

The Persistent Benefits of Providing Chemical Dependency Treatment to Low-Income Adults

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Report to the Division of Behavioral Health and Recovery (DBHR), David Dickinson, MA, Director;
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THE DIVISION OF BEHAVIORAL HEALTH AND RECOVERY (DBHR) provides chemical dependency (CD) treatment to low-income adults in Washington State who do not qualify for Medicaid. This report examines the impact of receiving CD treatment in fiscal year (FY) 2003 on earnings, medical costs, arrests, and mortality over the subsequent five year period (FY 2004-2008). We analyze the impact of treatment for a population of low-income, non-Medicaid adults compared to a similar population of adults who received detoxification services or were enrolled in ADATSA in FY 2003 but who did not receive CD treatment between FY 2002 and 2008.¹

Key Findings

- **Low-income adults who receive CD treatment earn more.** In the first year after CD treatment, average earnings were \$1,494 higher per client for treated low-income clients, compared to those who did not get treatment but likely needed it. A pattern of higher earnings for the treated group was sustained over the five year study period with treated clients earning an average of \$2,081 more in annual income by FY 2008 relative to their untreated counterparts.
- **Treated low-income adults experience lower medical costs.** By study design, neither clients treated for chemical dependency nor their untreated counterparts were eligible for Medicaid in FY 2003. However, among the subset who became eligible for DSHS medical coverage in FY 2004, average annual medical costs in FY 2004 were \$2,274 lower per treated client, compared to those who did not get treatment. Lower medical costs were still observed four years later (in FY 2008), with treated clients experiencing annual medical costs that were, on average, \$1,786 less per person.
- **Treated low-income adults have fewer arrests.** The change in the average annual number of arrests from FY 2002 to 2004 translates into 21 arrests avoided for every 100 clients who received CD treatment. Even by FY 2008, receipt of CD treatment five years earlier is associated with 19 fewer arrests for every 100 treated clients.
- **Treated low-income adults have a lower risk of dying.** In the first year after CD treatment, the regression-adjusted risk of dying was 48 percent lower for the treated group. This group continued to experience a lower risk of dying through the fifth year, when it was 24 percent lower.

¹ The Alcoholism and Drug Addiction Treatment and Support Act (ADATSA), passed by the Washington State Legislature in 1987, provided assessments, chemical dependency treatment, and financial support for indigent clients deemed unemployable due to chemical dependency.



STUDY POPULATION | Low-Income Adults

This report examines outcomes for low-income adults who did not have Medicaid or General Assistance related medical coverage in FY 2002 or 2003 but who may have had ADATSA coverage during this time period. We refer to these individuals as “low-income adults” for simplicity. From this larger pool, we restrict the study population to individuals who received detoxification or CD treatment or enrolled in ADATSA in FY 2003. We defined the treatment group as those who received DBHR-funded CD treatment in FY 2003. The comparison group was defined as low-income adults who received detoxification or enrolled in ADATSA in FY 2003 but who did not receive CD treatment in FY 2002 through 2008.

The purpose of this analysis is to estimate the impact of CD treatment on the well-being of low-income adults over time. To credibly estimate the impact of CD treatment, we need to identify a comparison group of individuals who are similar to the treated group – including in their need for CD treatment – but who did not receive treatment. Similar analyses conducted with Medicaid and General Assistance clients have relied primarily on medical claims diagnosis data to identify large comparison groups with untreated chemical dependency. However, we do not have access to medical service data for persons who are not enrolled in DSHS medical coverage, so we could not identify the comparison group through medical claims diagnoses. Instead, we identified the untreated comparison group by their receipt of non-treatment services from DBHR – notably through their receipt of detoxification services or enrollment in ADATSA coverage without subsequent entry into CD treatment services. It is important to note that the relatively small size of the comparison group identified for this analysis reflects our lack of information on CD risk factors for the broad population of low-income persons not enrolled in DSHS medical coverage; it should not be interpreted to suggest that there is a low level of CD treatment need in the low-income population.

Given the composition of the study population, we were unable to statistically match members of the treatment group with members of the comparison group. Due to the limited information available to us on untreated low-income adults noted above, the comparison group is relatively small (n=2,267). As a result, constructing a one-to-one matched sample would have required us to exclude most individuals from the treatment group. In addition, the study population did not have DSHS medical coverage in FY 2002 or 2003, so we were unable to match clients based on their medical histories. For example, we did not have sufficient data to create a baseline measure of medical risk (expected future medical costs), a measure RDA often constructs from its integrated database for analyses of this kind. However, we used regression analysis to control for key demographic characteristics and other factors likely to be related both to one’s status in the treatment or comparison group and the various outcomes of interest.

All in all, we find that the comparison group is similar to the treatment group on most measures. There are some relatively small differences in the age distributions and racial/ethnic compositions of the two groups, but we control for these demographic characteristics in the regression models. Another noteworthy difference is in detoxification utilization, which is considerably higher (74 percent compared to 10 percent) for the comparison group in FY 2003 by design since individuals had to have received detoxification or been enrolled in ADATSA to be included in the untreated comparison group. Nevertheless, we are encouraged by the relatively small differences between the two groups in their rates of detoxification utilization in the post-period. For example, by FY 2008, a mere 3 percent of both groups received detoxification. This suggests that we have not inadvertently identified a “chronic detox” population, which would have been a less credible comparison group. Moreover, it is possible that the small differences in detoxification rates between the two groups that we observe from FY 2004 to 2006 are to some extent a function of whether or not an individual received CD treatment in FY 2003.

Table 1. Baseline Sample Characteristics

DEMOGRAPHICS	Low-Income Adults <i>n = 15,235</i>	
	Untreated <i>n = 2,267</i>	Treated <i>n = 12,968</i>
AGE DISTRIBUTION AS OF JUNE 2003		
18 to 24 years	12%	20%
25 to 34 years	23%	28%
35 to 44 years	33%	31%
45 to 54 years	25%	17%
55 to 64 years	6%	3%
65 and over	1%	1%
GENDER		
Female	22%	20%
Male	78%	80%
RACE ETHNICITY		
Asian Pacific Islander	1%	2%
Black	9%	6%
Hispanic	9%	14%
American Indian	4%	9%
White <i>Non-Hispanic</i>	75%	67%
Other	2%	1%
Missing	0%	0%
DBHR-FUNDED SERVICES (FY 2003)		
Detoxification	74%	10%
CD Treatment	0%	100%
BASELINE MEASURES (FY 2002)		
Earnings <i>Average annual dollars per person</i>	\$5,547	\$6,461
Arrests <i>Average number per person per year</i>	0.42	0.70

OUTCOMES OVER 5 YEARS | Regression Results

We used statistical modeling to estimate the impact of receiving CD treatment on earnings, medical costs, arrests, and mortality among low-income adults who did not have DSHS medical coverage in FY 2002 or 2003. For each outcome, we ran a separate regression for each year of the five year post-period (FY 2004 to FY 2008). The “index year” for this analysis is FY 2003, the year in which the treatment group received CD treatment and the comparison group received detoxification services or enrolled in ADATSA but did not receive treatment.

It is worth noting that in general the regression-adjusted between-group differences in outcomes mirror the unadjusted differences we observe from basic descriptive statistics. However, there are some exceptions to this. For example, the regressions on mortality reduce the size of the unadjusted difference between groups while regressions on arrest increase the size of the unadjusted difference. In both cases, it is likely that the regressions are adjusting for the baseline differences we observe in the age distribution of the two groups; namely, that untreated clients are more likely to be older (and older individuals are generally more likely to die and less likely to be arrested).

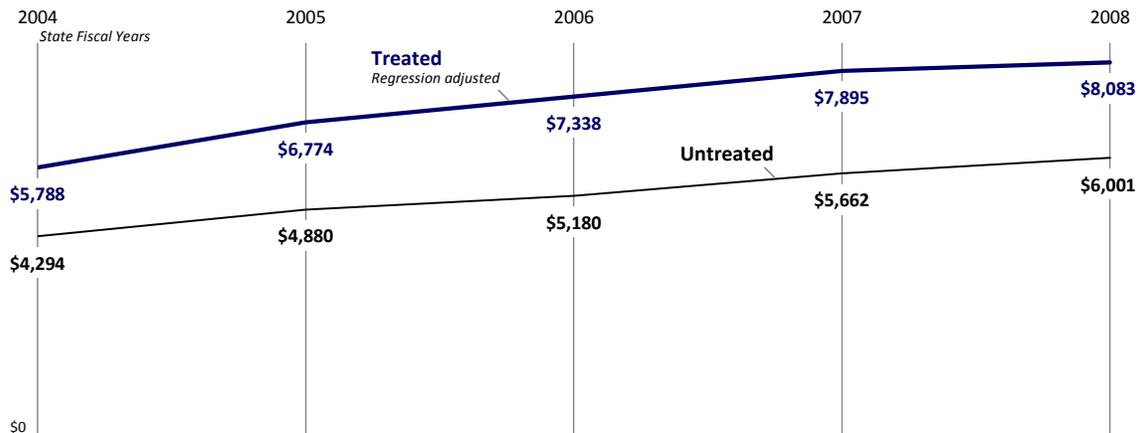
Earnings are Higher

We analyzed Employment Security Department (ESD) Unemployment Insurance wage data and found that, on average, annual earnings were \$1,494 higher per person in the first year after treatment (FY 2004) for clients who received CD treatment compared to individuals who likely needed treatment but did not receive it. This pattern of higher earnings was sustained over time, with low-income adults who received treatment earning, on average, \$2,081 more in FY 2008 than their untreated counterparts.

The estimated difference in earnings between the two groups in each year from FY 2004 to 2008 is based on regression analyses that control for baseline earnings, prior arrests, basic demographics (gender, race/ethnicity, and age), and whether or not an individual received detoxification services in FY 2002.

Figure 1. Earnings for treated low-income adult clients are significantly higher

Average annual earnings per low-income adult client per year



Treated vs. Untreated Low-Income Adults					
Total n = 15,235					
EARNINGS	Untreated	Treated Unadjusted	Parameter Estimate	Treated Regression-adjusted	p-value
FY 2004	\$4,294	\$7,218	\$1,494	\$5,788	<.0001
FY 2005	\$4,880	\$8,244	\$1,894	\$6,774	<.0001
FY 2006	\$5,180	\$8,900	\$2,158	\$7,338	<.0001
FY 2007	\$5,662	\$9,539	\$2,233	\$7,895	<.0001
FY 2008	\$6,001	\$9,920	\$2,081	\$8,083	<.0001

Medicaid Medical Costs Decline

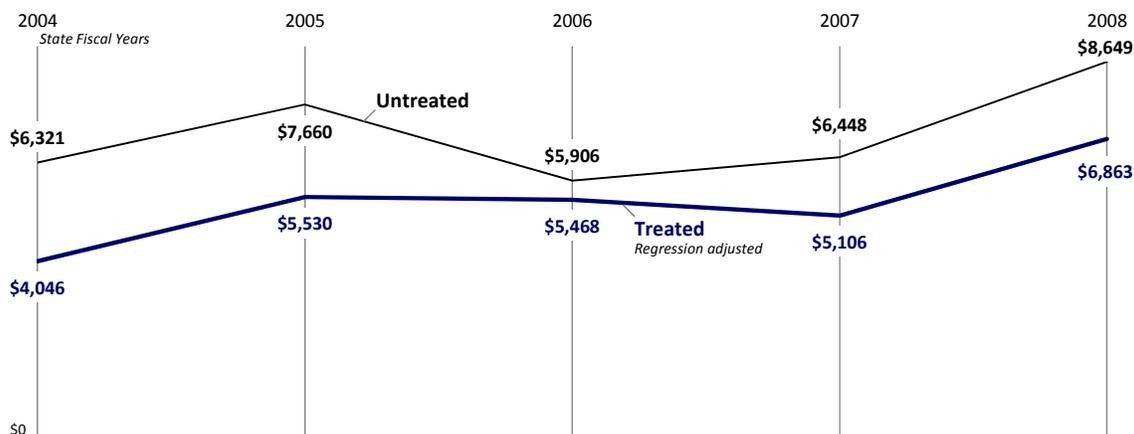
In the first year following treatment, annual Medicaid medical costs declined substantially among those who had DSHS fee-for-service (FFS) medical coverage for at least one month in that year. Based on a regression model controlling for demographics (gender, race/ethnicity, and age), baseline earnings, and whether or not an individual received detoxification in FY 2002, average annual medical costs in FY 2004 were \$2,274 lower per person for low-income adults receiving CD treatment compared to individuals who did not receive CD treatment between FY 2002 and FY 2008 but likely needed it.² Reduced medical costs were still observed five years after the index year, with individuals who had received CD treatment in FY

² We do not control for prior months of Medicaid eligibility and prior health status because the nature of our study population (non-Medicaid) is such that this information is not available to us by design.

2003 experiencing annual medical costs that were, on average, \$1,786 less per person than those incurred by members of the comparison group. Estimated medical cost differences for FY 2006 through FY 2008 were not statistically significant at standard confidence levels.

Figure 2. Medical costs for treated low-income adult clients are significantly lower

Average annual Medicaid medical costs per person (for individuals enrolled in FFS Medicaid for at least one month in the fiscal year)



Treated vs. Untreated Low-Income Adults					
MEDICAL COSTS	Untreated	Treated Unadjusted	Parameter Estimate	Treated Regression-adjusted	p-value
FY 2004	\$6,321	\$4,268	-\$2,274	\$4,046	0.02
FY 2005	\$7,660	\$4,721	-\$2,129	\$5,530	0.05
FY 2006	\$5,906	\$5,120	-\$437	\$5,468	0.67
FY 2007	\$6,448	\$4,914	-\$1,341	\$5,106	0.13
FY 2008	\$8,649	\$6,390	-\$1,786	\$6,863	0.18

It is worth noting that low-income adults who received CD treatment in FY 2003 were more likely to be enrolled in FFS medical coverage in each year of the five year post-period. The proportion of the untreated group enrolled in FFS medical coverage was 7 percent in FY 2004 and had increased to approximately 10 percent by FY 2008. By contrast, 9 percent of the treated group had FFS medical coverage in FY 2004 and the proportion enrolled had increased to 17 percent by FY 2008. In some ways, the greater likelihood of being enrolled in FFS medical coverage following CD treatment suggests that treated low-income adults may be getting connected to needed medical care. On the other hand, it also suggests that the medical cost savings we observe for treated clients are offset by the fact that a greater proportion of them become part of the Medicaid caseload over time.

It is also important to note that a large proportion of these low-income clients would qualify for Medicaid under the federal health reform proposals currently being considered. If Medicaid coverage is expanded, providing CD treatment to low-income clients may result in lower medical costs for newly eligible Medicaid clients than would otherwise have been experienced.

Number of Arrests is Lower

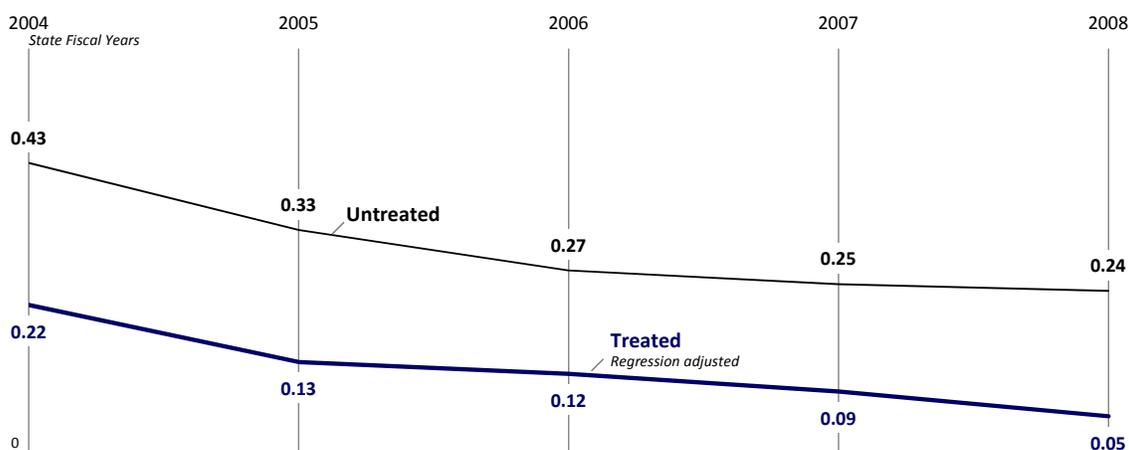
In the year following the index year, individuals who received CD treatment experienced a reduction in arrests that translates into 21 arrests avoided per 100 low-income clients treated for chemical

dependency. This reduction persisted and was statistically significant for the next four fiscal years (FY05-FY08).

The estimated reductions in arrests are based on regression analyses that controlled for baseline earnings, basic demographics (gender, race/ethnicity, and age), and whether an individual received detoxification services in FY 2002. This analysis was based on a difference-in-difference approach that analyzed changes in arrest rates before and after the index year.

Figure 3. Arrests among low-income adult clients are significantly lower

Change in average number of arrests per low-income adult client per year from FY 2002



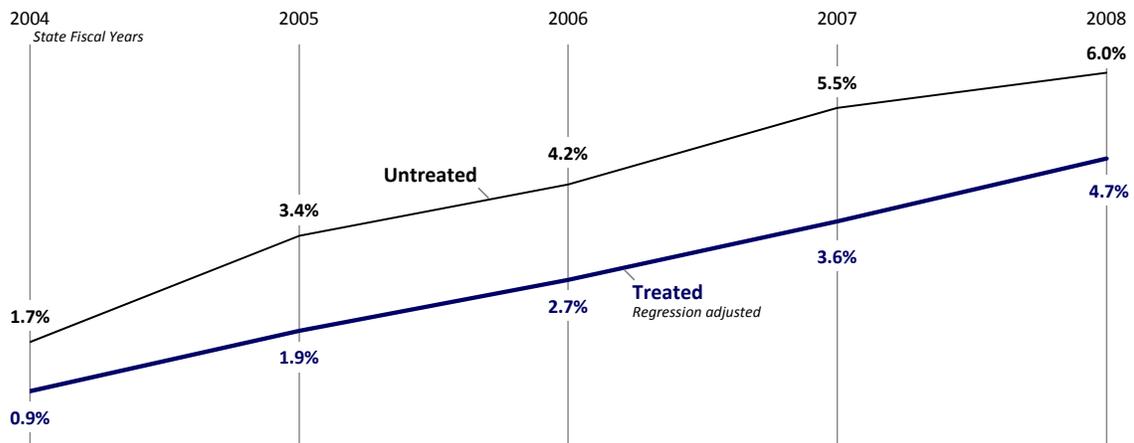
Treated vs. Untreated Low-Income Adults					
Total n =15,235					
ARRESTS	Treated <i>Unadjusted</i>	Untreated	Parameter Estimate	Treated <i>Regression-adjusted</i>	p-value
FY 2004	0.43	0.46	-0.21	0.22	<.0001
FY 2005	0.33	0.41	-0.20	0.13	<.0001
FY 2006	0.27	0.39	-0.15	0.12	<.0001
FY 2007	0.25	0.37	-0.16	0.09	<.0001
FY 2008	0.24	0.33	-0.19	0.05	<.0001

Risk of Dying Decreases

We analyzed data from the Department of Health (DOH) Death Certificate database and found that clients who were treated for chemical dependency were less likely to die over the course of the next five years relative to similar individuals who were not treated. In the first year after treatment, treated clients had a 48 percent lower risk of dying. Four years later, they experienced a 24 percent lower risk of dying.

Figure 4. The rate of death among low-income adult clients is significantly lower

Percent of low-income adult clients dying per year



Treated vs. Untreated Low-Income Adults					
Total n=15,235					
MORTALITY	Untreated	Treated Unadjusted	Odds Ratio Point Estimate	Treated Regression-adjusted	p-value
FY 2004	1.7%	0.6%	0.52	0.9%	0.004
FY 2005	3.4%	1.3%	0.54	1.9%	<.0001
FY 2006	4.2%	1.8%	0.63	2.7%	0.001
FY 2007	5.5%	2.4%	0.65	3.6%	0.001
FY 2008	6.0%	3.1%	0.76	4.7%	0.016

DISCUSSION | CD Treatment Has Persistent Benefits for Low-Income Adults

The findings presented in this report indicate that providing CD treatment to low-income adults can have a positive impact that persists even after five years. To recap, compared to low-income clients who did not receive CD treatment, in each year of the five year post-period (FY 2004-2008), treated clients:

- Earned more
- Had fewer arrests
- Were less likely to die
- Had lower medical costs if they were enrolled in DSHS medical coverage

In the broader context, these findings have the potential to guide decision-making in difficult times. The current economic downturn is forcing many states to make tough choices about which services and programs to cut and which ones to keep. This analysis demonstrates that the value of providing chemical dependency treatment to low-income adults persists even five years after treatment. It is likely that much, if not all, of the cost to the state of providing CD treatment to this population is offset by 1) increased earnings and the associated contributions to the state general fund,³ 2) reduced medical costs among those who enroll in Medicaid, and 3) reduced costs associated with fewer arrests.⁴

³ The Office of Financial Management estimates that individuals in Washington State contribute approximately 6 percent of their personal income to the state general fund in the form of excise and property taxes.

⁴ The average cost of an arrest to public agencies has been estimated to be \$1,000. See Roman, et al. (2007). "Impact and Cost-Benefit Analysis of the Maryland Reentry Partnership Initiative," Washington, DC: The Urban Institute Justice Policy Center, p.28.

TECHNICAL NOTES

This report provides an analysis of outcomes for low-income adults who received chemical dependency (CD) treatment funded through the Division of Behavioral Health and Recovery (DBHR) compared to similar adults who did not receive CD treatment but likely needed it.

Data Sources

- RDA's Client Services Database provided client demographics and a common identifier for linking client information from multiple data sources.
- DBHR's TARGET data system provided information on CD treatment and detoxification services. Use of detoxification services indicates need for CD treatment but is not considered treatment.
- Medical claims from the Medicaid Management Information System (MMIS) provided data on medical costs.
- Office of Financial Management (OFM) eligibility data provided MMIS-based information on clients' medical coverage.
- Washington State Employment Security Department (ESD) Unemployment Insurance wage data provided information on quarterly earnings.
- Washington State Department of Health Death Certificate Database provided information on deaths.
- Arrest data from the Washington State Patrol (WSP) identified clients who had been arrested. Local law enforcement agencies are generally required to report only felony and gross misdemeanor offenses into the WSP arrest database. This report somewhat understates the full volume of arrest events in the population because our data excludes some arrests for misdemeanor offenses that are not required to be reported in this database.

Case Selection

We began with the population of individuals who did not have DSHS medical coverage but may have had ADATSA coverage in FY 2002 or FY 2003 and who in FY 2003 received detoxification services, CD treatment, or enrolled in ADATSA. From this larger pool, the treatment group was composed of low-income adults who received DBHR-paid CD treatment in FY 2003. The comparison group was composed of low-income adults who received detoxification or enrolled in ADATSA in FY 2003 and did not receive CD treatment in FY 2002-2008.

Time Frame for Analysis

The "index year" for this analysis is FY 2003, the year in which the treatment group received CD treatment and the comparison group either received detoxification services or enrolled in ADATSA. For both groups, control variables in the regression models come from the FY 2002 baseline period and, in some cases, FY 2003.

Regression Analyses

For each of the five years subsequent to the index year (FY 2004-2008), ordinary least squares regressions estimated differences in annual Medicaid medical costs per eligible person, changes in the number of arrests from baseline (FY 2002), and annual earnings. Logistic regressions on mortality estimated the odds that an individual would die in each of the five years following the index year.