Client Retention in the British Columbia Methadone Program, 1996-1999

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ABSTRACT

Background: Methadone treatment for heroin addiction has been available for 40 years, but there is relatively little research on the effectiveness of Canadian programs. This paper describes one-year retention among the client cohorts entering the British Columbia Methadone Program during expansion between 1996 and 1999, and examines some factors previously shown to influence retention.

Methods: All methadone maintenance prescriptions dispensed to 1996-1999 program entrants were extracted from records of the BC Triplicate Prescription Program. Retention status and covariates were evaluated one year post-entry using logistic regression. Effects of retention status misclassification on time in the program were assessed with a Cox model for clients who received continuous daily dosing or short carries.

Results: Fifty-two percent of program entrants were still receiving methadone one year after entry; 24% had left the program at one year but later returned. Age at program entry and average daily dose of methadone were important predictors of continuation. In the logistic regression, only the 1999 year-of-entry cohort appeared to have a different retention trajectory. Year of entry is not a significant predictor of time in the program for those receiving daily or short carry doses only, and other results are consistent between models.

Interpretation: Retention rates in the BC Methadone Program are favourable and consistent with published rates. Program expansion does not reduce retention, once the effects of client age and dose are accounted for. Adequate daily dosing appears crucial to both initial retention and return to treatment.

La traduction du résumé se trouve à la fin de l'article.

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Methadone treatment for heroin addiction has been available for 40 years, but research on the effectiveness of Canadian programs is sparse.[1-3] The British Columbia (BC) Methadone Program is the largest in Canada. During 2001, more than 6,500 people were enrolled in the maintenance component of the program.[4]

In BC, methadone is prescribed almost exclusively by community physicians, and is dispensed by community pharmacists throughout the province. In 2001, 592 physicians were authorized to prescribe methadone, with approximately one half practicing in the Lower Mainland, one quarter on Vancouver Island and the remainder distributed throughout the rest of the province.[4] The College of Physicians and Surgeons of British Columbia (BCCPS) regulates methadone prescribers through a process of authorization, education, and supervision. In addition, the BCCPS works in collaboration with the British Columbia College of Pharmacists to authorize and supervise pharmacists who dispense methadone. Approximately 290 pharmacies currently dispense methadone throughout BC.

Although some methadone prescribers work in dedicated methadone treatment clinics, most prescribe methadone as part of a general medical practice. In 2001, 84% of methadone prescribers delivered methadone maintenance treatment (MMT) in a private practice, while 16% worked within a methadone clinic setting.[4] Most clinics provide ancillary psychosocial support services on-site. All methadone-prescribing physicians are encouraged to refer their methadone patients for additional support services through other medical and social service agencies. Methadone prescribers and dispensers are required to follow practice guidelines as specified by the BCCPS, and practice standards are monitored through routine audits.

The MMT program has expanded considerably over the past ten years by enlisting new physicians and pharmacists willing to prescribe and dispense methadone. Despite the expansion, however, no effectiveness studies had been completed.

Previous international studies have shown that participation in methadone maintenance treatment can lead to reductions in heroin use, criminal behaviour and HIV infections, and to improved health and

TABLE I

Demographic and Treatment Characteristics of Entrants to the BC Methadone Maintenance Program, 1996-1999 by Response Group

	Counts						% of group total				
	Left treatment before 1 year, did not return	Left treatment before 1 year, returned	In program at 1 year but disrupted	In program at 1 year, not disrupted	Total	Test	Left treatment before 1 year, did not return	Left treatment before 1 year, returned	In program at 1 year but disrupted	In program at 1 year, not disrupted	Total
Total (N)	1,217	1,217	642	2,011	5,087		23.9	23.9	12.6	39.5	100.0
Sex											
Male	817	787	399	1,315	3,318	LR $\chi^2 = 4.80$	67.1	64.7	62.1	65.4	65.2
Female	400	430	243	696	1,769	(df = 3, p = 0.19)	32.9	35.3	37.9	34.6	34.8
Age at Entry											
10 - 19	56	61	27	66	210		4.6	5.0	4.2	3.3	4.1
20 - 29	439	463	223	481	1,606		36.1	38.0	34.7	23.9	31.6
30 - 39	443	434	250	734	1,861		36.4	35.7	38.9	36.5	36.6
40 - 49	238	225	124	609	1,196		19.6	18.5	19.3	30.3	23.5
50 - 59	31	30	16	114	191	LR $\chi^2 = 172.55$	2.5	2.5	2.5	5.7	3.8
60 - 69	10	4	2	7	23	(df = 15, p < 0.0001)	0.8	0.3	0.3	0.3	0.5
Average Daily Dose											
< 40 mg	209	131	60	100	500	LR $\chi^2 = 127.53$ (df = 3, p < 0.0001)	17.2	10.8	9.3	5.0	9.8
40 - 59 mg	367	329	149	304	1,149	LR $\chi^2 = 120.90$ (df = 3, p < 0.0001)	30.2	27.0	23.2	15.1	22.6
60 - 79 mg	291	314	185	537	1,327	LR $\chi^2 = 5.92$ (df = 3, p = 0.12)	23.9	25.8	28.8	26.7	26.1
80 - 99 mg	155	231	125	548	1,059	LR $\chi^2 = 104.56$ (df = 3, p < 0.0001)	12.7	19.0	19.5	27.3	20.8
100-119 mg	66	89	60	278	493	LR $\chi^2 = 73.41$ (df = 3, p < 0.0001)	5.4	7.3	9.3	13.8	9.7
120-139 mg	34	42	23	112	211	LR $\chi^2 = 17.70$ (df = 3, p = 0.0005)	2.8	3.5	3.6	5.6	4.1
140-159 mg	17	29	10	56	112	LR $\chi^2 = 8.69$ (df = 3, p = 0.03)	1.4	2.4	1.6	2.8	2.2
160-199 mg	28	27	13	49	117	LR $\chi^2 = 0.43$ (df = 3, p = 0.94)	2.3	2.2	2.0	2.4	2.3
200-299 mg	36	18	12	23	89	LR $\chi^2 = 14.07$ (df = 3, p = 0.003)	3.0	1.5	1.9	1.1	1.7
300-400 mg	14	7	5	4	30	LR $\chi^2 = 12.52$ (df = 3, p = 0.006)	1.2	0.6	0.8	0.2	0.6
Year of Entry											
1996	183	278	122	372	955		15.0	22.8	19.0	18.5	18.8
1997	255	308	148	463	1,174		21.0	25.3	23.1	23.0	23.1
1998	297	315	174	519	1,305	LR $\chi^2 = 61.59$	24.4	25.9	27.1	25.8	25.7
1999	482	316	198	657	1,653	(df = 9, p < 0.0001)	39.6	26.0	30.8	32.7	32.5
Average Daily Dose											
Mean	74.87	76.98	79.99	86.55	80.64	Kruskal-Wallis test = 295.98					
SD	52.86	42.73	44.65	35.55	43.36	(df = 3, p < 0.0001)					
Median	62.27	68.39	73.04	63.58	73.44						
Age at Program Entry											
Mean	33.2	32.7	33.3	36.2	34.3	Kruskal-Wallis test = 163.20					
SD	9.1	8.7	8.7	9.2	9.1	(df = 3, p < 0.0001)					
Median	32.4	31.7	33.3	36.6	34.0						

social functioning.[5] Research evidence suggests a linear relationship between length of time in methadone treatment and improved outcomes.[6] The minimum treatment retention threshold for improved outcomes in methadone maintenance treatment is considered to be 12 months.[3] Factors shown to influence retention include take-home doses ("carries"),[7] methadone dose,[8,9] gender,[10] dispensing location,[9] client age,[8] and previous involvement with the criminal justice system.[8] Program expansion can also have a negative impact.[11]

The purpose of this paper is to briefly describe one-year retention among the client cohorts entering the BC MMT program between 1996 and 1999, a period of rapid expansion, and to examine the impact of some known contributors to retention.

METHODS

The study reported here was commissioned as part of a program evaluation by the BC Ministry of Health and the BCCPS, and access to anonymized program data was granted under the provisions of the BC *Freedom of Information and Protection of Privacy Act*.[12]

All methadone maintenance prescriptions dispensed to individuals registered in the program between 1990 and September 4, 2001 (anonymized to protect confidentiality) were extracted from records of the BC Triplicate Prescription Program. Data were initially included for analysis if the methadone recipient had a recorded gender and age between 10 and 69 years at program entry, and received a first maintenance prescription between January 1, 1996 and December 31, 1999* (n = 5,124 clients). Yearly cohorts are based on the calendar year of the first dispensing date. Thirty-seven individuals were removed because their average daily methadone dose was more than 400 mg, as examination revealed probable errors in data entry at the pharmacy, aggregation of identifiers for confidentiality (e.g., for incarcerated clients), or abuse of the program. Removed cases did not differ on the other analysis factors, and discarding them did not change the results. Analyses are based on the remaining 5,087 clients.

Because some MMT clients in BC receive 'carries' of up to a month's supply of methadone at any one time, participants are considered to have left the program only when they have had no methadone for 30 days (i.e., they have a gap of 31 days or more between dispensing dates). They are, however, permitted to re-register to continue therapy at any time. We have used the 31-day rule to divide clients remaining in the program at one year into those whose treatment was uninterrupted (i.e., no gaps of 31 days or more) and interrupted/disrupted (at least one gap of 31 days or more) during their first year of program participation.

* 'First prescription' means there is no earlier methadone maintenance prescription recorded with the BC Triplicate Prescription Program. Some individuals may have received methadone outside the maintenance program (e.g., for withdrawal or pain), or outside BC.

TABLE II

Demographic and Treatment Characteristics of Clients Receiving Daily or Short-carry Doses Only by Response Group

	Counts					% of group total			
	Left treatment before 1 year, did not return	Left treatment before 1 year, returned	In program at 1 year not disrupted	Total	Test	Left treatment before 1 year, did not return	Left treatment before 1 year, returned	In program at 1 year not disrupted	Total
Total (N)	688	583	1,166	2,437		28.2	23.9	47.8	100.0
Sex									
Male	471	389	765	1,625	LR χ^2 = 1.59	68.5	66.7	65.6	66.7
Female	217	194	401	812	(df = 2, p = 0.45)	31.5	33.3	34.4	33.3
Age at Entry									
10 - 19	27	29	35	91		3.9	5.0	3.0	3.7
20 - 29	242	212	259	713		35.2	36.4	22.2	29.3
30 - 39	254	204	424	882		36.9	35.0	36.4	36.2
40 - 49	144	120	362	626		20.9	20.6	31.0	25.7
50 - 59	17	16	83	116	LR χ2 = 96.13	2.5	2.7	7.1	4.8
60 - 69	4	2	3	9	(df = 10, p < 0.0001)	0.6	0.3	0.3	0.4
Average Daily Dose									
< 40 mg	122	67	47	236	LR χ^2 = 97.49 (df = 2, p < 0.0001)	17.7	11.5	4.0	9.7
40 - 59 mg	223	172	183	578	LR χ^2 = 82.49 (df = 2, p < 0.0001)	32.4	29.5	15.7	23.7
60 - 79 mg	166	148	336	650	LR χ^2 = 5.52 (df = 2, p = 0.06)	24.1	25.4	28.8	26.7
80 - 99 mg	92	118	360	570	LR χ^2 = 81.11 (df = 2, p < 0.0001)	13.4	20.2	30.9	23.4
100-119 mg	37	37	148	222	LR χ^2 = 35.64 (df = 2, p < 0.0001)	5.4	6.3	12.7	9.1
120-139 mg	18	16	52	86	LR χ^2 = 5.73 (df = 2, p = 0.0005)	2.6	2.7	4.5	3.5
140-159 mg	6	9	18	33	LR χ^2 = 1.82 (df = 2, p = 0.40)	0.9	1.5	1.5	1.4
160-199 mg	8	8	15	31	LR χ^2 = 0.12 (df = 2, p = 0.94)	1.2	1.4	1.3	1.3
200-299 mg	11	4	7	22	LR χ^2 = 4.72 (df = 2, p = 0.10)	1.6	0.7	0.6	0.9
300+ mg	5	4	0	9	LR χ^2 = 11.76 (df = 2, p = 0.003)	0.7	0.7	0.0	0.4
Year of Entry									
1996	105	149	227	481		15.3	25.6	19.5	19.7
1997	138	158	268	564		20.1	27.1	23.0	23.1
1998	189	139	297	625	LR χ^2 = 61.59	27.5	23.8	25.5	25.6
1999	256	137	374	767	(df = 9, p < 0.0001)	37.2	23.5	32.1	31.5
Average Daily Dose									
Mean	68.90	72.66	82.80	76.45	Kruskal-Wallis test = 216.36				
SD	44.62	39.05	28.54	36.80	(df = 2, p < 0.0001)				
Median	59.77	65.97	80.88	72.68					
Age at Program Entry									
Mean	33.3	33.1	36.8	34.9	Kruskal-Wallis test = 92.81				
SD	8.9	8.9	9.1	9.2	(df = 2, p < 0.0001)				
Median	33.0	32.5	37.3	35.1					

The distribution of covariates across response groups was evaluated using chi-square tests for categorical variables. The Kruskal-Wallis test was used to compare the means of continuous variables and chi-square tests for trend.

Model 1 used logistic regression to assess the likelihood that individuals would fall into one of four groups at one year post-entry: group 'LN' comprised those who were not receiving methadone* and who did not return to the program at any time before the end of the observation period (September 4, 2001); group 'LR' were not receiving methadone at one year but did return at some time in the observation period; group 'D' were receiving methadone at one year but their treatment had been interrupted; and group 'N' remained in the program at one year with uninterrupted treatment. Because there were four possible responses, we used the CATMOD procedure in SAS (Version 8.01, SAS Institute Inc., Cary, NC, 1999-2000) for this component.

There is a risk of misclassifying responses in this model. This may be due to the unequal length of observation possible following individuals' first year in the program. Early entrants in the 1996 cohort, for example, could return to the program and be classified as 'LR' for over four years, while those entering late in 1999 could do so for less than one year. It may also result from the fact that we are looking for a 'non-event' – the first date that no methadone is received. Individuals may be misclassified as remaining in the program because their last amount of methadone dispensed covers the one-year date, but if the assumed rate of consumption is too low (i.e., there has been a dose increase for the last prescription) then this will be incorrect.

To assess the impact of misclassification on our results, Model 2 included only the first year post-entry for clients who received no long carries and had no interruptions; that is, no interval between dispensing dates of more than 7 days. Using a Cox model (PROC PHREG in SAS), time in the program was measured as days between the first and last prescriptions in the year, using the other covariates from Model 1.

RESULTS

Client demographic and treatment characteristics for the full cohort (n = 5,087) are shown in Table I. Fifty-two percent of the cohort remained in treatment at one year, and another 24% had left the program at one year but later returned. Only 24% of the cohort left treatment before one year and never returned.

While the response groups do not differ in their proportions of male to female clients, they have a significantly different age distribution at program entry. The

* Individuals are classified as receiving methadone on a given date if either methadone was dispensed to them on that date, or the latest amount dispensed would have covered that date if consumed at the rate of the next most recent amount. If an individual is consuming 50 mg/day, for example, 250 mg is assumed to last 5 days.

TABLE III

Results of Logistic Regression for Status at One Year After Entering Program, All Clients (N = 5,087)

Variable	Parameter	Estimate	SE	Chi-Sq	Pr Chi-Sq	Odds Ratio	95% CI
Intercept	LR vs LN	0.313	0.115	7.43	0.006	1.37**	(1.09, 1.71)
	D vs LN	-0.683	0.151	20.42	<0.0001	0.51	(0.38, 0.68)
	N vs LN	-0.436	0.133	10.7	0.001	0.65	(0.50, 0.84)
Sex (reference = male)	LR vs LN	0.095	0.079	1.44	0.229	1.10	(0.94, 1.29)
	D vs LN	0.145	0.103	1.97	0.160	1.16	(0.94, 1.41)
	N vs LN	-0.059	0.088	0.45	0.501	0.94	(0.79, 1.12)
Year of entry 1997	LR vs LN	0.084	0.111	0.57	0.449	1.09	(0.87, 1.35)
(reference 1996)	D vs LN	0.087	0.148	0.35	0.557	1.09	(0.82, 1.46)
	N vs LN	0.271	0.129	4.43	0.035	1.31*	(1.02, 1.69)
Year of entry 1998	LR vs LN	0.197	0.110	3.19	0.074	1.22	(0.98, 1.51)
(reference 1996)	D vs LN	0.257	0.146	3.13	0.077	1.29	(0.97, 1.72)
	N vs LN	0.471	0.127	13.7	0.000	1.60***	(1.25, 2.05)
Year of entry 1999	LR vs LN	0.486	0.109	19.95	<0.0001	1.63***	(1.31, 2.01)
(reference 1996)	D vs LN	0.398	0.144	7.7	0.006	1.49***	(1.12, 1.97)
	N vs LN	0.930	0.122	57.81	<0.0001	2.53***	(1.99, 3.22)
Average daily dose < 40 mg	LR vs LN	-0.720	0.154	22	<0.0001	0.49***	(0.36, 0.66)
(reference 60-79 mg)	D vs LN	0.218	0.184	1.4	0.236	1.24	(0.87, 1.78)
	N vs LN	0.585	0.141	17.13	<0.0001	1.79***	(1.36, 2.37)
Average daily dose 40-59 mg	LR vs LN	-0.555	0.108	26.33	<0.0001	0.57***	(0.46, 0.71)
(reference 60-79 mg)	D vs LN	-0.246	0.136	3.27	0.071	0.78	(0.60, 1.02)
	N vs LN	0.212	0.113	3.53	0.060	1.24	(0.99, 1.54)
Average daily dose 80-99 mg	LR vs LN	0.248	0.108	5.33	0.021	1.28*	(1.04, 1.58)
(reference 60-79 mg)	D vs LN	-0.113	0.145	0.6	0.439	0.89	(0.67, 1.19)
	N vs LN	-0.362	0.133	7.37	0.007	0.7**	(0.54, 0.90)
Average daily dose 100-119 mg	LR vs LN	0.515	0.143	12.99	0.000	1.67***	(1.26, 2.21)
(reference 60-79 mg)	D vs LN	0.092	0.192	0.23	0.630	1.10	(0.75, 1.60)
	N vs LN	-0.294	0.183	2.58	0.108	0.75	(0.52, 1.07)
Average daily dose 120-139 mg	LR vs LN	0.295	0.197	2.24	0.135	1.34	(0.91, 1.98)
(reference 60-79 mg)	D vs LN	-0.122	0.277	0.2	0.659	0.88	(0.51, 1.52)
	N vs LN	-0.244	0.247	0.98	0.323	0.78	(0.48, 1.27)
Average daily dose 140-159 mg	LR vs LN	-0.008	0.244	0	0.974	0.99	(0.62, 1.60)
(reference 60-79 mg)	D vs LN	-0.570	0.379	2.25	0.133	0.57	(0.27, 1.19)
	N vs LN	-0.512	0.319	2.58	0.108	0.60	(0.32, 1.12)
Average daily dose 160-199 mg	LR vs LN	-0.062	0.253	0.06	0.806	0.94	(0.57, 1.54)
(reference 60-79 mg)	D vs LN	-0.241	0.351	0.47	0.492	0.79	(0.39, 1.56)
	N vs LN	0.040	0.285	0.02	0.888	1.04	(0.60, 1.82)
Average daily dose 200-299 mg	LR vs LN	-0.406	0.327	1.54	0.215	0.67	(0.35, 1.26)
(reference 60-79 mg)	D vs LN	0.139	0.386	0.13	0.718	1.15	(0.54, 2.45)
	N vs LN	0.785	0.304	6.69	0.010	2.19**	(1.21, 3.97)
Average daily dose 300-399 mg	LR vs LN	-1.299	0.636	4.18	0.041	0.27*	(0.08, 0.95)
(reference 60-79 mg)	D vs LN	0.223	0.597	0.14	0.709	1.25	(0.39, 4.03)
	N vs LN	0.788	0.478	2.73	0.099	2.20	(0.86, 5.61)
Age at entry 10-19	LR vs LN	-0.302	0.196	2.39	0.122	0.74	(0.50, 1.08)
(reference 30-39)	D vs LN	-0.327	0.251	1.69	0.193	0.72	(0.44, 1.18)
	N vs LN	-0.475	0.205	5.35	0.021	0.62*	(0.42, 0.93)
Age at entry 20-29	LR vs LN	-0.414	0.092	20.29	<0.0001	0.66***	(0.55, 0.79)
(reference 30-39)	D vs LN	-0.201	0.117	2.96	0.085	0.82	(0.65, 1.03)
	N vs LN	-0.247	0.098	6.27	0.012	0.78*	(0.64, 0.95)
Age at entry 40-49	LR vs LN	0.442	0.101	19.33	<0.0001	1.56***	(1.28, 1.89)
(reference 30-39)	D vs LN	-0.039	0.138	0.08	0.781	0.96	(0.73, 1.26)
	N vs LN	0.050	0.117	0.18	0.672	1.05	(0.84, 1.32)
Age at entry 50-59	LR vs LN	0.823	0.271	14.36	0.000	2.28***	(1.34, 3.88)
(reference 30-39)	D vs LN	-0.078	0.321	0.06	0.807	0.92	(0.49, 1.73)
	N vs LN	-0.086	0.268	0.1	0.750	0.92	(0.54, 1.55)
Age at entry 60-69	LR vs LN	0.277	0.642	0.19	0.667	1.32	(0.37, 4.64)
(reference 30-39)	D vs LN	-0.078	0.875	0.01	0.929	0.93	(0.17, 5.14)
	N vs LN	0.816	0.607	1.81	0.179	2.26	(0.69, 7.43)

Response groups:
LN = not in program at one year, did not return during observation period
LR = not in program at one year, returned during observation period
D = in program at one year, at least one interruption longer than 30 days during first year
N = in program at one year, no interruptions longer than 30 days during first year
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

mean and median ages of the group remaining in undisrupted treatment for one year are both higher than those in the group who left treatment and did not return, while the left-and-returned group is youngest. With the exception of a small number of categories, the four response groups appear to have quite different patterns of dosing.

A significant trend ($p<0.0001$) toward younger average client age and lower average daily dose from 1996 to 1999 appears in analysis of year-of-entry cohorts (not shown).

Table II describes the characteristics of the client sub-group (n = 2,437) used for Model 2. By definition, members of response group D are excluded. Though the comparison with those not in the sub-group is not shown, sub-group members tend to be older (67% vs 61% over age 30 at entry, $p<0.0001$) and are more likely to be male (67% vs 64%, $p<0.04$). There are also fewer clients receiving an average daily dose of 120 mg/day or more than in those not included (14% vs 7%, $p<0.0001$).

The results of the logistic regression appear in Table III. The reference group for the response analysis is LN, those who had left the program at one year and did not return. The impact of year of entry is in relation to 1996, and of average daily dose is in relation to 60-79 mg/day, the

TABLE IV

Cox Model of One-Year Retention, Program Clients Receiving Daily or Short-carry Doses Only (N = 2,487)

Variable	Parameter Estimate	SE	Hazard Ratio	95% CI for Hazard Ratio
Age at entry 10-19	0.029	0.147	1.03	(0.77, 1.37)
Age at entry 20-29	0.192	0.068	1.21**	(1.06, 1.38)
Age at entry 40-49	-0.273	0.078	0.76**	(0.65, 0.89)
Age at entry 50-59	-0.765	0.182	0.47***	(0.33, 0.66)
Age at entry 60-69	0.213	0.412	1.24	(0.55, 2.77)
Sex (0 = male)	-0.106	0.061	0.89	(0.80, 1.01)
Year of entry 1997	0.057	0.086	1.06	(0.89, 1.25)
Year of entry 1998	-0.026	0.084	0.98	(0.83, 1.15)
Year of entry 1999	-0.049	0.082	0.95	(0.81, 1.12)
Average daily dose < 40 mg	0.939	0.095	2.56***	(2.12, 3.08)
Average daily dose 40-59 mg	0.563	0.076	1.76***	(1.51, 2.04)
Average daily dose 80-99 mg	-0.323	0.090	0.72***	(0.61, 0.86)
Average daily dose 100-119 mg	-0.412	0.130	0.66**	(0.51, 0.85)
Average daily dose 120-139 mg	-0.174	0.181	0.84	(0.59, 1.20)
Average daily dose 140-159 mg	0.027	0.265	1.03	(0.61, 1.72)
Average daily dose 160-199 mg	0.297	0.257	1.35	(0.81, 2.23)
Average daily dose 200-299 mg	1.092	0.267	2.98***	(1.77, 5.03)
Average daily dose 300-400 mg	3.748	0.347	42.01***	(21.31, 83.16)

Reference categories:
Age at entry = 30-39
Year of entry = 1996
Average daily dose 60-79 mg

* p < 0.05
** p < 0.01
*** p < 0.001

average range. Age at entry refers to the 30-39 age group, which contains the largest number of individuals.

Client gender appears to have no notable effect. Year of entry has a marginal impact until 1999, when it appears to improve retention. Average daily dose appears predictive of return to the program, but not of continuous treatment, up to 120 mg/day, though confidence intervals are wide and the results should be interpreted cautiously. Older age at entry is associated with greater likelihood of return to the program, and younger age with interrupted treatment.

The results of the Cox model are found in Table IV. Increased age is associated with improved one-year retention, as are average doses up to 120 mg/day. Year of entry is no longer statistically significant.

Figure 1 shows one-year retention in the program from Model 2, stratified by average daily dose categories.

DISCUSSION

Retention rates in the BC Methadone Program are favourable and consistent with rates reported for other programs.[13] While we cannot determine causality in an observational study, our models show consistent associations between one-year retention and our limited set of factors. Any misclassification in Model 1 does not appear to be influencing these results.

As in other studies, older clients remain in the BC program longer (other than the very oldest cohort, which is very small). This study suggests that younger clients may also have a more disrupted course of treatment.

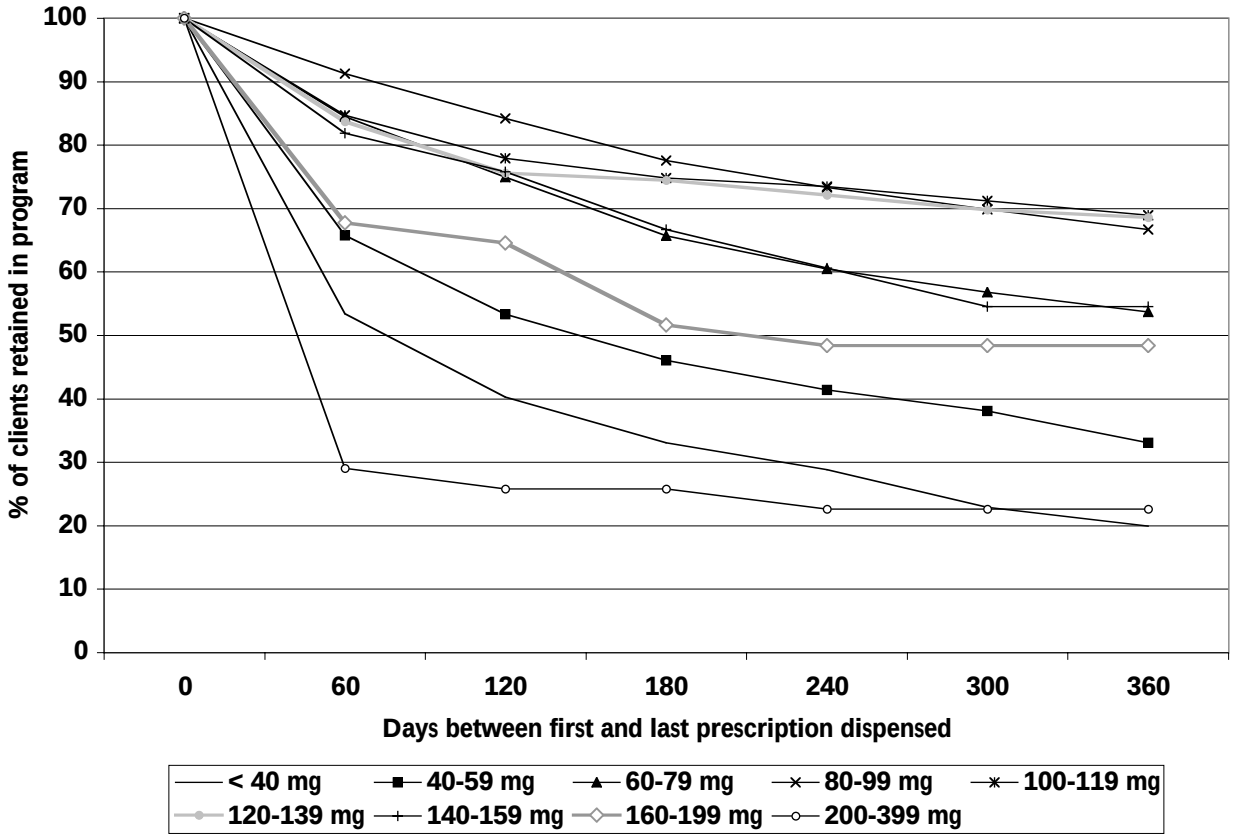

Figure 1. One-year retention in MMT program clients receiving daily or short-carry doses only by average daily methadone dose

Average daily dose is both a predictor of retention and potentially modifiable. The minimum dose recommended by expert consensus is 60 mg per day.[5] It is possible that the clients in our study receiving low doses (32% of participants) could be helped to remain in treatment longer if their daily doses were increased. Our data suggest that increasing doses to the provincial average range would have the strongest impact, and doses up to 120 mg/day would also be helpful. The margin of uncertainty in both models, however, suggests that this effect may be confounded by variables we were unable to measure, such as illicit drug use and clustering by physician.

Unlike a previous study of a smaller Australian methadone program's expansion,[11] retention rates in the BC Methadone Maintenance Program were largely unaffected through a period of rapid expansion. Later year-of-entry cohorts were no more likely to leave the program before one year, but Model 1 suggests the course of treatment may have changed in more recent years.

Study limitations are mostly related to restrictions imposed by the administrative databases from which our data are drawn. Data fields are limited to basic demographic information, drug dose, duration and frequency of dispensing. Other variables of interest, such as high- versus low-threshold methadone maintenance, concomitant use of illicit drugs, and use of additional psychosocial and primary care services, are not fully recorded. We are also unable to identify why clients had interruptions or left the program, or to adjust for the effects of patient clustering by clinic or physician.

The structure of the BC program also imposes an inherent limitation independent of the data sources. In order to account for the availability of extended 'carries', participants are considered to have left treatment only when they have had no methadone dispensed to them for 31 days or more. Some individuals identified as receiving a prolonged 'carry' may actually have left treatment for a short time and then returned, so the size of the disrupted-treatment group may be underestimated.

Our study suggests that many clients who leave before one year of methadone maintenance return to treatment, and that those who received a daily dose of methadone in the higher therapeutic range are more likely to return. These findings emphasize the importance of 'keeping the door open' for program dropouts to return to treatment, as well as that of adequate dosing – not only to enhance initial retention, but also to improve return-to-treatment rates.

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RÉSUMÉ

Contexte : Le traitement à la méthadone des héroïnomanes est disponible depuis 40 ans, mais on a relativement peu étudié l'efficacité des programmes canadiens. Notre étude décrit la persévérance sur un an des cohortes de clients qui se sont inscrits au programme de méthadone de la Colombie-Britannique durant sa phase de développement, entre 1996 et 1999. Nous avons aussi examiné quelques-uns des facteurs ayant une influence connue sur la persévérance.

Méthode : Toutes les ordonnances de méthadone délivrées aux personnes inscrites au programme entre 1996 et 1999 ont été extraites des dossiers du Triplicate Prescription Program de la C.-B. L'état de persévérance et ses covariables ont été évalués un an après l'inscription à l'aide d'une analyse de régression logistique. Les effets des erreurs de classement de l'état de persévérance sur la durée de participation au programme ont été évalués à l'aide du modèle Cox pour les clients bénéficiant d'une dose quotidienne continue ou de doses de dépannage.

Résultats : Cinquante-deux p. cent des personnes inscrites au programme recevaient encore de la méthadone un an après leur inscription; 24 % avaient quitté le programme avant un an, mais y étaient revenues par la suite. L'âge lors de l'inscription et la dose quotidienne moyenne de méthadone étaient d'importants prédicteurs de la persévérance. L'analyse de régression logistique a indiqué que seule la cohorte inscrite en 1999 semblait plus susceptible d'abandonner le traitement en moins d'une année sans le reprendre par la suite. Une analyse plus poussée a montré que cet effet pouvait résulter d'une erreur de classement, car l'année d'inscription n'est pas un prédicteur significatif de la durée d'inscription au programme pour les personnes qui ne reçoivent que des doses quotidiennes ou de dépannage.

Interprétation : Les taux de persévérance du programme de méthadone de la C.-B. sont favorables et conformes aux taux publiés. Le développement du programme n'a pas réduit la persévérance, compte tenu de l'âge des clients et des doses administrées. Une dose quotidienne suffisante semble être un élément crucial, à la fois pour la persévérance initiale et pour la reprise du traitement.