

# Cycling in and out of treatment; participation in methadone treatment in NSW, 1990–2002

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## Abstract

**Background:** There are few descriptions of patterns of long-term participation in methadone treatment. There has been progressive expansion of methadone maintenance treatment (MMT) in Australia in the last 15 years, and by international standards Australia has a high participation rate in MMT, and has accumulated extensive data on participation.

**Aim:** (1) To analyse predictors of retention in treatment (a proxy measure of treatment effectiveness) in three cohorts of people entering public and private methadone treatment, in 1990, 1995, and 2000 in the state of New South Wales (NSW), and to compare retention rates with those reported from recent clinical trials; and (2) to describe the pattern of participation in subsequent treatment and predictors of re-entry.

**Method:** Sequential first admissions to MMT for the month of February during 1990, 1995, and 2000, were identified from the NSW Health database. Initial treatment setting (public or private) was identified. Pattern of subsequent participation in treatment of all subjects was also extracted. Descriptive statistics were generated, and predictors of retention in treatment and re-entry to treatment were analysed.

**Results:** The sample comprised 342 subjects commencing in private and 135 in public settings. Retention did not differ between settings. At 6 months, 51% in the current study were retained, compared to 48% in pooled clinical trials from Australia. There was a significant cohort effect; at 3 months retention was significantly better in the 1990 cohort, but by 12 months, differences between the year-cohorts were not statistically significant. Most people who left treatment dropped out; two-thirds subsequently re-entered MMT, often having multiple episodes. Participation in non-continuous treatment was around 45% for the 5 years after first entering treatment. Using multiple logistic regression, the significant predictors of re-entry to treatment were age, and duration of first treatment episode; specifically, older people and those with >12 months continuous treatment were significantly less likely to re-enter.

**Conclusion:** Retention in treatment in practice, across a range of settings, appears comparable to treatment delivered in clinical trials. Participants cycle in and out of treatment, and this recycling appears to have increased as the program has expanded and access to treatment has increased.

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**Keywords:** Methadone; Heroin; Retention

## 1. Introduction

The medical management of heroin addiction using methadone (and recently, buprenorphine) has grown progressively in Australia since 1985. In that year, the decision to expand access to methadone maintenance treatment (MMT) was taken, and the Federal Government provided funding to

build and run several new, publicly funded clinics. These clinics were staffed to provide counselling and welfare services in addition to medical services and dispensing. However, demand for treatment rapidly outstripped allocated funding. Continued growth was made possible because of Australia's then system of universal health insurance, under which consultation fees for office-based treatment by a general practitioner or psychiatrist could be fully reimbursed. This funding source was the major factor defining the characteristics of treatment in Australia, in which medical practitioners

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became the key providers of methadone treatment, with little provision of counselling or welfare services.

Although costs of consultations were met, patients receiving private treatment were required to pay dispensing fees, to either a retail pharmacist or the clinic they attended. These fees ranged from \$25 to \$50 per week, whereas treatment in the public clinics was free. However, public clinics were almost invariably full, and most people seeking to access treatment did so through the private sector. In addition, methadone treatment was introduced within prison settings, initially so that people in treatment could continue to receive methadone while incarcerated; this program was later extended so that opioid-dependent individuals could be commenced on methadone while incarcerated.

As in other countries, expansion of office-based prescribing was hampered in all Australian jurisdictions by the reluctance of practitioners to become involved (Roche et al., 2002). In most Australian jurisdictions moves were made to recruit and train doctors. The training programs “medicalized” methadone maintenance, partly as a way of making it acceptable to practitioners and thus encouraging them to participate (Bell, 1995). The training emphasized tolerance of continuing drug use, use of high doses of methadone, and an orientation to maintenance rather than abstinence, as being components of treatment supported by research evidence. Thus, out of a pragmatic decision to fund treatment by shifting it into private settings, a distinct “medical” approach to maintenance treatment was shaped. This approach influenced treatment in all settings, so that throughout the treatment system there came to be little emphasis on counselling, ancillary services, or involvement with 12-step fellowships (Bell et al., 1995). State methadone guidelines promoted an “orientation to maintenance”, and supported the approach of indefinite maintenance.

By the mid 1990s, Australia, along with Switzerland, had the highest per capita participation in methadone treatment in the world, a rate about 2.5 times higher than the United Kingdom, and nearly twice that of the United States (Borbatis et al., 2000). Within Australia, the growth in methadone treatment has been greatest in the state of New South Wales (NSW); in 1985, there were about 1000 people on methadone in NSW, and by September 2003 there were 16,200 on methadone or buprenorphine, of whom about 1000 were receiving treatment in the prison system. This extensive experience of MMT allows an investigation of the pattern of long-term participation in treatment.

The progressive growth has been associated with controversy, particularly during the late 1990s, a period when there was increasing availability of heroin and increasing number of heroin users in Australia (Hall et al., 2000). Governments around Australia responded by funding research into medical treatment of heroin addiction, giving rise to a collaborative research effort, the National Evaluation of Pharmacotherapies for Opioid Dependence (NEPOD) (Mattick, 2001). The NEPOD Project pooled data collected in 13 separate clinical trials of medical treatment

of opioid dependence conducted across Australia, involving 1070 heroin users entering an episode of treatment during the years 1996–2000. Investigators who conducted the independent trials contributed a standardized core data set for central analysis across a set of agreed outcomes. These studies confirmed that MMT was an effective and cost effective treatment for heroin addiction (Mattick, 2001). The key finding was that heroin use was sharply reduced among subjects remaining in treatment. However, among those who left treatment, relapse to heroin use was common, emphasizing the importance of retention in treatment as a critical component (and measure of) effectiveness.

These findings were an important affirmation of the value of methadone treatment. However, clinical trials of efficacy are generally short, and there is no Australian data on long-term participation in treatment. All people registered to receive MMT in NSW are recorded in a central database, making it possible to track retention of cohorts entering treatment.

The available data provide an opportunity to investigate the pattern of participation in methadone treatment, to provide comparison with findings from research trials, and to provide benchmarks of retention in first episode of treatment against which clinics can measure the effectiveness of their treatment. In investigating patterns of retention and re-entry to treatment, it was considered desirable to test two specific hypotheses about variations in treatment retention. The first was whether retention in “private” (fee-paying) settings was significantly worse than in “public” (free to patients) treatment settings. One early report from New York indicated that 1-year retention rates in the public program were 58.5%, but private methadone programs in New York at that time had 1-year retention rates of 38% (Des Jarlais, 1982). Australian research on three public and three private clinics in the early 1990s found significant differences in retention between clinics, but overall no difference between the private and public sector (Bell et al., 1995). However, there remained a plausible hypothesis in a larger sample across many sites, the deterrent effect of dispensing fees on participation in treatment would give rise to better retention in public clinics. The second hypothesis was that as treatment has expanded and become more accessible, retention in treatment has declined. This was first noted in an American study which reported that retention in MMT in New York City diminished as the availability of treatment increased over the years from 1967 to 1982 (Bayer and Koenigsberg, 1981), and a subsequent Australian study from a single clinic reported diminished retention as the program expanded (Bammer et al., 2000).

## 2. Subjects and methods

The data source for this study was the NSW Pharmacotherapy Treatment Database, maintained by NSW Health. This database records all people registered to receive

methadone treatment in the state. Analysis was performed on de-identified data. The study was approved by the Research Ethics Committee, South Eastern Sydney Area Health Service.

Data was extracted on 16 April 2002. To test the hypothesis that as treatment expanded, retention diminished, three cohorts were selected, each from different years. The cohorts were selected by taking sequential first admissions to MMT from 1 February to 1 March in each of 3 years—1990, 1995, and 2000. The month of February was arbitrarily selected as being the first full working month of the year; most Australians take annual holidays in late December and early January, so January is an atypical month. For each person entering treatment, data extracted from the database included age, sex, whether the patient commenced treatment by attending a public or private dispensing point (or in prison), date of commencing treatment, date of administration of last dose of methadone in the episode of treatment, reason for leaving treatment, and dates of subsequent entries and exits.

Continuous retention in treatment was tabulated at 3, 6 and 12 months. Transfers to different dosing points, and changes of prescribing doctor, were common, and “continuous” treatment often involved treatment in three or four different sites and several different settings. When patients transferred to another prescribing doctor it was regarded for this analysis as a continuous episode of treatment. Where there was a gap of 7 days or more between a given exit date and a given start date for a new program, it was defined as a new episode of treatment.

For purposes of statistical analysis of retention, subjects commencing treatment in the corrections system were not included, as factors such as length of sentence may be expected to influence retention. Predictors of retention were analysed using survival analysis and Cox regression. The final Cox regression model was built using backwards, stepwise removal. Log-minus-log plots and time-dependent covariates were used to check the assumption of proportional hazards for the final model (results not shown).

Re-entry to treatment, and participation in treatment (either continuous or non-continuous) were tabulated, along with continuous retention in the second episode. Re-entry to treatment after leaving first episode was also examined, using survival analysis and logistic regression to investigate

predictors of re-entry to treatment within 12 months. Because the 2000 cohort had limited time to re-enter, further re-entry analysis was restricted to earlier cohorts. The final model was developed using backwards, stepwise, logistic regression.

After the initial data collection and identification of cohorts, a power calculation was undertaken to determine whether the samples from each year-cohort were large enough to detect statistically significant predictors of retention in first treatment episode with a hazard ratio of 1.5. This analysis confirmed that the sample size had approximately 90% power to detect such differences.

### 3. Results

Table 1 summarizes the cohorts. The rate of intake of patients into a first episode of treatment increased across the 3 years, with the cohorts being progressively larger. In each cohort, many more people entered private treatment. Patients entering their first episode of treatment were slightly younger in each cohort, but this difference was not statistically significant (Tamhane T2 post-hoc test for unequal variances,  $F = 2.57$ ;  $p = 0.07$ ).

#### 3.1. Retention in first treatment episode

Retention data is summarized in Table 2. There were 477 participants in the sample who began treatment in either the public or private settings. Three months after beginning their first episode of treatment 307 (64%) were still in this first continuous episode of treatment. At 6 months, 243 (51%) participants remained, and at 12 months 183 (38%) were still in continuous treatment. Five years after entering first episode of methadone treatment, 19/124 (15%) of the 1990 cohort, and 13/138 (9%) of the 1995 cohort were still in continuous treatment.

#### 3.2. Predictors of retention

The predictors of leaving treatment at 3, 6, and 12 months were examined using Cox regression. Predictors included in the model were sex, age, treatment setting, and cohort. The 3-month model is displayed in Table 3. Younger subjects were

Table 1  
Cohorts by treatment setting (site of methadone administration)

Variables	1990	1995	2000	Total
Age (mean $\pm$ S.D.)	28.8 $\pm$ 6.2	28.5 $\pm$ 6.6	27.4 $\pm$ 7	28.1 $\pm$ 6.7
Female	41 (28%)	56 (35%)	83 (34%)	180 (32%)
Male	108 (72%)	106 (65%)	164 (66%)	378 (68%)
Public	28 (19%)	31 (19%)	76 (31%)	135 (24%)
Private	95 (64%)	107 (66%)	139 (56%)	342 (61%)
Corrections	24 (16%)	14 (9%)	21 (9%)	59 (11%)
Other/missing	2 (1%)	10 (6%)	11 (5%)	22 (4%)
Total	149	162	247	558

Table 2  
Retention in first treatment episode, by cohort, at 3, 6, 12 months

	N	Retained 3 months		Retained 6 months		Retained 12 months	
		N	%	N	%	N	%
Cohort 1990							
Public	28	17	61	12	43	8	29
Private	96	72	75	57	59	46	48
Total	124	89	72	69	56	54	44
Cohort 1995							
Public	31	22	71	18	58	14	45
Private	107	65	61	50	47	31	29
Total	138	87	63	68	49	45	33
Cohort 2000							
Public	76	50	66	42	55	30	40
Private	139	83	60	64	46	54	38
Total	215	133	62	106	49	84	39
Total sample	477	309	64.8	243	51.0	183	38.4

more likely to leave, but this did not reach significance. Retention was worse in successive cohorts, and, after adjusting for sex, age, and the setting of first episode, the 1990 treatment cohort were significantly less likely to drop out in the first 3 months than the 2000 cohort.

### 3.3. Reasons for leaving treatment

The reasons for leaving the first episode of treatment are tabulated in Table 4. “Successfully completed program” ( $N=68$ ) is defined as meaning that the patient has had their dose progressively reduced to zero. In some cases the patients were listed as “transfer” but they did not resume treatment within 1 week ( $N=29$ ), suggesting that the patient dropped out rather than transferred. Three patients were incarcerated without treatment being continued in prison, giving a total of 32 “transfers” without continuation of treatment. Most people dropped out, and the second most common means of leaving treatment was elective withdrawal. As shown in Table 4, median duration of treatment for patients “completing

treatment” was much longer than median duration subjects who dropped out.

### 3.4. Deaths

In four subjects, the initial episode of MMT was terminated by death, but little information was available on these deaths. Exit forms for subsequent episodes of treatment reported a total of 10 patients (1.7%) died while still enrolled in a methadone program (8 men and 2 women). Their mean age at entry was 34.3 years when they began the program, older than the mean age for the sample, 28.1 years. Seven of these clients were from the 1990 cohort, two were from the 1995 cohort, and one from the 2000 cohort. Most had received multiple episodes of treatment. The date of death was available for only 3 of the 10 subjects. One of these clients died while in treatment (93 days), and two died within 5 days of ceasing receiving a dose of methadone: one of these clients had been in continuous treatment for 2 years (11 years in total) and the other had 4 years continuous treatment with a total of 9 years treatment. The last methadone dose for these three clients ranged from 50 to 95 mg.

Table 3  
Cox regression for likelihood of leaving treatment within 3 months

Parameter	Wald	d.f.	Hazard ratio (95% CI)	<i>p</i> value
Sex				
Female	1.526	1	0.81 (0.58–1.13)	0.22
Male			Ref.	
Setting				
Private	0.280	1	1.10 (0.77–1.55)	0.60
Public			Ref.	
Age				
< 21	1.948	1	1.44 (0.86–2.38)	0.16
21–30	1.179	1	1.21 (0.86–1.72)	0.28
> 30			Ref.	
Cohort				
1990	4.170	1	0.66 (0.44–0.98)	0.04
1995	0.065	1	0.95 (0.67–1.37)	0.80
2000			Ref.	

Table 4  
Reason for leaving first treatment episode

Reason	N	Median days treatment
Successfully completed program	68 (17.4%)	697
Ceased to pick up methadone	264 (67.7%)	95
Treatment terminated involuntarily	6 (1.5%)	183
Patient deceased	4 (1%)	862
Transfer	32 (8.2%)	–
Other	16 (4.1%)	–
Subtotal	390	
Missing data	18	
Still in first episode of treatment	69	
Total sample	477	

### 3.5. Participation in non-continuous treatment

One year after starting treatment, 44.0% of the 477 subjects entering public or private treatment were participating in treatment (compared to 38.5% continuous retention). The 1990 cohort had 12-month participation of 43.5%, while 48.6% of the 1995 cohort was participating at 12 months. Five years after commencing their first episode of treatment, 52/124 from the 1990 cohort (41.5%) were participating in treatment, and 64/138 (46.4%) of the 1995 cohort was (NS, log-rank = 2.7;  $p=0.10$ ). For these two cohorts, 5 years after beginning treatment 39.8% of subjects had participated in one episode of treatment, 36.0% had two episodes, 13.8% had three episodes, and 10.3% had between four and nine episodes. Males and females had similar treatment status at 5 years, with the percentage of women still participating in treatment slightly higher (46.4%) than the proportion of men (44.4%).

The 1990 cohort had an average of 2.6 treatment episodes and an average total of 1748 days in treatment (4.8 years) during the 12 years observation period from first entry to treatment.

### 3.6. Re-entry to treatment

Re-entry to treatment for the 1990 and 1995 cohorts is summarized in Table 5. This tabulates only the 1990 and 1995 cohorts, as there was insufficient observation period for the 2000 cohort. The second column shows the number re-entering as a proportion of the cohort, while the next four columns show the number re-entering within set periods, as a proportion of the total number re-entering. Table 5 illustrates that overall about two-thirds of subjects from both cohorts re-entered treatment, with most doing so within 1 year.

A series of analyses investigated predictors of re-entry. First, a logistic regression model with treatment re-entry within 1 year of leaving first episode as a dichotomous-dependent variable was constructed, using age, sex, cohort and setting as predictors. In addition to subjects from the 1990 and 1995 cohort, 138 subjects from the 2000 cohort who had left treatment for at least 12 months prior to the date of data collection (that is, before April 2001) were included, and 63 of these subjects (46%) had re-entered within that year. None of the predictor variables approached significance.

The next step in the analysis was to examine whether people who completed treatment were less likely to re-enter. "Successfully completed" was added to the previous analysis

Table 6

Backward stepwise logistic regression (likelihood ratio)—likelihood of re-entering treatment ( $N=177$ )

Parameter	Wald	d.f.	Odds ratio (CI 95%)	$p$ value
Constant	5.842	1	2.24	0.02
Age				
$\leq 20$	3.154	1	3.36 (0.88–12.79)	0.076
21–30	10.843	1	2.81 (1.52–5.20)	0.001
$\geq 31$			Ref.	
Days 1st episode				
$\leq 91$			Ref.	
92–365	0.945	1	0.68 (0.31–1.48)	0.331
$\geq 366$	5.133	1	0.43 (0.20–0.89)	0.02

as a dichotomous variable. Relative to successful completers, those who dropped out were significantly more likely to re-enter treatment within 1 year (OR 2.59 [1.35, 4.96],  $p=0.004$ ); including this variable in the equation, age also became a significant predictor, with younger subjects more likely to re-enter treatment.

Since people who "successfully completed" treatment tended to have had longer first episodes, the final analysis investigated whether duration of treatment was a predictor of re-entry. This analysis was restricted to subjects from the 1990 and 1995 cohorts, as to include the 2000 cohort would involve some distortion due to the short observation period (only people with relatively short first episodes of treatment would have been included). A backward stepwise logistic regression predicting re-entry to methadone treatment was constructed. The model included six categorical variables as predictors of re-entry: treatment setting (public/private), cohort (1990/1995), reason for leaving 1st episode (successful completion/other), length of 1st episode (number of days in treatment), sex (M/F), and age ( $\leq 20$ , 21–30,  $\geq 31$ ). Two of these variables were significant predictors of re-entry to treatment; age and duration of 1st treatment episode. Probably because duration of treatment was correlated with "successful completion", successful completion was dropped from the final model. The model is displayed in Table 6.

This analysis found that the major predictor of whether people re-enter treatment is duration of first episode—longer duration of treatment is associated with less likelihood of re-entry. In addition, younger people were more likely to re-enter treatment. Subjects were more likely to re-enter treatment if their first treatment episode was shorter than 90 days (80.5% of whom re-entered), followed by those who spent between 3 and 12 months in episode 1 (73.7%), while only 52% of

Table 5  
Re-entry to treatment

Cohort	Total re-entry (% of sample)	Re-entering within 1 year (%)	Re-entering within 2 years (%)	Re-entering within 3 years (%)	Re-entering within 5 years (%)
1990	83/124 (67%)	42/83 (51%)	59/83 (71%)	66/83 (80%)	77/83 (93%)
1995	94/138(68%)	65/94 (69%)	80/94 (85%)	85/94 (90%)	93/94 (99%)
Total	177/262 (68%)	107/177 (60%)	139 (79%)	151 (85%)	170 (96%)

subjects who remained in their first episode for greater than 365 days re-entered treatment.

Age was also a significant predictor. The age group with the most subjects re-entering treatment was the youngest age group (81.3% re-entered). The small numbers in this group may explain why the difference between the youngest and oldest groups did not reach significance. A greater proportion of subjects re-entered treatment aged 21–30 (74.3%) compared to those older than 30, who were the least likely to re-enter (52%).

### 3.7. Second and subsequent episodes of treatment

There was a positive bivariate correlation between the length of time subjects spent in their first and second episodes of treatment; patients who spent more time in their first episode had longer subsequent second episodes of treatment ( $r=0.17$ ;  $p<0.05$ ). Among people who had at least two episodes of treatment second episodes were on average slightly longer than first episodes. The mean length of the second treatment episode (1 year after commencing) was slightly longer at 175.2 days (S.D. = 147.8) than the length of these clients' first episode with a mean of 155.48 (S.D. = 142.7) days at 12 months.

## 4. Discussion

The most striking observation from the current study was the high turnover of patients; cycling in and out of treatment was common. Nearly two-thirds of people left treatment within a year, and two-thirds of those who left returned, often for multiple episodes.

Most patients who leave methadone treatment, particularly after short treatment episodes, relapse. For example, in John Ball's large observational study from North America, 82% of subjects who left treatment had relapsed by 12 months (Ball and Ross, 1991). Patients who leave treatment with the support of staff, after completing detoxification, are less likely to relapse (Milby, 1988). The Drug Abuse Reporting Program (DARP) suggested that the relationship between outcomes and time spent in treatment was linear—the longer the treatment, the better the results. Compared to short-term treatment (intake only, or less than 90 days treatment), those patients remaining in MMT for longer than 300 days had significantly better outcomes (Simpson, 1979). In the subsequent Treatment Outcome Prospective study, relative to those who left treatment within a week, regular heroin use post discharge was significantly lower only in patients who had remained in treatment for at least 12 months (Hubbard et al., 1989).

However, only a little over one-third of patients remained in treatment for at least 1 year. Overall retention in MMT was 65% at 3 months, 51% at 6 months, and 38% at 1 year. These figures compare unfavourably with some overseas reports. Torrens et al. (1996) reported retention of 72% of subjects at

2 years in a Spanish methadone treatment program. In 1974, retention rate in the NYC MMT Program was reported to be 65% at 1 year, 47% at 2 years, 35% at 3 years (Newman, 1977); 15 years later, a study on a group of methadone clinics in NYC from 1989–1990 reported retention was 38% at 3 years (Magura et al., 1998), a very similar figure. One striking difference between the Magura study and the current study is that in the NYC sample, only 18.4% of subjects dropped out of treatment, compared to 67% in the current Australian study.

However, there is also a sharp contrast between retention figures reported from recent clinical trials in the USA in the late 1990s, and the retention data reported by Magura. Retention in the current study compares closely with results of some of the recent clinical trials in the USA, in which retention in MMT (doses 50 mg and higher) have variously been reported as 31% at 12 months (Ling et al., 1996) and 56% at 4 months (Strain et al., 1994); or, distinctly lower, 31% at 4 months in one trial (Johnson et al., 1992).

Retention reported in the current study was also very similar to results from pooled Australian clinical trials conducted in the 1990s, in which retention in MMT was 48% at 6 months (Mattick, 2001).

It may be that part of the stark difference in reported retention rates is definitional. Participation in treatment is substantially higher than continuous retention, and the current study used a fairly strict definition of continuous retention (maximum of 7 days out of treatment). In addition, this study differs from most previous studies of retention in MMT in that it is based on cohorts of individuals entering their first episode.

Private treatment settings involve paying fees for treatment from the beginning, whereas public settings were free of fees, but despite this there was no evidence in this data set that there were significant differences in retention between public and private settings. A limitation in interpreting these figures is that many patients during a single episode of continuous treatment received methadone at all three settings at different times. Therefore, the current data do not really provide a definitive picture of any differences in treatment retention in different settings. A further limitation is that it was impossible to distinguish between office-based private practitioners (whose patients attend pharmacies to receive methadone) and private clinic-based practitioners. Despite these limitations, the finding of no difference is consistent with a previous comparison of public and private clinics, in which it was demonstrated that while there were marked differences between clinics within each sector, there was no difference in treatment effectiveness between the public and private sectors (Bell et al., 1995).

The current study provided some support for the hypothesis that as the NSW methadone program expanded, and achieved a higher penetration of treatment into the drug using population, retention in treatment diminished. Subjects in the 1990 cohort were least likely to leave treatment, a difference significant at 3 months. Beyond 3 months, retention remained best in the 1990 group, but differences were not significant;

differences less than 1.5 effect size could have been missed due to insufficient power. Subjects from the 1990 cohort also tended to re-enter treatment more slowly, although this difference was not significant. It has been suggested (Bammer et al., 2000) that the reason for diminishing retention as a program expands is that with increasing access to treatment, people are more prone to drop out, knowing that it is reasonably easy to re-enter treatment. This fits with the observation that the 1995 cohort dropped out more rapidly than the 1990 cohort, but also dropped back into treatment more rapidly (although this difference did not reach statistical significance). Another explanation is that by reaching more people, a higher proportion of those who are ambivalent about participating in treatment will be included, with the result that as treatment expands people tend to have shorter stays.

Although people got younger (non-significantly), they were not entering treatment earlier in their addiction careers. The mean age of initiation of use in Australia has been progressively dropping, from 20.5 for people born in the 1940s, 16.5 for those born in the 1970s (Lynskey and Hall, 1998).

Re-entry to treatment is a reasonable indicator of relapse; it is less clear that failure to re-enter treatment equates to non-relapse. However, the finding that people who “completed treatment” (progressively reduced methadone dose to zero) were less likely to re-enter treatment is consistent with the hypothesis that not re-entering treatment is a marker of less likelihood of relapse. Insofar as that assumption can be accepted, the finding in the current study that first episodes of treatment greater than 1 year were associated with a lower likelihood of return to treatment adds to the accumulated data emphasizing the importance of retention in treatment. However, long-term follow-up studies would be needed to confirm whether the health and frequency of heroin use is significantly worse for clients who cycle in and out of treatment than for those continuously retained in treatment.

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