



Short communication

## Factors predicting 2-year retention in methadone maintenance treatment for opioid dependence

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### Abstract

Factors predicting 2-year retention in methadone maintenance and the impact of repeat treatment episodes on retention are examined. Data ( $n=9555$  episodes) were drawn from a population-based treatment registry and analyses were performed using episode-weighted data. We estimated a binary logistic regression model with a duration of 730 days or greater as the dependent variable. The odds of remaining in treatment for 730 days or more increase with age and vary by region and provider type, but decrease with increasing number of treatment episodes. In comparison with other studies, these analyses show much higher rates of retention in methadone treatment but suggest that repeat episodes may not be as beneficial as existing research suggests.

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## 1. Introduction

Retention in methadone maintenance treatment (MMT) beyond 12 or 24 months is important for positive treatment outcome (Gunne & Gronbladh, 1984; Simpson, Joe, & Brown, 1997). As well, repeated episodes of addiction treatment are associated with incremental improvements in outcome, although this may not hold true for MMT (Anglin, Hser, & Grella 1997; Zhang, Friedman & Gerstein, 2003). We analyzed data from a population-based patient registry to determine the extent to which MMT patients are retained for 2 years and if repeat episodes of MMT are associated with incremental increases in treatment duration.

## 2. Methods

Data from the College of Physicians and Surgeons of Ontario (CPSO) Registry of MMT included information on treatment initiations, transfers and cessations, practice type, and limited demographic and regional variables. Episodes of treatment were used as the unit of analysis. We assumed that an interval of greater than 7 days between a cessation and a new MMT registration constituted cessation of a treatment episode. Episodes in correctional facilities that were not preceded or succeeded by treatment in the community were deleted because the episode length was determined only by length of sentence. Following these exclusions, we analyzed data from 9555 episodes of treatment beginning between January 1, 1996 and December 31, 2001.

To model the determinants of retention for 730 days or longer, we estimated a binary logistic regression model with treatment duration of 730 days or greater as the dependent variable. Predictor variables constrained to remain in the final model included: age (continuous variable); age squared; sex (dichotomous); region (six dummy variables with Toronto as the omitted category), treatment provider type (group practice-only, independent physician-only, clinic and correctional facility, clinic and independent physician, independent and correctional facility, and clinic-independent and correctional facility); a count variable for episode number; and a linear and quadratic time trend. To assess the contribution of interaction terms, we employed a backward stepwise procedure using the set of all two-way interaction terms, removing all terms with tail probabilities of  $p > 0.05$ . Huber–White robust standard errors were estimated to account for clustering (i.e., repeated observations on the same client).

## 3. Results

Of the 9555 episodes of treatment, 70.3% were for men and 29.7% for women. The mean age was 34.9 years at time of entry into treatment. The distribution by region was as follows: 16% Central East, 9.4% Central South, 7.2% Southwest, 6.5% Eastern, 2.8% Northern, and 47.8% Toronto. The proportion of treatment episodes that exceeded 730 days was 49.8%.

Table 1  
Adjusted odds ratios for 730 or more days of treatment and 95% confidence intervals

Predictor	AOR	95% CI	Predictor	AOR	95% CI
Age	1.09	1.05–1.13	Group practice	4.19	2.76–6.35
Age <sup>2</sup>	0.999	0.98–0.99	Group practice and correctional	5.57	4.25–7.30
Central East	0.8	0.71–0.91	Group practice and individual practitioner	6.16	4.89–7.74
Central South	0.79	0.67–0.93	Individual practitioner and correctional	3.09	2.41–3.95
Central West	1.27	1.09–1.47	Group practice, individual practitioner, and correctional	7.51	5.49–10.28
Central West	1.27	1.09–1.47	Clinic×South region	2.43	1.07–5.55
East	0.53	0.42–0.65	Clinic×East region	3.41	2.32–5.22
North	1.76	1.31–2.36	Clinic×North region	0.39	0.17–0.89
Episode <sup>a</sup>	0.79	0.74–0.86	Age×Group practice	0.98	0.98–0.99
Sex×Group practice/ independent	2.38	1.09–5.21			
Sex×Group practice/ correctional/independent	1.54	1.05–2.27			

<sup>a</sup> Maximum number of episodes=7.

The odds of remaining in treatment for 730 days or more increased with age and for residents of the Central West and North regions versus Toronto region (see Table 1). As well, the odds of remaining in treatment up to 730 days increased for those receiving treatment from more than one provider type during an episode of treatment, but decreased for residents of the Central South and East regions. As well, the odds decreased with increasing number of treatment episodes.

#### 4. Discussion

While a meta-analysis by Farre, Mas, Torrens, Moreno, and Cami (2002) reported retention rates from a low of 20% at 17 weeks to a high of 85% at 40 weeks, we found that 50% of patients remained in treatment for 730 days or more. Retention was not uniform by region, and those with fewer MMT prescribers appear to have higher retention rates. Scarcity of providers may deter dropout, and/or competition for scarce treatment places may favour admission of patients with less complicated addiction problems. Conversely, patients with polysubstance use and mental illness who are more likely to be discharged may have a greater chance of finding a prescriber in a well-serviced region. This finding requires future in-depth analysis to understand the impact of provider density on treatment retention.

Unlike MMT clinics, physicians in group MMT practices provide prescribing and related diagnostic services, but little or no primary care. Studies show that MMT based in general practice is more cost-effective, less stigmatizing, and leads to improved care for physical health (Lewis & Bellis, 2001). However, our results show that group practices may have an

advantage over solo practitioners in terms of retention. Nevertheless, integration of primary care services within these group practices is likely to lead to better outcomes for patients.

Using a treatment career approach Anglin et al. (1997) suggest that drug dependence leads to “multiple treatment episodes which can be understood as cyclical, incremental, and interactive in nature rather than as discrete episodes” (p. 309). However, results from this study suggest that repeat episodes of treatment may not lead to improved outcomes. Specifically, the data show that repeat episodes of treatment are of shorter duration than the initial episodes. While it may be that these shorter second, third, and later episodes of treatment lead to stability and recovery, clinical experience suggests that this may not be the scenario. If this interpretation is correct, efforts to retain patients when they first appear for treatment are necessary if patients are to derive the full benefits of MMT.

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