Published in final edited form as:

Drug Alcohol Depend. 2012 August 1; 124(3): 340–346. doi:10.1016/j.drugalcdep.2012.02.006.

What Oregon's Parity Law Can Tell Us about the Federal Mental Health Parity and Addiction Equity Act and Spending on Substance Abuse Treatment Services^b

K. John McConnell

Oregon Health & Science University

M. Susan Ridgely

RAND Corporation

Dennis McCarty

Oregon Health & Science University

Abstract

Background—The Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008 (MHPAEA) requires commercial group health plans offering coverage for mental health and substance abuse services to offer those services at a level that is no more restrictive than for medical-surgical services. The MHPAEA is notable in restricting the extent to which health plans can use managed care tools on the behavioral health benefit. The only precedent for this approach is Oregon's 2007 state parity law. This study aims to provide evidence on the effect of comprehensive parity on utilization and expenditures for substance abuse treatment services.

Methods—A difference-in-difference analysis compared individuals in five Oregon commercial plans ($n=103,820$) from 2005–2008 to comparison groups exempt from parity in Oregon ($n=19,633$) and Washington ($n=39,447$). The primary outcome measures were annual use and total expenditures.

Results—Spending for alcohol treatment services demonstrated statistically significant increase in comparison to the Oregon and Washington comparison groups. Spending on other drug abuse treatment services was not associated with statistically significant spending increases, and the effect of parity on overall spending (alcohol plus other drug abuse treatment services) was positive but not statistically significant from zero.

Conclusions—Oregon's experience suggests that behavioral health insurance parity that places restrictions on how plans manage the benefit may lead to increases in expenditures for alcohol treatment services but is unlikely to lead to increases in spending for other drug abuse treatment services.

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K. John McConnell (Corresponding author) Oregon Health & Science University 3181 SW Sam Jackson Park Rd. Mail Code CR-114 Portland, OR 97239 mcconnjo@ohsu.edu Telephone: 503-494-1989 Fax: 503-494-4640.

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Keywords

Parity; Health Economics; Health Policy; Alcohol Treatment; Substance Abuse Treatment; Managed Care

1. INTRODUCTION

The 2008 enactment of the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act (PL 110–343) (MHPAEA) represents a new era for coverage of substance abuse treatment services. The MHPAEA is a comprehensive federal “parity” law, requiring group insurers that offer coverage for behavioral health services to offer those services at a level that is no more restrictive than for medical-surgical services. In other words, health plans may not impose a visit or spending limit for mental health or substance abuse treatment unless a similar limit exists for an analogous general medical condition. While the law has some exclusions (for example, group health plans covering less than 50 employees), it is substantially more comprehensive than the 1996 Mental Health Parity Act (PL 104–204) and considerably stronger than most state parity laws. It is noteworthy, in particular, in that it applies to alcohol and other drug abuse treatment services, services that were excluded from the 1996 federal parity law and many state parity laws.

Although the MHPAEA became effective beginning in October, 2009, its reach has been substantially enhanced with the 2010 enactment of the Patient Protection and Affordable Care Act (PL 111–148) (ACA). Provisions of the ACA specify “minimum essential coverage” that applies to the Medicaid expansions, individual mandate, and health insurance exchanges. This essential benefit package includes coverage of mental health and substance abuse treatment services. Taken together, the ACA and MHPAEA will substantially increase in the number of people whose insurance will cover substance abuse treatment services, as well as assure that these services will be covered at parity with general medical-surgical services.

Although the ACA has received more media attention around its most contentious provision – the individual mandate – the MHPAEA has also generated controversy. The most vigorously debated provision of the law defines “treatment limitations” to include not only frequency of treatment (i.e., number of visits and days of coverage) but also “similar limits on the scope or duration of treatment.” The regulations implementing the MHPAEA distinguished these limitations as “non-quantitative treatment limitations” (NQTLs), with the implication that behavioral health benefits could not be managed differently than the physical health benefit without a clinical justification. While under the federal parity rules literal equivalence is not required, the “criteria, processes and evidentiary standards” used by an insurer in determining when and how an NQTL is applied must be comparable.

The NQTL restriction is controversial because studies of parity have almost exclusively tested implementations where visit and spending limitations were removed but behavioral health services received *greater* oversight and management (Azzone et al., 2011; Barry et al., 2006; Goldman et al., 2006; Ma and McGuire, 1998; Rosenbach et al., 2003; Sturm et al., 1998). The partnering of parity and managed care was often seen as “a Faustian bargain” (Goode 2001), with managed care and carve-outs substituting for the traditional “quantitative” limitations on behavioral health services.

Thus, there are two aspects of the MHPAEA that distinguish it from its predecessor and from state parity laws. First, the MHPAEA limits “differential management” of behavioral health benefits. Second, the MHPAEA extends parity to include coverage for substance use

disorders. Previous studies provide little evidence on what to expect for spending on substance abuse treatment services in the context of the MHPAEA.

This study aims to fill that gap. We examine the effects of the Oregon's comprehensive state parity law, enacted in 2007. Oregon's law is among the most comprehensive, including coverage of benefits for the treatment of alcohol and other drug use disorders, as well as restricting management of the behavioral health benefit, which in 2007 was a significant departure from both federal and state parity laws and policies.

An evaluation of the Oregon parity law found no significant increases in aggregate behavioral health spending associated with its implementation (McConnell et al., forthcoming). In this paper we examine the effect of Oregon's parity law on utilization and spending for alcohol and other drug abuse treatment services, independent of utilization and spending on treatment of other mental disorders.

2. METHODS

Oregon's parity law was enacted in 2005 and went into effect on January 1, 2007. Prior to the law, Oregon did require plans to offer substance abuse treatment services and to cover visits up to a minimum actuarial value of \$13,125 for adults and \$15,625 for children under 18 years old. However, the parity law represented a substantial improvement in coverage, moving Oregon from being among seven states with minimum parity mandates to a state with the most comprehensive parity law in the country. The parity law effectively removed quantitative treatment limitations on the number of visits and length of stay for *all* substance abuse treatment: outpatient, inpatient, and residential.

The law applied to commercial group plans that were not self-insured and contained a broad definition of mental health and substance use disorders, including almost all disorders in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR, revised in 2000). The parity law also eliminated separate and unequal deductibles and unequal out-of-pocket copayments or coinsurance.

In contrast to most implementations of parity, Oregon's law was noteworthy for the ways in which the Oregon statute restricted the management of the behavioral health benefit. The Oregon Insurance Division interpreted the statute to mean that managed care tools such as "selectively contracted panels of providers, health policy benefit differential designs, preadmission screening, prior authorization, case management, utilization review, or other mechanisms designed to limit eligible expenses to treatment that is medically necessary" could not be used unless there was an analog in the management of medical-surgical benefits (Oregon Insurance Division, 2008).

We studied the utilization and expenditures of enrollees between the ages of 4 and 64 who were continuously enrolled in one of five Preferred Provider Organization (PPO) health plans affected by the 2007 Oregon parity law. We examined changes in access, total spending, and out-of-pocket spending on substance abuse treatment services. To account for changes over time unrelated to the parity law, we used a comparison group of Oregonians who were continuously enrolled in self-insured commercial PPO plans. Our study was conducted prior to the implementation of the MHPAEA, and as health plans regulated under the Employee and Retirement Income Security Act of 1974 (so-called ERISA plans), these self-insured plans were exempt from state parity laws.

Since there is the potential that the Oregon parity law may have led to changes in provider or insurance behavior that affected the treatment of self-insured individuals in Oregon, we also conduct a second set of analyses that use self-insured individuals from the State of

Washington. These additional analyses provide a measure of robustness, since Washington is similar in its delivery system and blend of rural and urban populations, but commercially insured individuals in Washington should not have been affected by Oregon's law.

2.1. Data

We collected information on benefit design and management from structured, on-site interviews with key informants at each of the five PPO plans. We adapted the semi-structured interview developed for the evaluation of parity in the Federal Employees Health Benefits Program (Goldman et al., 2006). We collected data on a variety of non-quantitative treatment limitations that are common to both the Oregon regulations and the MHPAEA, including prior authorization, the use of treatment plans as a utilization management tool, and the use of "carve outs" (management of the behavioral health benefit by a specialty organization).

From each of the five PPOs, we obtained four years of data on enrollment and medical and pharmacy claims, including two years before and two years after the implementation of the Oregon parity law. We also obtained claims data on a comparison cohort of individuals continuously enrolled in self-insured plans in Oregon and Washington from the Thomson Reuters' MarketScan database.

Alcohol use disorders were defined as those with diagnostic codes 291 and 303 in the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM). Other drug use disorders were defined as those with diagnostic codes 292, 304, 305.0, and 305.2–305.9. An inpatient visit was classified as alcohol or other drug abuse treatment if the primary diagnosis was an alcohol use or substance use disorder. An outpatient visit was classified as alcohol abuse or substance abuse treatment if the primary diagnosis was an alcohol or substance use disorder or there was a procedure code specific to alcohol or substance abuse treatment.

2.2. Statistical Analysis

We estimated the effect of parity on utilization and spending on three outcomes – overall substance abuse services, alcohol treatment services, and other drug abuse treatment services – using the difference-in-differences method. The difference-in-differences is the average difference (occurring with the implementation of parity) in outcomes of interest among Oregonians affected by parity, subtracted by the average difference (after the parity implementation) among the comparison group (self-insured individuals in plans not affected by the parity legislation). The first difference reflects changes in the outcome of interest (access, utilization, or cost) that occur after the parity implementation. By subtracting the second difference – the changes that occur in the comparison group – we net out the secular changes that may have occurred for reasons not related to the parity law. Any remaining significant differences in outcome – the difference-in-differences – are attributed to the parity legislation.

To estimate the difference-in-differences model, we used a two-part model that accommodated two important characteristics of health care spending (Duan et al., 1983). First, in any given year, many individuals will not have any episodes of treatment or expenditures for alcohol or substance abuse treatment. Thus, our dependent variable will have a large cluster of observations at zero. Second, among individuals who do use care, the distribution tends to be skewed, with a small proportion of individuals having high levels of spending. We examined a number of competing approaches that have been discussed in the literature to account for this skewed distribution (Manning, 1998; Manning and Mullahy, 2001). After testing competing models, we settled on the generalized linear model with a log

link and gamma variance distribution. The overall estimate of spending is based on the product of part one (the probability of accessing care, estimated by a logistic regression with the dependent variable taking a value of 1 if any substance abuse treatment services were accessed, and 0 otherwise), and part two (spending, conditional on accessing care, estimated by a generalized linear model). To generate our estimates of interest, we used the method of recycled predictions, using clustered bootstrapping to generate 95% confidence intervals that account for correlation among repeated annual observations.

In our analyses of out-of-pocket spending, we also use a difference-in-difference analysis with median regressions to test for changes in median co-payments that might not be detected by mean changes driven by large outlier payments.

Our unit of observation was the person year. In our regressions, we adjusted for age, sex, and the person's relationship to the policyholder (e.g., child or dependent). The key variables of interest were an indicator variable assigned a value of one for the post-parity period and zero for the pre-parity period, an indicator variable assigned a value of one for individuals in fully insured plans (i.e. covered by the parity statute) and zero for the comparison groups and the interaction of the two indicator variables.

Our comparison group was based on the MarketScan self-insured population. After inspection of the data, we excluded one outlier, an individual in Oregon with an emergency admission to a hospital for alcohol withdrawal with complications that led to spending of \$88,865. This particular payment was almost 70% higher than any other episode for substance abuse treatment. We chose to exclude the individual with this claim (which occurred in the post-parity period) because of concerns that this single episode inflate the secular trend and lead to underestimates of the parity effect.

We conducted a number of sensitivity analyses. Substance abuse treatment is relatively infrequent. Thus, to maximize power, we pool data from all five of our health plans in the main analyses. As part of our sensitivity analyses, we also tested the effect of parity on each of the plans separately. In additional sensitivity analyses, we estimated our difference-in-difference models using propensity score weighting on patient demographics and behavioral health risk adjusters, to assess whether differences in population characteristics between individuals in plans affected by parity and individuals in self-insured plans confound our estimates of the effect of parity on substance abuse spending.

3. RESULTS

3.1. Main Results

Detailed information on benefit limits and management for the five PPOs are displayed in Table 1. Whereas previous studies of parity have generally shown an increase in the use of management techniques such as prior authorization and treatment plans, in Oregon the use of these methods either stayed constant or declined. Among the five plans we studied, none required preauthorization for outpatient substance abuse treatment services after the implementation of parity. Only one PPO required treatment plans for outpatient substance abuse services.

Table 2 reports descriptive data on individuals in the PPOs affected by parity and in the comparison groups (i.e., those unaffected by parity). While there are statistically significant differences in the populations, overall, the intervention and comparison subjects are fairly comparable and exhibited a similar prevalence of substance use diagnoses.

Rates of use and spending are reported in Table 3 (Oregon comparison) and Table 4 (Washington comparison). The top row reports aggregated substance abuse and alcohol treatment spending; the middle row reports alcohol abuse treatment services only and the bottom row reports substance abuse treatment services only. The probability of using any substance abuse treatment service (alcohol or other) is relatively low, ranging from a low of 0.62% among individuals covered by parity in the pre-parity period to a high of 1.12% in the Washington control group, post-parity. Spending on these services is also relatively small, reaching a maximum of \$23.38 in the post-parity period for individuals in plans affected by parity. (To place this in perspective, total spending for this group on all health care services, including pharmaceuticals, averaged \$3903. Thus, spending on substance abuse treatment services accounted for less than one percent of all spending.) However, despite these small absolute amounts, the rates of use and spending increased substantially during the study period – approximately doubling in the Oregon groups and increasing by approximately 50% in the Washington comparison group.

Tables 3 and 4 also report difference-in-differences estimates for the probability of use of substance abuse treatment services and for spending on such services. The multivariate analyses for Washington and Oregon are qualitatively similar in nature. Spending for alcohol treatment services demonstrated a statistically significant increase with parity (\$4.57, 95% CI [\$0.17, \$8.75], Oregon control; \$5.54, 95% CI [\$1.88, \$9.79] Washington control). Spending on other drug abuse treatment services (excluding alcohol services) decreased, but this decrease was not statistically significant. After accounting for secular trends, the overall estimate of the effect of parity on *all* substance abuse health spending was positive, but not statistically significant from zero using either the Oregon comparison or Washington comparison group.

Oregon's parity law also required that co-insurance, co-payments, and deductibles for substance abuse treatment services be no higher than those set for medical-surgical care, although this policy had been the de facto practice for most health plans. The effects of parity on out-of-pocket spending by users of substance abuse services are summarized in Table 5 (Oregon comparison) and Table 6 (Washington comparison). Relative to the control groups, parity was associated with an increase in out-of-pocket spending for substance abuse treatment services, although this increase was not statistically significant. Increases in out of pocket spending were driven primarily by a relatively small number of episodes of very large out-of-pocket expenses (>\$10,000) for individuals covered by parity in the post parity period. The point estimates for median change in out-of-pocket expenses for individuals covered by parity was positive but smaller in magnitude. Finally, while absolute out-of-pocket spending increased, this may also reflect the relative increase in spending for these services over time. We conducted separate analyses on the out-of-pocket spending as a proportion of total substance abuse spending and did not find increases in this proportion over time.

3.2. Sensitivity Analysis

We estimated changes in spending for substance abuse treatment services on a plan-by-plan basis, using the self-insured individuals as a control in each case. These non-pooled results were similar to the pooled analyses. We also estimated our difference-in-difference models using propensity score weighting on patient demographics and behavioral health risk adjusters (Ettner et al., 1998). These results were qualitatively similar to the results from the difference-in-difference models without the propensity score model. Thus, the small differences in population characteristics displayed in Table 2 do not appear to be confounding the estimates of the effect of parity on behavioral health spending.

4. DISCUSSION

This study is the first to assess the effects of a parity law that restricts non-quantitative treatment limitations on utilization and spending on substance abuse treatment services. After controlling for secular trends, we find a statistically significant increase in spending on alcohol treatment services associated with parity. Spending on other drug abuse treatment services and overall substance abuse treatment services is not significantly different from zero.

Our study and findings differ from other studies in at least two important ways. First, to our knowledge, our study is the first to conduct separate analyses for alcohol treatment and other drug abuse services (excluding alcohol). Separating these services is apparently important, for we find a relative increase in spending for alcohol services, and a relative decrease in spending for other drug abuse services. The combined effect is a negative result for all substance abuse services.

Our study is also notable for the relatively large secular trend in spending for substance abuse services in the Oregon control group. For example, spending on alcohol treatment services increases by approximately 100% (from \$4.14 to \$8.38) over the 2005–2006 to 2007–2008 time period. In contrast, other studies (e.g., Azzone et al., 2011) have shown rates of growth closer to 50% over similar time periods. It is possible that self-insured individuals in Oregon experienced indirect effects of the parity law, and this was reflected in a larger secular increase in spending. For example, Oregon self-insured plans may have been more liberal in their denials of claims post-parity, or Oregon providers may have been more likely to change their treatment patterns in response to the parity law, and this affected treatment of individuals in self-insured and non self-insured plans.

If Oregon's parity law had these effects on the self-insured population, or estimates of the effect of the parity law would be biased downward. However, analyses that use the Washington self-insured as a control group are relatively similar to the findings that use the Oregon group.

Our results are similar to a separate analysis of the Oregon parity law conducted by the Oregon Insurance Division (Oregon Insurance Division, 2009). This report used data from 10 health plans (including the 5 that are part of our study) and compared 2006 claims (before the parity law took effect) with 2008 claims, and focused only on before- and after-parity expenses, without a control group. Their analysis found that expenses for substance abuse treatment services decreased by \$1.44. It is not clear if their analysis excluded alcohol treatment (in which case their results would be similar to our findings). However, the study offers additional evidence that spending on substance abuse services (perhaps separated from alcohol services) did not increase substantially post-parity.

Although not statistically significant, average out-of-pocket expenses for all substance abuse treatment services increased substantially, while median out-of-pocket expenses for all substance abuse treatment services showed a relatively small increase. Furthermore, as a proportion of total spending on substance abuse treatment, out-of-pocket expenses did not increase with parity. Most of the increase in out-of-pocket spending was related to a relatively small number of episodes of very high out-of-pocket expenditures for alcohol abuse treatment services.

Parity has typically been associated with overall reductions in out-of-pocket spending (Azzone et al., 2011; Goldman et al., 2006). Oregon's parity law was not associated with such reductions. Our interviews with health plans suggested one possible explanation for this phenomenon. Although parity required that co-insurance, co-payments, and deductibles

for substance abuse treatment services be no higher than those set for medical-surgical care, parity – and the limitation on NQTLs – may have had the unintended effect of placing some patients at greater financial risk. In particular, pre-parity, providers worked closely with health plans and typically conducted an assessment of the patient and received approval from the health plan and an indication that treatment conformed with “medical necessity.” Post-parity, health plans faced greater restrictions on managing these services and thus there were likely to be more frequent episodes where treatment proceeded without approval from the health plan. However, health plans were still able to deny treatment on the basis of medical necessity. In this case, patients would be liable for services rendered but not covered by the health plan. Plans noted that this might be a particular problem for clients who had been mandated treatment by a court because of a DUII (Driving Under the Influence of Intoxicants) infraction. Centers specializing in treatment for these alcohol-related episodes might proceed without receiving authorization from the health plan, but a health plan could deny payment to the provider (based on lack of medical necessity), leaving the client to pay the remainder. Oregon's experience warrants careful observation of this phenomenon on a national level.

Our study has several limitations. We used Washington and Oregon self-insured individuals as a control group, but there is the possibility that neither adequately controlled for secular trends. This study is also limited by its time frame, which covered two years post-parity. While we would expect that this would be adequate to capture changes in patient behavior, it may not be long enough to capture changes in provider behavior. In particular, if providers see parity laws as an opportunity to expand certain services, they may invest in infrastructure and facilities that could have longer term consequences for the costs of treating behavioral health conditions. Although we did not detect changes in our claims data, in our interviews, health plans expressed concern that the use of residential treatment would increase, with the financial opportunities offered by parity creating the potential for a re-emergence of residential (as opposed to outpatient) treatment for substance use disorders.

The MHPAEA's NQTL provision has been controversial, with health plans and some employers expressing concern that parity without differential management of the behavioral health benefit may lead to costs that are higher than have been anticipated. If this were the case, some employers might be tempted to drop coverage for substance abuse treatment entirely. Our study provides mixed results with respect to substance abuse. On the one hand, we find relatively little evidence that parity– even with NQTLs – is likely to result in large increases in spending on drug abuse treatment services (excluding alcohol treatment). On the other hand, the increase in spending on alcohol treatment services was significantly larger for the parity group than the control group, and post-parity spending increased by more than 100% for these services. Thus, there may be a rationale for management that addresses large expenses for these alcohol treatment services, especially if more expensive services are not providing better outcomes. There may be certain types of management that are helpful in steering clients toward high quality, low cost services. It will be necessary to balance the oversight and restrictions that come from managing behavioral health benefits with the benefit that may come by way of lower costs and the potential for standardization of care. The long-term impacts of comprehensive parity remain to be seen.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1
Characteristics of Five Oregon Health Plans with and Management of Substance Abuse Benefit

Characteristic	Plan A		Plan B		Plan C		Plan D		Plan E	
	Pre-parity	Post-parity	Pre-parity	Post-parity	Pre-parity	Post-parity	Pre-parity	Post-parity	Pre-parity	Post-parity
Coverage limits ^a										
Inpatient substance abuse treatment	13 days ^b	None	\$5625 ^c	None	\$5625 ^c	None	\$5625 ^c	None	14 days ^d	None
Residential substance abuse treatment	19 days ^e	None	\$4375 ^f	None	\$4375 ^f	None	\$4375 ^f	None	19 days ^g	None
Outpatient substance abuse treatment	25 visits ^h	None	27 visits ^h	None	\$1875 ⁱ	None	\$1875 ⁱ	None	32 visits ^j	None
Preauthorization requirement										
Inpatient substance abuse treatment	Within 48 hours	Within 8 days	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Residential substance abuse treatment	Within 48 hours	Within 8 days	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Outpatient substance abuse treatment	No	No	No	No	Yes	No	No	No	Yes	No
Treatment plans										
Inpatient substance abuse services	Within 48 hours	Within 8 days	No	No	No	No	In place at all times	In place at all times	Yes	Yes
Residential substance abuse services	Within 48 hours	Within 8 days	No	No	No	No	In place at all times	In place at all times	Within 3 to 4 days	Within 7 days
Outpatient substance abuse services	No	No	No	No	No	No	After 8 visits	After 8 visits	After 20 visits	No
Carve out status	No	No	No	No	Yes	Yes	Yes	Yes	No	No

^aPre-parity coverage limits represent limits over a 24 month time period

^b27 days for children

^c\$5000 for children

^d19 days for children

^e26 days for children

^f\$3700 for children

^g24 days for children

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h_{36} visits for children
 i_{2500} for children
 i_{42} visits for children

TABLE 2

Characteristics of the Study Population

Characteristic	Self-insured Comparison (Oregon) (N=19,633)	Self-insured Comparison (Washington) (N=39,447)	Pooled Plans (A,B,C,D, E) (N=103,820)	Pooled Plan Characteristics vs. Comparison Plan Characteristics	
				Self-insured Oregon vs. Pooled Plans	Self-insured Washington vs. Pooled Plans
				<i>P</i> -value	<i>P</i> -value
Age (S.D.)	37.2 (18.1)	40.0 (17.4)	37.5 (17.5)	0.04	<0.001
Female sex (%)	56	51	50	<0.001	0.002
Policy holder status (%)					
Policy holder	49	55	52	<0.001	<0.001
Spouse	20	18	20	<0.001	<0.001
Dependent	31	27	28	<0.001	<0.001
Rural residence (%)	28	25	24	<0.001	<0.001
Pre-parity diagnosis of Substance abuse (%)	0.25	0.30	0.18	0.03	<0.001
Pre-parity diagnosis of alcohol abuse (%)	1.1	1.3	1.0	0.56	<0.001

(*P*-values designate the statistical significance of the difference between a characteristic of the health plan and comparison group populations.)

TABLE 3
Probability of Use and Expenditures on Substance Abuse Treatment Services (Oregon Control Group)^a

Service category	Plans	Probability of Use of Substance Abuse Services ^b		Total Substance Abuse Spending per Beneficiary ^b		Change in Value before and after the Implementation of Parity ^c	
		Pre-parity	Post-parity	Pre-parity	Post-parity	Probability of Use of Substance Abuse Services	Total Substance Abuse Spending per Beneficiary
All Substance Abuse and Alcohol Abuse Services	Oregon Self-insured Comparison Plans (N=19,633)		Percent		\$	Percent (95% CI)	\$ (95% CI)
		0.65	1.08	8.82	16.84	NA	NA
	Pooled Plans A, B, C, D, E* (N=103,820)	0.62	0.84	11.78	23.38	-0.22 (-0.35, -0.08) ^d	2.94 (-2.93, 7.96)
Alcohol Abuse Services only	Oregon Self-insured Comparison Plans (N=19,633)	0.28	0.39	4.14	8.38		
	Pooled Plans A, B, C, D, E* (N=103,820)	0.42	0.53	7.95	16.76	-0.004 (-0.08, 0.08)	4.57 (0.17, 8.75)
Other Drug Abuse Services (excluding alcohol)	Oregon Self-insured Comparison Plans (N=19,633)	0.52	0.93	4.68	8.46	NA	NA
	Pooled Plans A, B, C, D, E* (N=103,820)	0.34	0.47	3.83	6.62	-0.28 (-0.39, -0.15) ^d	-1.55 (-4.72, 1.70)

^aCI denotes confidence interval.

^bPre-parity and post-parity figures are annual figures averaged across two years

^cA difference-in-differences analysis was used to account for secular trends.

^dp 0.05

TABLE 4
Probability of Use and Expenditures on Substance Abuse Treatment Services (Washington Control Group)^a

Service category	Plans	Probability of Use of Substance Abuse Services ^b		Total Substance Abuse Spending per Beneficiary ^b		Change in Value before and after the Implementation of Parity ^c	
		Pre-parity	Post-parity	Pre-parity	Post-parity	Probability of Use of Substance Abuse Services	Total Substance Abuse Spending per Beneficiary
		Percent		\$		Percent (95% CI)	\$ (95% CI)
All Substance Abuse and Alcohol Abuse Services	Washington Self-insured Comparison Plans (N=19,633)	0.85	1.17	15.81	22.58	NA	NA
	Pooled Plans A, B, C, D, E* (N=103,820)	0.62	0.84	11.78	23.38	-0.10 (-0.21, -0.001) ^d	4.38 (-1.19, 9.19)
Alcohol Abuse Services only	Self-insured Comparison Plans (N=19,633)	0.44	0.47	9.35	13.19	NA	NA
	Pooled Plans A, B, C, D, E* (N=103,820)	0.42	0.53	7.95	16.76	0.09 (0.01, 0.17) ^d	5.54 (1.88, 9.79) ^d
Other Drug Abuse Services (excluding alcohol)	Self-insured Comparison Plans (N=19,633)	0.56	0.87	6.47	9.39	NA	NA
	Pooled Plans A, B, C, D, E* (N=103,820)	0.34	0.47	3.83	6.62	-0.24 (-0.35, -0.14) ^d	-3.57 (-8.35, 0.91)

^aCI denotes confidence interval.

^bPre-parity and post-parity figures are annual figures averaged across two years

^cA difference-in-differences analysis was used to account for secular trends.

^dp 0.05

Difference-in-Differences Results for Out-of-Pocket Spending per User for Substance-Abuse Treatment Services with Implementation of Parity (Oregon control group).^a

TABLE 5

Service category	Plans	Mean Out-of-Pocket Spending for Substance-Abuse Services per User (Median)		Change in Value before and after the Implementation of Parity (Generalized Linear Model) ^b	Change in Value before and after the Implementation of Parity (Median Regression) ^b
		Pre-parity	Post-parity		
All Substance Abuse and Alcohol Abuse Services	Self-insured Comparison Plans	\$ 229.13 (54.81)	\$ 241.63 (30.00)	\$ (95% CI) NA	\$ (95% CI) NA
	Pooled Plans A, B, C, D, E*	356.28 (109.78)	453.61 (100)	63.40 (-60.16, 177.18)	15.03 (-26.76, 56.82)
Alcohol Abuse Services only	Self-insured Comparison Plans	300.21 (77.00)	316.30 (160.00)	NA	NA
	Pooled Plans A, B, C, D, E*	343.74 (136.78)	511.65 (165.46)	182.48 (-15.29, 444.26)	-54.08 (-139.52, 31.35)
Other Drug Abuse Services (excluding alcohol)	Self-insured Comparison Plans	125.31 (29.95)	147.90 (20.00)	NA	NA
	Pooled Plans A, B, C, D, E*	223.40 (50.00)	227.72 (30.00)	-31.08 (-122.90, 52.07)	-10.00 (-32.32, 12.32)

^aCI denotes confidence interval.

^bA difference-in-differences analysis was used to account for secular trends

TABLE 6

Difference-in-Differences Results for Out-of-Pocket Spending per User for Substance-Abuse Treatment Services with Implementation of Parity (Washington control group).^a

Service category	Plans	Mean Out-of-Pocket Spending for Substance-Abuse Services per User (Median)		Change in Value before and after the Implementation of Parity (Generalized Linear Model) ^b	Change in Value before and after the Implementation of Parity (Median Regression) ^b
		Pre-parity	Post-parity		
		\$	\$	\$ (95% CI)	\$ (95% CI)
All Substance Abuse and Alcohol Abuse Services	Self-insured Comparison Plans	271.03 (100)	286.55 (100)	NA	NA
	Pooled Plans A, B, C, D, E*	356.28 (109.78)	453.61 (100)	95.69 (-2.82 202.50)	1.14 (-16.89, 19.17)
Alcohol Abuse Services only	Self-insured Comparison Plans	273.30 (132.82)	313.86 (119.47)	NA	NA
	Pooled Plans A, B, C, D, E*	343.74 (136.78)	511.65 (165.46)	152.46 (-10.68 287.37)	21.90 (-41.00, 84.80)
Other Drug Abuse Services (excluding alcohol)	Self-insured Comparison Plans	174.75 (54.06)	189.32 (50.00)	NA	NA
	Pooled Plans A, B, C, D, E*	223.40 (50.00)	227.72 (30.00)	-14.74 (-116.44, 100.85)	-20 (-54.10, 18.89)

^a CI denotes confidence interval.

^b A difference-in-differences analysis was used to account for secular trends