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# Impact of Full Mental Health and Substance Abuse Parity for Children in the Federal Employees Health Benefits Program

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## Abstract

**OBJECTIVE—**The Federal Employees Health Benefits Program implemented full mental health and substance abuse parity in January 2001. Evaluation of this policy revealed that parity increased adult beneficiaries' financial protection by lowering mental health and substance abuse out-of-pocket costs for service users in most plans studied but did not increase rates of service use or spending among adult service users. This study examined the effects of full mental health and substance abuse parity for children.

**METHODS—**Employing a quasiexperimental design, we compared children in 7 Federal Employees Health Benefits plans from 1999 to 2002 with children in a matched set of plans that did not have a comparable change in mental health and substance abuse coverage. Using a difference-in-differences analysis, we examined the likelihood of child mental health and substance abuse service use, total spending among child service users, and out-of-pocket spending.

**RESULTS—**The apparent increase in the rate of children's mental health and substance abuse service use after implementation of parity was almost entirely due to secular trends of increased service utilization. Estimates for children's mental health and substance abuse spending conditional on this service use showed significant decreases in spending per user attributable to parity for 2 plans; spending estimates for the other plans were not statistically significant. Children using these services in 3 of 7 plans experienced statistically significant reductions in out-of-pocket spending attributable to the parity policy, and the average dollar savings was sizeable for users in those 3 plans. In the remaining 4 plans, out-of-pocket spending also decreased, but these decreases were not statistically significant.

**CONCLUSIONS—**Full mental health and substance abuse parity for children, within the context of managed care, can achieve equivalence of benefits in health insurance coverage and improve financial protection without adversely affecting health care costs but may not expand access for children who need these services.

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**Keywords**

health care costs; health insurance; mental health; substance abuse/use; managed care

Parity refers to a policy in which insurance benefits for mental health (MH) and substance abuse (SA) care are equal to those for general medical care. Proponents of MH/SA parity have maintained that parity would improve access to MH/SA care and financial protection for MH/SA service users, particularly those with severe mental illnesses.[1] At the 1999 White House Conference on Mental Health, President Clinton directed the Office of Personnel Management (OPM) to offer MH/SA parity within the Federal Employees Health Benefits (FEHB) Program and called for an evaluation of this policy initiative, the first national study of comprehensive MH/SA parity. The evaluation revealed that parity increased financial protection by lowering out-of-pocket costs for adult service users in most plans studied but stimulated little or no increase in adult MH/SA service use.[2] Would parity affect children differently than adults? In this study we examined the effects of full MH/SA parity on children's MH/SA service use rate, spending among child users of MH/SA services, and out-of-pocket MH/SA spending for children.

The FEHB Program, which insures federal employees, annuitants, and dependent adults and children, represents the largest private insurance program in the country and is considered a model for the nation's health insurance. Like other competitive health insurance markets, the FEHB Program had been unable to maintain parity coverage for MH care, primarily because of cost concerns on the part of plans that compete in this marketplace. To slow spending and avoid attracting enrollees with high MH/SA expenditures, plans have an incentive to offer restrictive coverage for MH/SA care, including annual and lifetime ceilings on expenditures for MH/SA care, limits on the number of outpatient visits and inpatient days, and higher copayments and deductibles for MH/SA services than for general medical care. Although restricting coverage in this way represents an effective means of controlling MH/SA costs, it distorts the insurance market and may limit access to MH/SA care.

Parity policies are intended to remedy these insurance market distortions and remove restrictive health insurance benefit features, with the goal of providing equal coverage and increased financial protection for individuals with MH/SA disorders. The main argument against MH/SA parity has been that more generous coverage of MH/SA care would result in large increases in MH/SA service use and spending.[3] However, recent successes of managed care in controlling MH/SA spending have diminished this concern about expanded MH/SA coverage.[3–5]

The MH/SA service literature offers evidence of differential responses to financial incentives and different patterns of use for children and adolescents who use MH/SA services than for adults. For example, most of the increase in MH/SA service use and cost experienced in the 1980s was because of increases in service use by children, particularly those in hospital treatment, where they experienced long, expensive stays.[6] When alternatives to placements in residential treatment settings were offered and paid for in a variety of financial arrangements, care shifted away from inpatient settings.[7,8] Early studies simulating the effect of MH/SA parity found that children would be the main beneficiaries of removing restrictive benefit limits on health care insurance, particularly because of the costs associated with long inpatient stays and residential care.[9,10] Inpatient limits reduce insurance protection for children who use MH/SA services, even more than for adults.[11,12] Adolescents, who are more likely to use MH/SA inpatient and outpatient care and have higher inpatient spending than adults, may be particularly likely to benefit from the removal of coverage limits.[10] Consequently, the FEHB parity policy might affect children differently than it affects adults.

### Parity in the FEHB

The FEHB Program has 8.5 million enrollees. Approximately 25%, or 2 million, are children <18 years, the vast majority dependents of current or retired federal employees. More than 300 health plans participate in the FEHB Program, which is managed by OPM.[13] Federal employees and retirees have a choice of preferred provider organizations (PPOs) and health maintenance organizations (HMOs). Among the PPO plans, several large plans are available nationally.

Beginning January 1, 2001, OPM required all of the FEHB plans to adopt an MH/SA parity policy, defined as coverage that is "identical with regard to traditional medical care deductibles, co-insurance, co-pays, and day and visit limitations."[14] Before 2001, the FEHB plans offered MH/SA specialty care benefits with coverage limits resembling other plans in the private health insurance market. In 1999, 98% of FEHB plans contained ≥1 benefit feature more restrictive for MH/SA care than for general medical care; for example, 68% of plans required higher cost sharing for outpatient MH/SA services, and 23% of plans required higher cost sharing for inpatient services.[15] FEHB beneficiaries and providers were informed about the FEHB parity policy through direct mail from the plans; providers were also informed through announcements in professional publications.

The FEHB parity policy is much broader than either the federal or any state parity law. For example, whereas the Federal Mental Health Parity Act of 1996 requires identical annual and lifetime dollar limits for MH specialty and general medical care, it does not address co-insurance, copays, or day and visit limits; leaves the definition of "mental disorder" to each health plan; and excludes SA disorders. Although the majority of states have some type of MH parity law, these policies are only modestly more comprehensive than the federal parity law, and none has the MH/SA coverage afforded by the FEHB parity policy. FEHB parity applies only to health plans' in-network benefits; plans could keep cost sharing, day and visit limits, and catastrophic maximums at 2000 levels for services provided by out-of-network providers.[16]

To control expected cost increases associated with the FEHB parity policy, OPM encouraged health plans to use managed care techniques, such as utilization review and preferred provider networks. Although 47% of FEHB plans had already carved out MH/SA care to managed care organizations before 2001, 69% of the plans were carved out in 2001, a sizable 1-year increase.[16] (MH/SA care is carved out when a plan contracts with a managed care organization to manage MH/SA care separately from general medical care, often for cost-saving purposes.) Managed care practices serve to control MH/SA service use by limiting users' demand for MH/SA services. Thus, the FEHB parity policy's concomitant increase in the use of managed care techniques could potentially limit actual access to MH/SA care and alter patterns of MH/SA service use under the FEHB parity policy.

## METHODS

This natural experiment used a quasiexperimental design to account for secular trends in children's MH/SA service use and spending that were not attributable to the FEHB parity policy. We compared MH/SA service use and spending in 7 large FEHB plans during 1999–2002 with a matched set of comparison plans from Med-stat's (Ann Arbor, MI) MarketScan database that did not experience a similar change in MH/SA coverage. The comparison plans represented large self-insured employers. FEHB plans were selected for study on the basis of geographic location, differences in plan type and structure, size of enrollee population, and the plan's interest in collaborating. Previous parity evaluations have studied parity's impact in a single plan and without a comparison group and were, thus, unable to distinguish the impact of parity from secular trends in MH/SA service use and spending.

Nine FEHB plans (7 PPO and 2 HMO plans) were initially selected for the study. Table 1 shows characteristics of the 9 FEHB plans and their comparison plans before and after the implementation of FEHB parity. This table also illustrates the changes in plan benefit design and managed care carve-out arrangements experienced by the FEHB plans after implementation of the FEHB parity policy; the comparison plans did not experience similar benefit changes over the same time period. Thus, the FEHB parity policy resulted in dramatically improved MH/SA benefits for the 7 PPO plans, which eliminated inpatient annual day limits and outpatient annual visit limits and reduced inpatient and outpatient enrollee cost-sharing. Benefit design features of the PPO comparison plans changed little over the same time period, retaining the same inpatient annual day limits and out-patient annual visit limits and inpatient and outpatient enrollee cost-sharing. The 2 HMO plans, which were already close to full parity in 2000, did not experience these dramatic changes in benefits.[2] Consequently, we analyzed the impact of FEHB parity only for the 7 PPO plans in which an impact could be expected. (Results for the 2 HMO plans are available at www.aspe.hhs.gov/daltcp/reports/parity.htm.) This study was approved by institutional review boards at the institutions where the data were collected and analyzed, that is, Harvard Medical School, the RAND Corporation, and Westat.

## Participants

Enrollment in the FEHB plans over the 4-year study period was dynamic, with members joining and exiting the plans annually, as generally occurs in the private insurance market. To avoid confounding the impact of changing plan enrollment patterns with the impact of the parity policy, we studied only child enrollees who were continuously enrolled in each of the 7 FEHB plans over the 4-year period. Beneficiaries were classified as continuously enrolled if they were enrolled in the same plan in each analysis year 1999–2002 and as children if they were under the age of 18 years in each of these years. To achieve this, beneficiaries over the age of 15 at study start (1999) were excluded from all of the analyses, because they would have been ≥18 years of age before the study's end (2002) and, thus, no longer children as defined in this study. Children comprised 17% to 29% of the continuously enrolled population in the 7 FEHB plans in the years 1999–2002, with little year-to-year variation in each plan's proportion of child beneficiaries. Table 2 shows the number of all child enrollees and continuously enrolled children in each of the 7 plans. Of the continuously enrolled children in the 7 plans at study start, 25% to 29% were under the age of 6 years, 54% to 61% were between the ages of 6 and 12 years, and 13% to 18% were >12 but ≥15. Across the 7 plans, 47% to 49% of the child beneficiaries were girls. Table 2 also shows each plan's carve-out status before and after the parity policy was implemented; all but 1 plan carved out MH/SA care to a managed care organization after the FEHB parity implementation.

## Data

We collected 4 years of data on benefit design, enrollment, medical claims/encounters, and pharmacy claims from the 7 plans for the 2 years before (1999 and 2000) and 2 years after (2001 and 2002) implementation of FEHB parity. We obtained benefits, enrollment, and claims/encounter data for the same time period from the Medstat MarketScan database for the matched comparison group. The comparison group represents plans of large, self-insured employers matched to the selected FEHB plans on geography and plan type.

## Identifying MH/SA Services

We identified MH/SA use and spending using claims/ encounter data showing diagnosis, procedure code, and provider type for inpatient and outpatient services. (A detailed description is available at www.aspe.hhs.gov/daltcp/reports/parity.htm.) We first identified specific International Classification of Diseases, Ninth Revision, Clinical Modification codes

associated with the MH/SA conditions 291, 292, 295 to 309 (except 305.1 and 305.8), and 311 to 314; these International Classification of Diseases, Ninth Revision, Clinical Modification codes classified a condition as MH/SA. Claims were identified as MH/SA inpatient stays if the last primary diagnosis and the majority of primary diagnoses on the inpatient record were MH/SA conditions. Outpatient claims were identified as MH/SA if any of the following was indicated: MH/SA primary diagnosis, MH/SA-specific procedure, or face-to-face encounter with an MH/SA provider or in an MH/SA facility. To identify psychotropic medication use, we developed 2 lists of medications: a restricted list of medications that are used only for MH/SA conditions and an expanded list of medications that are used for both MH/SA and other conditions. We counted all of the medications on the restricted list as MH/SA use/spending. If the service user had any other MH/SA use/spending in the year, then we counted all of the medication use from the expanded list as MH/SA use/ spending.

## Statistical Analyses

The key outcomes examined were MH/SA service use, MH/SA spending among MH/SA service users, and out-of-pocket MH/SA spending. To estimate the impact of the FEHB parity policy on MH/SA service use and spending, we calculated the "difference-in-differences," which is the average difference in the key outcomes before and after the implementation of parity in the comparison plans subtracted from the average difference before and after the implementation of parity in the FEHB plans. This approach accounts for any secular trends in outcomes that are not attributable to parity; any remaining significant differences in outcome are attributed to the parity policy.

In estimating parity's impact on MH/SA use and spending, we addressed 2 critical features of health care spending data: most people use no MH/SA care in any given year (ie, have 0 use and spending), and spending tends to be skewed. To account for these features, we tested competing models and then selected the 2-part model, because it best fit the data.[17] (Details available at www.aspe.hhs.gov/daltcp/reports/parity.htm.)

We estimated the relationship between MH/SA spending and FEHB parity using the generalized linear model. After investigating several "link" functions and distributional assumptions, we used a normal model to characterize spending. A generalized estimating equation approach was used to account for correlations among repeated annual observations.

We used a logistic regression model to estimate the impact of the parity policy on the probability of a child enrollee using any MH/SA services in the first part of the 2-part model. The unit of observation was the child year, and we adjusted for demographic characteristics of the child (age and gender). The age variable also served to adjust for any time trend. An indicator variable that took on a value of 1 for the postparity period and 0 for the preparity period, an indicator variable that took on a value of 1 when an enrollee was a member of an FEHB plan and 0 for comparison group members, and the interaction of the 2 indicator variables were the independent variables. The net impact of the parity policy on an outcome could not be calculated directly; the difference-in-differences approach requires estimating a coefficient for an interaction term.[18] We calculated the average impact of the probability of using MH/SA services using simulation methods based on the estimated regression model for the case when the appropriate dummy variables are set to 1 and 0. Using these regressions, we obtained an estimate of the change in the likelihood of using any MH/SA services that was attributable to movement from preparity to postparity, taking into account secular trends in MH/SA use rates. Using bootstrap samples, we constructed 95% confidence intervals (CIs) for our final estimates.[19]

In the second part of the model, we used a least-squares regression approach to analyze individual spending on MH/SA services, conditional on using any MH/SA services. We used

the same independent variables as in the first part of the model, plus indicator variables for a service user's diagnosis. We estimated any change in MH/SA spending attributable to the parity policy through the coefficient for the interaction term, after taking account of the secular trend in MH/SA spending among MH/SA service users. We used a generalized estimating equation to estimate the SEs for the conditional spending change in the second part of the model.

## RESULTS

### Children's MH/SA Service Use and Spending

Table 3 describes rates of children's MH/SA service use and spending by service users for the 7 FEHB plans and their comparators. Across both FEHB and comparison plans, rates of children's MH/SA service use and spending increased from preparity (1999–2000) to postparity (2001–2002), without exception. Table 3 also shows the difference-in-differences estimates for the probability of MH/SA service use among children and MH/SA spending among child service users. After accounting for secular trends in children's MH/SA service use with the difference-in-differences model, we found a significant effect of the FEHB parity policy on the probability of children's MH/SA use for only 1 plan, Mid-Atlantic 2, in which use increased 0.73% relative to its matched comparison plan. In the remaining 6 plans, the estimated effect of parity on the probability of children's MH/SA use was not significant. Thus, the apparent increase in children's MH/SA service use after implementation of the FEHB parity policy was almost entirely because of the secular trend of increased MH/SA service use by children over the same time period.

The difference-in-differences estimates for children's MH/SA spending conditional on MH/SA service use showed significant decreases in spending per user attributable to parity for 2 plans; spending decreased $174.04 in the National plan and $320.00 in the South plan. Spending estimates for the other 5 plans ranged from negative $128.84 to $20.36 and were not significant. Thus, the analysis provided no evidence of significant increases in children's MH/SA spending attributable to the FEHB parity policy.

### Out-of-Pocket Spending on Children's MH/SA Services

Table 4 summarizes the results on the impact of FEHB parity on out-of-pocket spending for children using MH/SA services. Children using MH/SA services in 3 of 7 plans experienced statistically significant reductions in out-of-pocket MH/SA spending attributable to the parity policy, ranging from $62.25 to $200.22. In the remaining 4 plans, out-of-pocket spending also decreased, but these decreases were not statistically significant.

## DISCUSSION

Our findings suggest that the FEHB parity policy did not substantially expand children's access to MH/SA services. Observed increases in the likelihood of MH/SA service use for 6 of the 7 FEHB plans were on par with that in other large, privately insured plans and not attributable to the parity policy. As was the case for adults in the FEHB plans, the 1 plan (Mid-Atlantic 2) experiencing a statistically significant increase in children's MH/SA service use beyond that attributable to the secular trend was the only plan that did not carve out MH/SA care to a managed care company.[2]

Likewise, the findings offer no evidence of MH/SA spending increases attributable to the parity policy. Instead, when secular trends were taken into account, spending by child service users decreased significantly in 2 of 7 plans and showed no statistically significant change in the other 5. Although all 7 of the plans experienced spending growth after implementation of the

parity policy, this growth was because of secular trends. A similar spending pattern was found previously for adult FEHB service users.[2]

Insofar as we found few statistically significant differences in the probability of children's MH/SA service use or spending that could be attributed to the FEHB parity policy, our results are "negative." The large sample sizes and small magnitude of estimated differences between FEHB and comparison plan enrollees strongly suggest little or no impact of the parity policy on children's MH/SA use and spending rather than insufficient statistical power to detect impacts of the policy.

Our findings support the hypothesis that parity can, in some instances, reduce out-of-pocket spending for children using MH/SA services, increasing financial protection. Three of 7 plans showed statistically significant decreases in out-of-pocket costs for child MH/SA service users, and for users in those 3 plans the average dollar amount of savings was sizeable. Although FEHB adult MH/SA service users in 5 of the 7 plans experienced statistically significant decreases in out-of-pocket spending attributable to the parity policy, these decreases were smaller in magnitude than those for children in the same plan.

Our study had several limitations. First, with quasiexperimental studies there is a risk of nonequivalence of intervention and comparison groups, particularly in time trends over a longer period before parity. However, the consistency of key findings across multiple matched sets of plans is reassuring, and plan variations in out-of-pocket spending are interpretable. Second, MH/SA diagnoses may be underreported in claims data yielding an underestimate of MH/SA service use and spending. To address this issue, we used multiple methods of identifying MH/SA use, including an MH/SA-specific procedure code, indication of a face-to-face encounter with an MH/SA provider, and indication of an MH/SA-specific place of service. Third, the analysis involved only 7 of the FEHB plans, all PPOs, potentially limiting the generalizability of the findings. However, these 7 plans used different managed care arrangements and had >3 million FEHB beneficiaries across the United States. Fourth, to avoid confounding the effect of changing enrollment with the effect of the FEHB parity policy, we excluded children who were not enrolled continuously throughout the study period, which may limit the generalizability of our findings. We also excluded children who were >15 years of age at study start (and, thus, not >18 years of age throughout the 4-year study period), so our study may underrepresent older teens. Fifth, for the 6 plans in which FEHB parity implementation was accompanied by adoption of a carve-out arrangement, the design did not permit us to disentangle the effects of parity and carve-out status. Finally, using 2 years of data after parity implementation, we are unable to examine the longer-term effects of parity on spending and use. It is possible, for example, that after the 2-year follow-up period, families would become more familiar with their parity benefits and, consequently, service use by children would increase.

The relatively small proportion (13%–18%) of adolescents comprising our child sample and the exclusion of adolescents over age 15 years at study start may have contributed to the finding of limited impact of the FEHB parity policy on children's MH/SA use and spending. The literature suggests that adolescents are more likely than younger children to use inpatient and outpatient MH/SA care and so benefit more from the removal of coverage limits.[10]

## CONCLUSIONS

Concerns that full MH/SA parity would produce large increases in children's MH/SA service use and spending were unsupported for the FEHB plans evaluated. The FEHB parity policy resulted in expanded financial protection for beneficiaries through decreased out-of-pocket spending on children's MH/SA care in some (but not all) plans. As was the case for adults in

the FEHB, these findings show that full MH/SA parity for children, within the context of managed care, can achieve increased equity in health insurance coverage and improve financial protection without adversely affecting health care costs. Full MH/SA parity, however, may not expand access for children who need MH/SA services.

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## References

1. Frank RG, Goldman HH, McGuire TG. Will parity coverage in coverage result in better mental health care? N Engl J Med 2001;345:1701–1704. [PubMed: 11759651]
2. Goldman HHG, Frank RG, Burnam MA, et al. Behavioral health insurance parity for federal employees. N Engl J Med 2006;354:1378–1386. [PubMed: 16571881]
3. Goldman W, McCulloch J, Sturm R. Costs and use of mental health services before and after managed care. Health Aff (Mill-wood) 1998;17:40–52.
4. Ma C, McGuire T. Costs and incentives in a mental health carve-out. Health Aff (Millwood) 1998;17:53–69. [PubMed: 9558785]
5. Rosenbach, M.; Lake, T.; Young, C., et al. Effects of the Vermont Mental Health and Substance Abuse Parity Law. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration; 2003.
6. Frank RG, Salkever DS, Sharfstein SS. A new look at rising mental health insurance costs. Health Aff (Millwood) 1991:116–123. [PubMed: 1885129]
7. Libby AM, Cuellar A, Snowden LR, Orton HD. Substitution in a Medicaid mental health carve-out: services and costs. J Health Care Finance 2002;28:11–23. [PubMed: 12148661]
8. Zuvekas SH, Regier DA, Rae DS, Rupp A, Narrow WE. The impacts of mental health parity and manager care in one large employer group. J Behav Health Serv Res 2002;21:148–159.
9. Sturm R. How expensive is unlimited mental health care coverage under managed care? JAMA 1997;278:1533–1537. [PubMed: 9363977]
10. Gresenz CR, Liu X, Sturm R. Managed behavioral health services for children under carve-out contracts. Psychiatr Serv 1998;49:1054–1058. [PubMed: 9712212]
11. Peele PB, Lave JR, Xu Y. Benefit limits in manager behavioral health care: do they matter? J Behav Health Serv Res 1999;26:430–441. [PubMed: 10565103]
12. McKusick DR, Mark TL, King EC, Coffey RM, Genuardi J. Trends in mental health insurance benefits and out-of-pocket spending. J Ment Health Policy Econ 2002;5:71–78. [PubMed: 12529560]
13. US Office of Personnel Management. Federal Employees Health Benefits Handbook, 2004. [Accessed April 10, 2004]. Available at: www.opm.gov/insure/handbook/fehb01.asp#GENERAL%20OVERVIEW
14. US Office of Personnel Management. Call Letter for Contract Year 2001–Policy Guidance, 2000. Washington, DC: FEHB Program Carrier; Letter No. 2000–17;
15. Hennessy, K.; Barry, CL. Parity in the Federal Employees Health Benefits Program: an overview. In: Manderscheid, RW.; Henderson, MJ., editors. Mental Health United States, 2002. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration; 2004.
16. US Department of Health and Human Services. Evaluation of parity in the Federal Employees Health Benefits (FEHB) Program: final report. [Accessed November 21, 2006]. Available at: www.aspe.hhs.gov/daltcp/reports/parity.htm
17. Manning WG, Mullahy J. Estimating log models: to transform or not to transform. J Health Econ 2001;20:461–494. [PubMed: 11469231]
18. Ai C, Norton EC. Interaction terms in Logit and Probit models. Econ Lett 2003;80:123–129.
19. Efron, B.; Tibshirani, R. An Introduction to the Bootstrap. Boca Raton, FL: CRC Press; 1998.

## Abbreviations

**MH** mental health

**SA** substance abuse

**OPM** Office of Personnel Management

**FEHB** Federal Employees Health Benefits

**PPO** preferred provider organization

**HMO** health maintenance organization

**CI** confidence interval

## TABLE 1

Characteristics of the 9 FEHB Program Plans and Their MarketScan Comparison Plans Before and After Parity: Benefit Design and Managed Care Changes, 2000–2001

| Benefit Design by Plan[a] | FEHB Program Plans (Continuous Enrollees) | | MarketScan Comparison Plans[b] (Continuous Enrollees) | |
|---|---|---|---|---|
| | 2000 (Before)[c] | 2001 (After)[d] | 2000 (Before)[c] | 2001 (After)[d] |
| | PPO-NAT (365 137) | | PPO-NAT Comparison (306 127) | |
| Inpatient annual day limits | 45 | No limit | 50 | 50 |
| Inpatient enrollee cost-sharing | 30% | 0 | Low[e] | Low[e] |
| Outpatient annual visit limits | 20 | No limit | 30–50 | 30–50 |
| Outpatient enrollee cost sharing | 30% | $15 | Low[f] | Low[f] |
| Carve-out status[g] | No[h] | Yes | 6/15 | 5/15 |
| | PPO-MA1 (108 460) | | PPO-MA1 Comparison (20 392) | |
| Inpatient annual day limits | 100 | No limit | 30 | 30 |
| Inpatient enrollee cost-sharing | 40% | 0 | Low[e] | Low[e] |
| Outpatient annual visit limits | 25 | No limit | 30 | 30 |
| Outpatient enrollee cost sharing | $25 | $15 | Low[f] | Low[f] |
| Carve-out status | Yes | Yes | 4/7 | 3/7 |
| | PPO-MA2 (75 676) | | PPO-MA2 Comparison (20 392) | |
| Inpatient annual day limits | 100 | No limit | 30 | 30 |
| Inpatient enrollee cost-sharing | 40% | 0 | Low[e] | Low[e] |
| Outpatient annual visit limits | 25 | No limit | 30 | 30 |
| Outpatient enrollee cost sharing | $25 | $15 | Low[f] | Low[f] |
| Carve-out status | No | No | 4/7 | 3/7 |
| | PPO-NE1 (38 716) | | PPO-NE1 Comparison (20 392) | |
| Inpatient annual day limits | 100 | No limit | 30 | 30 |
| Inpatient enrollee cost-sharing | 40% | 0 | Low[e] | Low[e] |
| Outpatient annual visit limits | 25 | No limit | 30 | 30 |
| Outpatient enrollee cost sharing | $25 | $15 | Low[f] | Low[f] |
| Carve-out status | Yes | Yes | 4/7 | 3/7 |
| | PPO-NE2 (21 459) | | PPO-NE1 Comparison (20 392) | |
| Inpatient annual day limits | 100 | No limit | 30 | 30 |
| Inpatient enrollee cost-sharing | 40% | 0 | Low[e] | Low[1] |
| Outpatient annual visit limits | 25 | No limit | 30 | 30 |
| Outpatient enrollee cost sharing | $25 | $15 | Low[f] | Low[g] |
| Carve-out status | Yes | Yes | 4/7 | 3/7 |
| | PPO-W (51 902) | | PPO-W Comparison (27 376) | |
| Inpatient annual day limits | 100 | No limit | 30 | 30 |
| Inpatient enrollee cost-sharing | 40% | 0 | Low[e] | Low[e] |
| Outpatient annual visit limits | 25 | No limit | 30 | 30 |
| Outpatient enrollee cost sharing | $25 | $15 | Low[f] | Low[f] |
| Carve-out status | No[i] | Yes | 5/11 | 4/11 |
| | PPO-S (68 808) | | PPO-S Comparison (27 376) | |
| Inpatient annual day limits | 100 | No limit | 30 | 30 |
| Inpatient enrollee cost-sharing | 40% | 0 | Low[e] | Low[e] |
| Outpatient annual visit limits | 25 | No limit | 30 | 30 |
| Outpatient enrollee cost sharing | $25 | $15 | Low[f] | Low[f] |
| Carve-out status | Yes | Yes | 5/11 | 4/11 |
| | HMO-W (17 902) | | Not Applicable | |
| Inpatient annual day limits | 30 | No limit | | |
| Inpatient enrollee cost-sharing | 0 | 0 | | |
| Outpatient annual visit limits | 40 | No limit | | |
| Outpatient enrollee cost sharing | $20 | $20 | | |
| Carve-out status | Yes[j] | Yes | | |
| | HMO-NE (32 352) | | Not Applicable | |
| Inpatient annual day limits | No limit | No limit | | |
| Inpatient enrollee cost-sharing | 0 | 0 | | |
| Outpatient annual visit limits | 40 | No limit | | |
| Outpatient enrollee cost sharing | $10 | $10 | | |
| Carve-out status | Yes | Yes | | |

Both the preparity and postparity MH/SA service use and spending columns for the descriptive data show the 2-year average for the preparity (1999 – 2000) and postparity (2001–2002) periods. (Adapted with permission from Goldman HH, Frank RG, Burnam MA, et al. Behavioral health insurance parity for federal employees. *N Eng J Med*. 2006;354:1378 –1386. Copyright © 2007 Massachusetts Medical Society. All rights reserved.)

[a] Geographic region of plan coverage is indicated in plan name as follows: NAT, national; MA, Mid-Atlantic; NE, Northeast; W, West; S, South.

[b] The comparison "plan" is actually a group of plans. Thus, some of the plan characteristics are best represented as a range of values, a proportion, or a weighted average.

[c] Plan characteristics in 2000 are nearly identical to those in 1999; thus, we show only the 2000 characteristics for the period before parity.

[d] Plan characteristics in 2001 are nearly identical to those in 2002; thus, we show only the 2001 characteristics for the period after parity.

[e] The inpatient cost sharing ranged from 0% to 20%, with a weighted average of 5%. We consider this to be a "low" level of cost-sharing.

[f] The outpatient cost-sharing ranged from 0% to 50%, with a weighted average of 15%. We consider this to be a "low" level of cost-sharing.

[g] For FEHB plans, we indicate whether or not the plan contracted with a managed behavioral health care company in a carve-out arrangement by either a "yes" or "no." The comparison plan is comprised of a group of plans, some of which contracted with a managed behavioral health care company in a carve-out arrangement and some that did not. We show the proportion of component plans that carved out in relation to the total.

[h] The plan contracted with a managed behavioral health care company in December 2000 in anticipation of the FEHB parity policy beginning in January 2001.

[i] The health plan implemented a carve-out for their other insurance products in response to state parity in 2000 but not for the FEHB Program enrollees until January 2001.

[j] The managed behavioral health care vendor is a wholly owned subsidiary of the health plan.

**TABLE 2**

Plan Characteristics of Child Enrollees in the 7 Selected FEHB Plans

| Plan | No. of Child Enrollees 2001 | No. of Continuously Enrolled Children 1999–2002 | Carve-Out Status | |
|---|---|---|---|---|
| | | | Before Parity 2000 | After Parity 2001 |
| National | 139 633 | 74 328 | No | Yes |
| Mid-Atlantic 1 | 47 421 | 23 951 | Yes | Yes |
| Mid-Atlantic 2 | 41 276 | 21 566 | No | No |
| Northeast 1 | 26 697 | 14 129 | Yes | Yes |
| Northeast 2 | 14 085 | 6974 | Yes | Yes |
| West | 29 781 | 14 593 | No | Yes |
| South | 50 953 | 22 397 | Yes | Yes |

**TABLE 3**

Probability of MH/SA Use and Total MH/SA Spending Among Child Service Users

| Plan | Descriptive Data[a] | | | | Difference-in-Differences Analysis | |
|---|---|---|---|---|---|---|
| | Probability of MH/SA Service Use, % | | Total MH/SA Spending Per User, $ | | | |
| | Preparity | Postparity | Preparity | Postparity | Change Preparity to Postparity in Probability of MH/SA Service Use Relative to Comparison Group (95% CI) | Change Preparity to Postparity in Total MH/SA Spending per User Relative to Comparison Group (95% CI), $ |
| National | 6.80 | 8.50 | 723.50 | 935.50 | –0.39 (–0.85 to 0.09) | –174.04[b] (–258.15 to –89.94) |
| National comparison | 9.45 | 11.65 | 842.00 | 1165.00 | | |
| Mid-Atlantic 1 | 10.13 | 12.85 | 1131.00 | 1360.00 | 0.48 (–0.27 to 1.17) | –48.47 (–337.61 to 240.67) |
| Mid-Atlantic 1 comparison | 8.15 | 10.45 | 871.50 | 1203.00 | | |
| Mid-Atlantic 2 | 10.01 | 13.02 | 746.00 | 958.50 | 0.73[b] (0.01 to 1.46) | −79.22 (–358.11 to 199.66) |
| Mid-Atlantic 2 comparison | 8.15 | 10.45 | 871.50 | 1203.00 | | |
| Northeast 1 | 5.46 | 7.74 | 827.00 | 1147.00 | –0.03 (–0.77 to 0.70) | 20.36 (–284.07 to 324.80) |
| Northeast 1 comparison | 8.15 | 10.45 | 871.50 | 1203.00 | | |
| Northeast 2 | 6.56 | 8.81 | 1093.00 | 1318.00 | –0.04 (–0.92 to 0.80) | –128.84 (–458.65 to 200.96) |
| Northeast 2 comparison | 8.15 | 10.45 | 871.50 | 1203.00 | | |
| West | 6.10 | 7.67 | 819.50 | 1124.00 | –0.24 (–0.87 to 0.42) | –103.21 (–316.82 to 110.39) |
| West comparison | 9.90 | 11.75 | 787.50 | 1058.50 | | |
| South | 7.15 | 9.10 | 900.50 | 953.50 | 0.06 (–0.52 to 0.65) | –320.00[b] (–510.31 to –129.69) |
| South comparison | 9.90 | 11.75 | 787.50 | 1058.50 | | |

[a] Preparity and postparity MH/SA service use and spending columns show the 2-year averages for the preparity (1999 –2000) and postparity (2001–2002) periods.

[b] $P \leq .05$.

**TABLE 4**

Difference-in-Differences Results on Children's MH/SA Out-of-Pocket Spending per User

| Plan | Change Preparity to Postparity per User (95% CI), $ |
|---|---|
| National | −15.99 (332.90 to 0.93) |
| Mid-Atlantic 1 | −30.51 (375.49 to 14.48) |
| Mid-Atlantic 2 | −62.25[a] (3104.76 to 321.74) |
| Northeast 1 | −23.94 (370.59 to 22.70) |
| Northeast 2 | −50.76 (3111.33 to 9.81) |
| West | −105.82[a] (3137.70 to 373.93) |
| South | −200.22[a] (3233.08 to 3167.36) |

[a] $P \leq .05$.