfare payments as their main source of income

- Less than one third were living in the family home.

- 25% were in their own or rented accommodation.

- 8% were homeless at treatment intake.

- 18% reported a period of homelessness over the preceding three months.

- 56% of respondents reported having children under the age of 18 years.

- Of those who were parents over half did not have their children in their care.

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METHODOLOGY

1. STUDY DESIGN

ROSIE is a longitudinal observational study, which 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 was 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.

The 404 ROSIE study participants were recruited from both in-patient (hospital, residential programmes & prisons) and outpatient settings (community-based clinics, health board clinics & G.P's). 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 & psychological health assessment);
- Social functioning (employment, accommodation, involvement in crime);
- Harm (injecting behaviour & experience of overdose) and;
- Mortality (participant/contact feedback & checking non-followed–up participants against General Death Register).

In addition to a lifetime measure, measures were taken for behaviours in the 90 days preceding interviews, except for injecting-related risk behavior 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, non-prescribed methadone, non-prescribed benzodiazepines, cocaine powder, crack cocaine, cannabis & alcohol) and reports changes in use patterns at 1-year.

2. COVERAGE

Recruitment to the ROSIE study started in March 2003 with the enrolment of 20 participants to the pilot study. The majority of the 404 participants were however recruited between September 2003 and July 2004. All study participants were in a new treatment episode. At national level a database on all treatment episodes in a calendar year is maintained by the National Drug Treatment Reporting System (NDTRS) of the Drug Misuse Research Division of the Health Research Board. In order to provide some information on the coverage of the treated population by the ROSIE study, comparisons were made between the ROSIE recruitment figures and the NDTRS figures (personal communication, J Long) for 2003. The NDTRS reports that there were 4,900 cases that commenced or recommenced treatment for problem drug use in 2003 giving ROSIE a national coverage rate of approximately 8.2%. In addition of the 4,900 NDTRS cases, 1,265 commenced or recommenced methadone maintenance. Within the ROSIE study 215 participants were recruited within the methadone modality giving the study a coverage rate of approximately 17% of all new methadone treatment episodes at national level. The NDTRS also reports that of the 4,900 cases treated nationally 682 commenced a detoxification programme. Within the ROSIE study 81 participants were recruited from the detoxification modality giving this modality a national coverage rate of approximately 12%.

3. 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 service 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. As a result of extensive tracking efforts, the research team located 92% of the baseline population at 12-month follow-up (n=373). Full interviews were obtained from 75% (n = 305) of study participants, 0.5% (n=2) were deceased, 4% (n=16) withdrew from the study and finally 12% (n=50) were located but not interviewed. Although these 50 were not interviewed extensive information is available on these participants. Five of these participants had left the country (one of whom was in treatment in London), five individuals were drug free (reliably informed by participants themselves, or a family member), ten individuals were on a methadone programme (two were still in their index treatment), one individual was in residential drug free treatment and one individual was in a detoxification programme. Seven of the remaining 28 participants were known to be actively using drugs at the time of being tracked.

The intake characteristics and problems of the followed-up and interviewed sample (n=305) were compared with those not interviewed (u=99) and the samples did not differ.

4. 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 profile 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.

5. UNDERSTANDING THIS PAPER

Data are presented on the 305 individuals who completed the baseline 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 all categorical variables were analysed using McNemar test. When the results of these tests were found to be statistically significant 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. Analysis was also undertaken to identify gender differences at treatment intake and at 1-year follow-up. Attention is drawn to significant differences.

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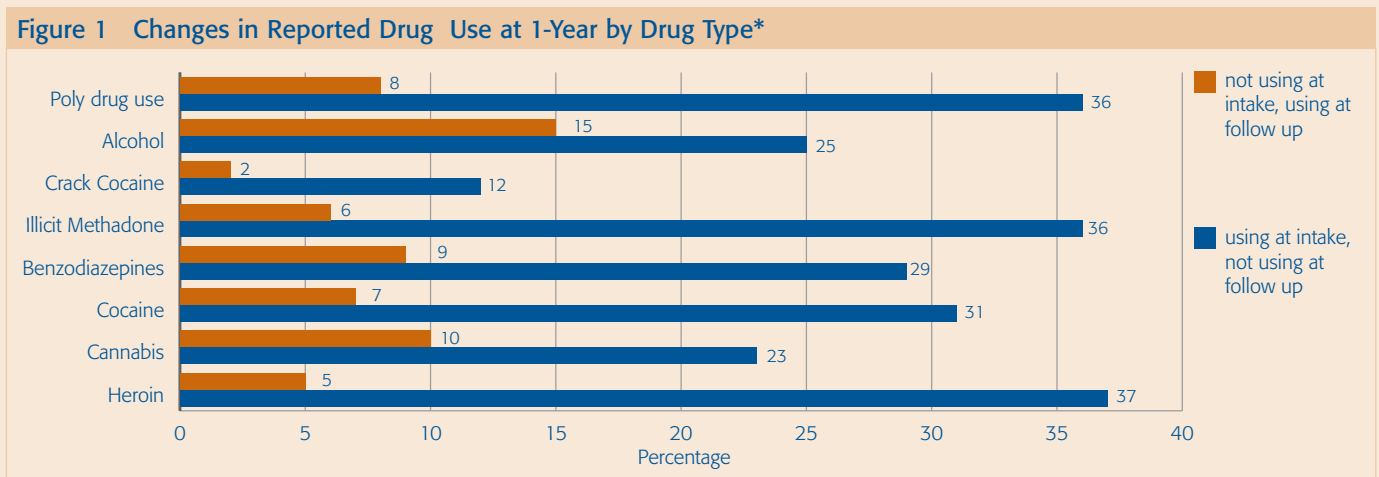
DRUG USE OUTCOMES

The primary aim of drug treatment is to obtain drug free status and/or reduce the levels of substance use among individuals accessing services. There are a variety of different ways changes in drug use outcomes can be measured. Analysis was carried out to examine changes in:

- The percentage of individuals reporting the use of each drug type;
- Drug using frequency (mean number of drug using days over the previous 90 days);
- Average quantity of each drug consumed on an typical drug using day;
- Average amount spent (€) on each drug in an typical drug using day and;
- Drug abstinence rates.

The percentage of individuals reporting the use of each drug type

Figure 1 illustrates that there were significant changes in the percentage of individuals reporting the use of each of the seven-target drugs at 1-year. Significantly more people stopped rather than started use of all target drugs. For example 36% of individuals stopped poly drug use at the 1-year follow-up and 8% started poly drug use (see below).

Figure 1   Changes in Reported Drug Use at 1-Year by Drug Type*

Legend: ■ not using at intake, using at follow up; ■ using at intake, not using at follow up

Poly drug use: 8, 36
Alcohol: 15, 25
Crack Cocaine: 2, 12
Illicit Methadone: 6, 36
Benzodiazepines: 9, 29
Cocaine: 7, 31
Cannabis: 10, 23
Heroin: 5, 37

a Refers to the use of non-prescribed drugs;
* McNemar test revealed a statistically significant change at 1-year

Table 1 presents reported drug use at treatment intake and 1-year by drug type and gender. There were no gender differences in the percentages reporting use of any drugs at treatment intake. The percentage of males reporting the use of all drugs at 1-year showed a significant reduction. The percentage of females reporting the use of all drugs, except alcohol and cannabis, also showed a significant reduction at 1-year. In addition, there were gender differences in the percentage of individuals reporting use at 1-year; males were more likely to report heroin use, and females were more likely to report alcohol use.

Table 1   Drug Use at Treatment Intake & 1-year by Drug Type & Gender

	Male				Female				Population			
	Intake		1-year		Intake		1-year		Intake		1-year	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Heroin	83	(181)	53	(116)*	75	(61)	36	(29)*	81	(242)	48	(145)*
aMethadone	43	(94)	15	(32)*	47	(38)	11	(9)*	44	(132)	14	(41)*
aBenzodiazepines	43	(93)	25	(55)*	44	(36)	16	(13)*	43	(129)	23	(68)*
Cocaine	45	(101)	23	(51)*	46	(37)	16	(13)*	45	(138)	21	(64)*
Crack Cocaine	17	(37)	6	(14)*	15	(12)	6	(5)*	16	(49)	6	(19)*
Cannabis	68	(140)	55	(114)*	60	(44)	46	(34)	66	(184)	53	(148)*
Alcohol	57	(117)	43	(88)*	57	(44)	56	(44)	57	(161)	47	(132)*
bPoly drug use	77	(172)	54	(121)*	82	(66)	37	(30)*	78	(238)	50	(151)*

a Refers to the use of non-prescribed drugs;
b Refers to the use of two or more illicit drugs;
* McNemar test revealed a statistically significant change

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Drug using frequency

Table 2 illustrates the frequency of drug use by average number of days individuals reported the use of each drug at treatment intake and 1-year and by gender. The results show that for the followed-up population, there was a reduction in the mean number of days individuals reported the use of all drugs except alcohol. At 1-year, male participants reported a reduction in the frequency of use of all drugs. Women reported a reduction in the use of all drugs except alcohol at 1-year. There were no gender differences in the frequency of drug use at treatment intake or 1-year.

Table 2   Mean Drug Using Days at Treatment Intake & 1-year by Drug Type & Gender

	Male				Female				Population			
	Intake		1-year		Intake		1-year		Intake		1-year	
	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)
Heroin	43.2	(35.3)	17.6	(28.9)*	41.1	(35.3)	10.7	(25.7)*	42.6	(35.3)	15.8	(28.2)*
[a]Methadone	11.2	(22.4)	3.9	(15.6)*	16.7	(28.0)	3.7	(16.1)*	12.7	(24.1)	3.9	(15.7)*
[a]Benzodiazepines	16.9	(30.7)	5.2	(14.1)*	11.7	(25.5)	5.5	(19.9)*	15.5	(29.4)	5.3	(15.9)*
Cocaine	7.2	(16.6)	3.6	(13.1)*	9.9	(20.8)	2.8	(13.6)*	7.9	(17.8)	3.4	(13.2)*
Crack Cocaine	1.9	(8.8)	1.1	(7.1)*	3.7	(14.7)	0.5	(3.4)*	2.4	(10.7)	0.9	(6.3)*
Cannabis	41.0	(40.6)	31.2	(38.6)*	39.3	(40.2)	30.2	(40.9)*	40.5	(40.5)	31.0	(39.2)*
Alcohol	15.2	(24.6)	10.1	(21.7)*	10.7	(21.9)	10.3	(20.3)	13.9	(23.9)	10.2	(21.3)

[a] Refers to the use of non-prescribed drugs;
*Paired t-test statistically significant

Average quantity of each drug consumed

Table 3 shows the average quantity of each drug consumed on a typical drug using day at treatment intake and 1-year, by gender. For the followed-up population, analysis revealed a reduction in the average quantity of all drugs consumed, except cannabis. Female participants reported a reduction in the average quantity of all target drugs except benzodiazepines and alcohol at 1-year. While males reduced the quantity of all drugs used, except cannabis. Analysis revealed that males reported using benzodiazepines in greater quantities than females at treatment intake. At 1-year males on average smoked more joints then their female counterparts. There were no gender differences in the quantities of other drugs consumed.

Table 3   Mean Quantity of Drugs Consumed at Treatment Intake & 1-year by Drug Type & Gender

	Male				Female				Population			
	Intake		1-year		Intake		1-year		Intake		1-year	
	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)
Heroin (grams)	0.7	(0.9)	0.2	(0.7)*	0.5	(0.7)	0.1	(0.2)*	0.6	(0.8)	0.2	(0.6)*
[a]Methadone (mils)	23.8	(38.1)	6.9	(22.2)*	26.8	(40.0)	8.7	(38.9)*	24.6	(38.5)	7.4	(27.5)*
[a]Benzodiazepines (mgs)	41.9	(119.8)	18.3	(72.7)*	20.4	(49.4)	10.2	(54.7)	35.6	(104.5)	15.9	(67.9)*
Cocaine (grams)[b]	1.1	(2.9)	0.4	(1.2)*	0.7	(1.3)	0.3	(1.0)*	1.0	(2.6)	0.4	(1.2)*
Cannabis (joints)	7.8	(17.3)	6.7	(25.3)	4.7	(10.8)	2.1	(5.2)*	7.0	(15.9)	5.4	(21.8)
Alcohol (units)[c]	9.3	(13.2)	6.2	(14.8)*	6.3	(9.2)	6.9	(13.3)	8.5	(12.2)	6.3	(14.4)*

[a] Refers to the use of non-prescribed drugs;
[b] Crack cocaine was excluded due to the inconsistency in the way data was reported;
* Paired t-test statistically significant
[c] A unit of alcohol is defined according to Department of Health and Children measures.

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Average amount spent on each drug

Table 4 presents data on the average amount (€) individuals spent on four of the seven target drugs, at treatment intake and 1-year. As it was not possible to calculate a standard unit cost of benzodiazepines (i.e cost per mgs) methadone (cost per mil) or alcohol (cost per unit) these substances were excluded from the analysis. Table 4 showed a reduction in the average amount spent on heroin, cocaine powder and crack cocaine. Female participants reported a reduction in spending on all drugs at 1-year. Males reported a reduction in spending on all but cannabis. No other gender differences were observed.

Table 4 Mean Daily Spending at Treatment Intake & 1-year by Drug Type & Gender											
	Male				**Female**				**Population**			
	Intake		**1-year**		**Intake**		**1-year**		**Intake**		**1-year**	
	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)
Heroin[a]	119.5	(146.4)	40.3	(129.3)*	84.9	(127.5)	17.2	(41.8)*	110.2	(142.1)	34.0	(112.9)*
Cocaine powder[b]	126.4	(324.0)	26.3	(81.3)*	79.6	(137.9)	18.8	(68.4)*	113.6	(286.0)	24.2	(78.0)*
Crack Cocaine[c]	34.1	(138.0)	6.6	(34.0)*	41.2	(136.9)	10.75	(49.4)*	36.0	(137.5)	7.7	(38.8)*
Cannabis[d]	3.0	(6.7)	2.4	(8.9)	1.8	(4.2)	0.7	(1.8)*	2.7	(6.2)	1.9	(7.7)

[a] *Based on bag of heroin (0.113 grams) costing €20*
[b] *Based on 1gram of cocaine 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 and €100 at 1 year; (cost per joint, 39c at intake 35c at 1year)*
Paired t-test statistically significant

Drug abstinence rates

Figure 2 and **Table 5** illustrates the changes in drug abstinence rates (excluding alcohol) at treatment intake and 1-year. Analysis revealed a significant increase in abstinence rates at 1-year for the followed-up population, and by gender.
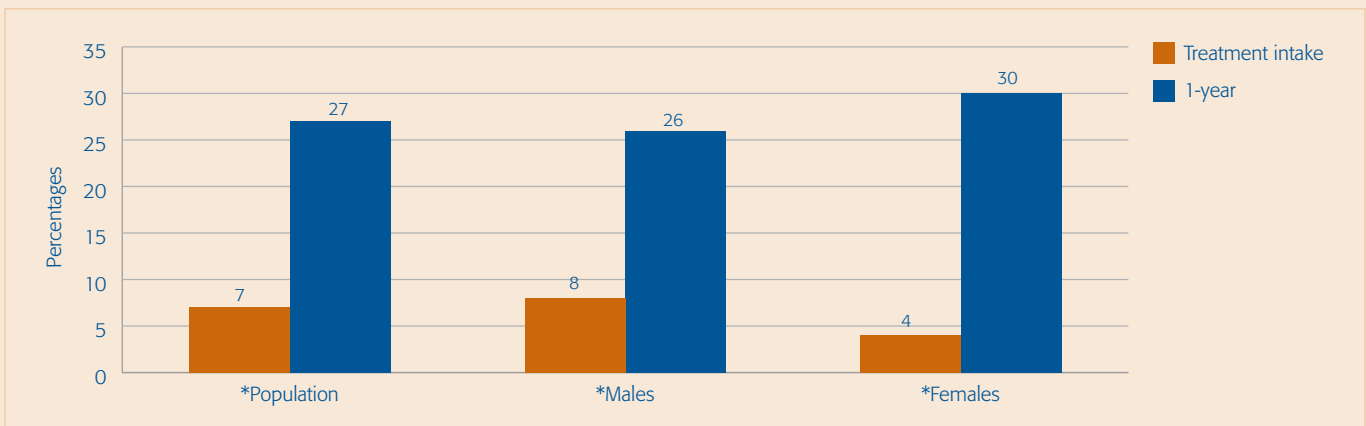

Figure 2   Drug Abstinence Rates at Treatment Intake & 1-year by Gender

* *McNemar test revealed a statistically significant change*

Table 5 Drug Abstinence Rates at Treatment Intake & 1-year by Gender											
	Male				**Female**				**Population**			
	Intake		**1-year**		**Intake**		**1-year**		**Intake**		**1-year**	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Drug abstinence	8	(17)	26	(56)*	4	(3)	30	(24)*	7	(20)	27	(80)*

* *McNemar test revealed a statistically significant change*

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MORTALITY RATES

The mortality rate for the ROSIE study population (2/404) at 1-year was very low at 0.5% (95% CI[2] 0.06%, 1.78%,) as compared with NTORS (1.2%) or Smyth *et al* (2005) follow-up study of opiate users seeking in-patient treatment in Dublin (1.8%). However, the confidence interval for the morality rate did over lap with these two point estimates. In an attempt to ensure accuracy, all participants for whom follow up interviews were not achieved were checked against the General Death Register.

INVOLVEMENT IN CRIME

Figure 3 shows that there was a decrease in the percentage of participants reporting involvement in acquisitive crime[3] from treatment intake to 1-year. In addition, a reduction in drug selling/dealing was observed.

Figure 3   Offending Behaviour at Treatment Intake & 1-Year
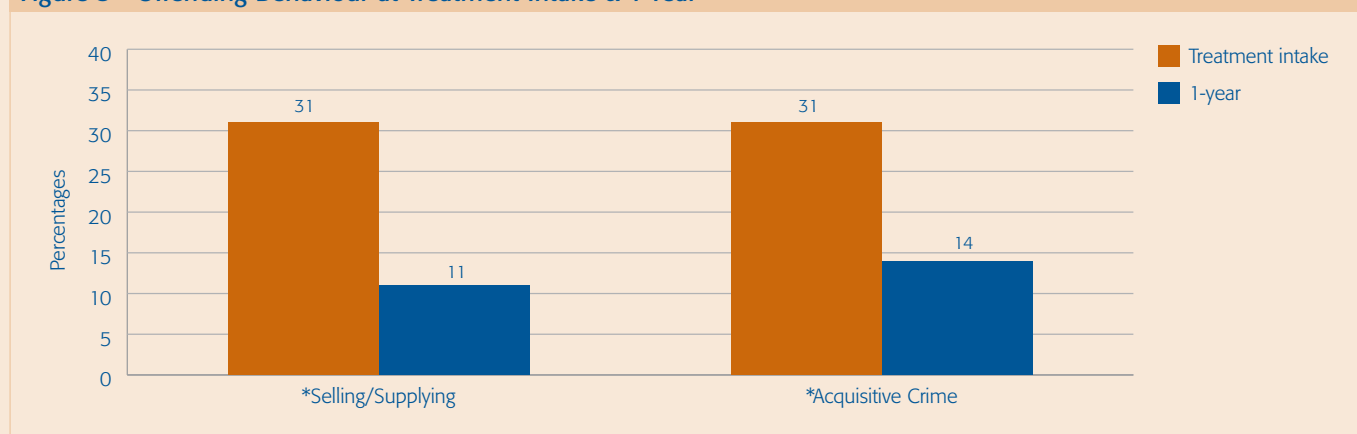
* McNemar test revealed a statistically significant change.

Table 6 shows the changes in the percentage of individuals reporting each category of offence at treatment intake and 1-year and by gender. Analysis revealed a reduction in all crimes, except theft from house/home for the followed-up population. Gender differences were observed in crime outcomes. Women reported a reduction in four offences (selling/supplying drugs, theft from shop, handling stolen goods, & soliciting) males reported a reduction in nine offences (selling/supplying drugs, theft from a person, theft from shop, theft of vehicle, handling stolen goods, fraud/forgery/deception, assault, criminal damage & breach of the peace). Gender differences in offending behaviour were observed at treatment intake. Females were more likely than males to report theft from a shop and soliciting. Males were more likely to report theft of a vehicle, assault and criminal damage. At 1-year, male respondents were more likely than their female counterparts to report selling/supplying drugs and theft from a vehicle.

Table 6   Offending Behaviour at Treatment Intake & 1-year by Offence Category & Gender

	Male				Female				Population			
	Intake		1-year		Intake		1-year		Intake		1-year	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Selling/supplying	32	(66)	15	(30)*	26	(18)	1	(1)*	31	(84)	11	(31)*
Theft from a person	13	(26)	3	(7)*	9	(6)	3	(2)	12	(32)	3	(9)*
Theft from house/home	8	(16)	4	(9)	5	(3)	1	(1)	7	(19)	4	(10)
Theft from shop etc.	15	(31)	7	(14)*	28	(19)	10	(7)*	18	(50)	8	(21)*
Theft from a vehicle	9	(19)	4	(9)	1	(1)	0	(0)nc	7	(20)	3	(9)*
Theft of a vehicle	10	(20)	3	(6)*	1	(1)	0	(0)nc	8	(21)	2	(6)*
Handling stolen goods	27	(56)	9	(18)*	25	(16)	5	(3)*	26	(72)	8	(21)*
Fraud/forgery/deception	13	(27)	2	(4)*	6	(4)	1	(1)	11	(31)	2	(5)*
Assault	10	(20)	4	(8)*	0	(0)	0	(0)nc	7	(20)	3	(8)*
Criminal damage	9	(18)	2	(5)*	0	(0)	0	(0)nc	7	(18)	2	(5)*
Soliciting	1	(2)	0.5	(1)	15	(10)	3	(2)*	4	(12)	1	(3)*
Breach of the peace	8	(16)	2	(4)*	4	(3)	1	(1)	7	(19)	2	(5)*

* McNemar test revealed a statistically significant change.
nc Not computed , McMemar can only be calculated if movement occurs both ways. This does not mean that there was no significant change

2 CI refers to the Confidence Interval

3 Acquisitive crime is defined as all theft, fraud, and handling of stolen goods. The variable 'acquisitive crime' presented in Figure 3 relates to a person who reports committing any of the aforementioned offences in the previous 90 days, not the sum of the individual offences, classified as acquisitive crime.

INJECTING-RELATED RISK BEHAVIOUR

Table 7 and **Figure 4** illustrate that there was a reduction in the percentages of individuals reporting injecting drug use at 1-year. Moreover, a reduction was observed across all drug types individuals reported injecting. No gender differences were observed.

Table 7   Injecting Drug Use at Treatment Intake & 1-year by Drug Type by Gender

Injecting Behaviour	Male				Female				Population			
	Intake		1-year		Intake		1-year		Intake		1-year	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Injected any drug	45	(100)	31	(69)*	47	(38)	22	(18)*	46	(138)	29	(87)*
Injected heroin	43	(97)	28	(63)*	43	(35)	21	(17)*	43	(132)	26	(80)*
Injected cocaine	23	(52)	11	(24)*	17	(14)	5	(4)*	22	(66)	9	(28)*
Injected benzodiazepines	14	(32)	4	(9)*	6	(5)	0	(0)nc	12	(37)	3	(9)*

nc Not computed , McMemar can only be calculated if movement occurs both ways. This does not mean that there was no significant change.
* McNemar test revealed a statistically significant change

Figure 4   Injecting Drug Use at Treatment intake & 1-year by Drug Type
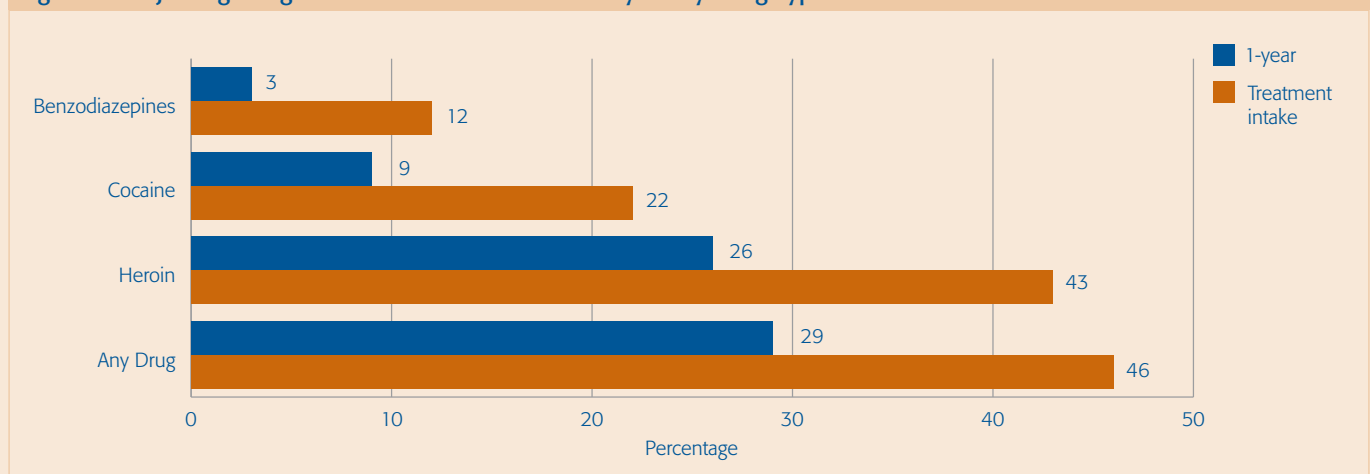
* McNemar test revealed a statistically significant change

Table 8 shows that for the followed-up population there was a reduction in both the mean number of days, and the mean number of times per day, individuals reported injecting drug use. Gender differences were observed at 1-year in that males injected on average more days than their female counterparts, and more times per day.

Table 8   Mean Times Injecting at Treatment Intake & 1-year by Gender

	Male				Female				Population			
	Intake		1-year		Intake		1-year		Intake		1-year	
	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)
Mean days injected	21.1	(32.7)	10.5	(23.9)*	20.1	(30.9)	4.9	(18.2)*	20.8	(32.2)	9.0	(22.6)*
Mean times injected per day	1.8	(4.5)	1.0	(3.0)*	1.7	(2.8)	0.3	(0.7)*	1.8	(4.1)	0.8	(2.6)*

* Paired t-test statistically significant

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Table 9 presents data on injecting-related risk behaviour at treatment intake and 1-year, for the followed-up population and by gender. At treatment intake, participants reported very low rates of injecting related risk behaviour (i.e the borrowing/lending of used injecting equipment). There were no significant changes in these behaviours at 1-year.

Table 9 Injecting-Related Risk Behaviour at Treatment Intake & 1-year by Gender												
	Male				Female				Population			
	Intake		1-year		Intake		1-year		Intake		1-year	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Borrowed used needle/syringe	4	(9)	3	(6)	4	(3)	3	(2)	4	(12)	3	(8)
Lent used needle/syringe	4	(8)	4	(8)	4	(3)	4	(3)	4	(11)	4	(11)
Reused own needle/syringe	16	(28)	11	(19)	9	(6)	9	(6)	14	(34)	10	(25)
Used filters/spoons after someone	4	(8)	3	(5)	4	(3)	0	(0)[nc]	4	(11)	2	(5)

[nc] Not computed , McMemar can only be calculated if movement occurs both ways. This does not mean that there was no significant change.

OVERDOSE

Table 10 and Figure 5 illustrate that although the percentages reporting overdose decreased at 1-year, the changes were not statistically significant.

Table 10 Overdose at Treatment Intake & 1-year by Gender												
	Male				Female				Population			
	Intake		1-year		Intake		1-year		Intake		1-year	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Overdose	8	(16)	5	(11)	5	(4)	3	(2)	7	(20)	4	(13)

Figure 5   Overdose Rates at Treatment Intake & 1-year by Gender
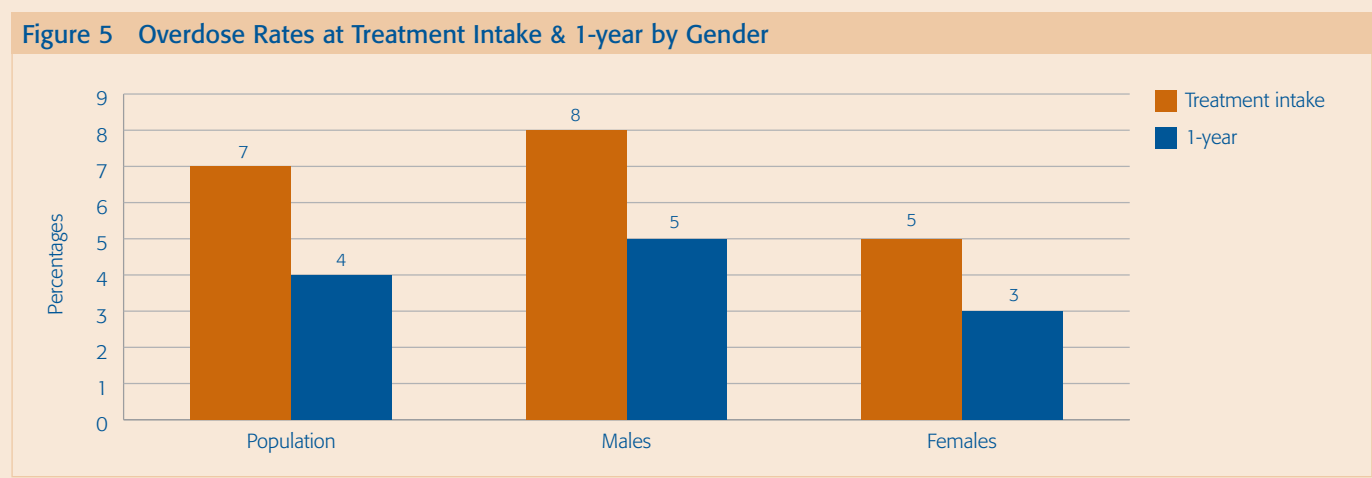
HEALTH OUTCOMES

Table 11 illustrates the changes in the percentages reporting each physical health symptom for the followed-up population and by gender. The population reported a reduction in five physical health symptoms (poor appetite, tiredness/fatigue, joint/bone pains, muscle pains, & tremors shakes). At 1-year, males reported a reduction in three symptoms (poor appetite, muscle pains & tremors/shakes) while women only reported a reduction in one symptom (poor appetite). Gender differences were also observed in percentages reporting individual physical health symptoms at treatment intake; female participants were more likely to report feeling tired/fatigued, and suffering nausea. No gender differences were observed at 1-year.

Table 11 Physical Health Symptoms at Treatment Intake & 1-year by Gender												
	Male				**Female**				**Population**			
	Intake		**1-year**		**Intake**		**1-year**		**Intake**		**1-year**	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Poor appetite	70	(139)	59	(117)*	78	(57)	62	(45)*	72	(196)	60	(162)*
Tiredness/fatigue	69	(135)	60	(117)	79	(60)	71	(54)	72	(195)	63	(171)*
Nausea (feeling sick)	38	(75)	33	(66)	47	(35)	32	(24)	40	(110)	33	(90)
Stomach pains	38	(74)	31	(62)	37	(28)	36	(27)	37	(102)	33	(89)
Difficulty breathing	29	(57)	23	(45)	32	(24)	28	(21)	30	(81)	24	(66)
Chest pains	24	(48)	18	(36)	19	(14)	18	(13)	23	(62)	18	(49)
Joint/bone pains	35	(70)	26	(52)	40	(30)	25	(19)	36	(100)	26	(71)*
Muscle pains	33	(64)	22	(42)*	37	(28)	27	(20)	34	(92)	23	(62)*
Numbness/tingling arms/legs	21	(41)	19	(37)	27	(20)	16	(12)	22	(61)	18	(49)
Tremors/shakes	31	(59)	15	(29)*	26	(19)	14	(10)	29	(78)	15	(39)*

* McNemar test revealed statistically significant changes*

Table 12 illustrates that for the followed-up population there were reductions in the percentages reporting seven of the ten mental health complaints at 1-year (feeling tense, suddenly scared for no reason, feeling fearful, nervous/shaking inside, feelings of worthlessness, feeling lonely, & thoughts of ending life). No significant changes were observed for women in all ten symptoms. Conversely, the percentage of males reporting 6 symptoms reduced at 1-year (feeling tense, suddenly scared for no reason, feeling fearful, feelings of worthlessness, feeling lonely, and thoughts of ending life). No gender differences were observed in the percentages reporting any mental health symptom at treatment intake and 1-year.

Table 12 Mental Health Symptoms at Treatment Intake & 1-year by Gender												
	Male				**Female**				**Population**			
	Intake		**1-year**		**Intake**		**1-year**		**Intake**		**1-year**	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Feeling tense	65	(115)	49	(87)*	67	(49)	55	(40)	65	(164)	51	(127)*
Suddenly scared for no reason	34	(63)	21	(38)*	37	(27)	30	(22)	35	(90)	23	(60)*
Feeling fearful	44	(76)	31	(54)*	39	(27)	41	(29)	42	(103)	34	(83)*
Nervous/shaking inside	39	(70)	31	(56)	49	(35)	34	(24)	42	(105)	32	(80)*
Panic attacks	23	(43)	20	(37)	26	(19)	29	(21)	24	(62)	22	(58)
Feeling hopeless about future	53	(95)	48	(85)	65	(45)	55	(38)	57	(140)	50	(123)
Feelings of worthlessness	55	(98)	40	(72)*	52	(36)	45	(31)	54	(134)	42	(103)*
No interest in things	55	(99)	55	(99)	63	(45)	49	(35)	57	(144)	53	(134)
Feeling lonely	58	(101)	47	(82)*	60	(42)	54	(38)	58	(143)	49	(120)*
Thoughts of ending life	26	(48)	17	(31)*	25	(16)	19	(12)	26	(64)	17	(43)*

McNemar test revealed statistically significant changes

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CONTACT WITH HEALTH AND SOCIAL CARE SERVICES

Drug treatment services: Individuals were recruited to the ROSIE study across four treatment modalities. **Table 13** illustrates the treatment status of participants at 1-year follow-up interview by gender. There were significant gender differences for the following, still in index treatment, completed treatment, and in any treatment at 1-year.

Table 13 Treatment Status at 1-year by Gender						
	Males		**Females**		**Population**	
	%	**(n)**	**%**	**(n)**	**%**	**(n)**
Still in index treatment	33	(70)	51	(39)*	38	(109)
Dropped out of index treatment	20	(41)	14.5	(11)	18	(52)
Transferred	14	(29)	14.5	(11)	14	(40)
Completed treatment	33	(69)*	20	(15)	30	(84)
Total	100	(209)	100	(76)	100	(285)
In any treatment at 1-year	78	(175)	91	(74)*	82	(249)

Note: Needle exchange clients are excluded from analysis in the above table except for those 'in any treatment' at 1-year.
*McNemar test revealed statistically significant changes

Other health and social care services: Table 14 illustrates reported contact with other health and social care services for the followed-up population, and by gender at treatment intake and 1-year. For the population there were increases in reported contact with three services (GP's, employment/educational services, and housing/homeless services). At 1-year males reported an increase in contact with three services (G.P., employment/education services & housing/homeless services) and females reported an increase in outpatient's appointments.

Table 14 Contact with Health and Social Care Services at Treatment Intake & 1-year by Gender												
	Male				**Female**				**Population**			
	Intake		**1-year**		**Intake**		**1-year**		**Intake**		**1-year**	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Stayed overnight in hospital	12	(26)	9	(20)	5	(4)	15	(12)	10	(30)	11	(32)
Treated in A & E	17	(36)	17	(37)	16	(12)	11	(8)	17	(48)	16	(45)
Seen G.P.	29	(61)	48	(99)*	52	(37)	56	(40)	35	(98)	50	(139)*
Out-patients appointment	13	(28)	13	(27)	16	(12)	32	(24)*	14	(40)	18	(51)
Contact with social services	5	(12)	9	(19)	9	(7)	14	(11)	6	(19)	10	(30)
Employment/education services	9	(18)	45	(92)*	16	(11)	30	(21)	11	(29)	41	(113)*
Social welfare services	34	(70)	29	(60)	27	(20)	23	(17)	32	(90)	27	(77)
Housing/homeless services	12	(26)	26	(55)*	24	(17)	37	(27)	15	(43)	29	(82)*

CONCLUSION

ROSIE is the first national study to have examined 1-year follow-up outcomes for opiate users. The study found marked reductions in drug use and criminal activity among study participants. In addition, a low mortality rate was observed. Although no significant changes were observed in injecting-related risk behaviour or overdose, the rates were low at treatment intake and 1-year. Some positive outcomes were observed for participants' physical and mental health complaints, despite the relatively short time period. These findings suggest that involvement in drug treatment has a positive impact on individuals. The ROSIE study is ongoing and outcomes for the 3-year follow-up will provide information on whether positive behaviour changes are sustained over time.

ACKNOWLEDGEMENTS

This paper should be referenced as follows:

Cox G, Comiskey C, Kelly P, Cronly J (2006) *ROSIE Findings 1: Summary of 1-year outcomes.* Dublin: National Advisory Committee on Drugs.

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