

# Federal Parity and Spending for Mental Illness

Alene Kennedy-Hendricks, PhD,<sup>a,b</sup> Andrew J. Epstein, PhD, MPP,<sup>c</sup> Elizabeth A. Stuart, PhD,<sup>a,b,d</sup> Rebecca L. Haffajee, JD, PhD, MPH,<sup>e</sup> Emma E. McGinty, PhD, MS,<sup>a,b,d</sup> Alisa B. Busch, MD, MS,<sup>f,g</sup> Haiden A. Huskamp, PhD,<sup>g</sup> Colleen L. Barry, PhD, MPP<sup>a,b,c,d</sup>

abstract

**BACKGROUND:** Families of children with mental health conditions face heavy economic burdens. One of the objectives of the Mental Health Parity and Addiction Equity Act (MHPAEA) is to reduce the financial burden for those with intensive mental health service needs. Few researchers to date have examined MHPAEA's effects on children with mental health conditions and those with particularly high mental health expenditures.

**METHODS:** A difference-in-differences approach was used to compare commercially insured children ages 3 to 18 years (in 2008) who were continuously enrolled in plans newly subject to parity under MHPAEA to children continuously enrolled in plans never subject to parity. Data included inpatient, outpatient, and pharmaceutical claims for 2008–2012 from 3 national commercial insurers. We examined annual mental health service use and spending outcomes.

**RESULTS:** Among children with mental health conditions who were enrolled in plans subject to parity, parity was associated with \$140 (95% confidence interval: −\$196 to −\$84) lower average annual out-of-pocket (OOP) mental health spending than expected given changes in the comparison group. Among children who were ≥85th percentile in total mental health spending, parity was associated with \$234 (−\$391 to −\$76) lower average annual OOP mental health spending.

**CONCLUSIONS:** MHPAEA was associated with increased financial protection on average for children with mental health conditions and among those at the higher end of the spending distribution. However, estimated reductions in OOP spending were likely too modest to have substantially reduced financial burden on families of children with particularly high mental health expenditures.



Departments of <sup>a</sup>Health Policy and Management and <sup>b</sup>Mental Health, and <sup>c</sup>Center for Mental Health and Addiction Policy Research, Johns Hopkins Bloomberg School of Public Health, Johns Hopkins University, Baltimore, Maryland; <sup>d</sup>Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, Pennsylvania; <sup>e</sup>Department of Health Management and Policy, School of Public Health, University of Michigan, Ann Arbor, Michigan; <sup>f</sup>McLean Hospital, Belmont, Massachusetts; and <sup>g</sup>Department of Health Care Policy, Harvard Medical School, Harvard University, Boston, Massachusetts

Dr Kennedy-Hendricks contributed to the conceptualization and design of the study, statistical analyses, interpretation of the data, drafting of the manuscript, and review and revision of the manuscript; Dr Epstein contributed to the conceptualization and design of the study, conducted the statistical analyses, interpreted the data, and critically reviewed and revised the manuscript; Drs Stuart, Haffajee, McGinty, Busch, Huskamp, and Barry contributed to the conceptualization and design of the study, statistical analyses, interpretation of the data, and critically reviewed and revised the manuscript; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

**DOI:** <https://doi.org/10.1542/peds.2017-2618>

Accepted for publication Apr 24, 2018

**WHAT'S KNOWN ON THIS SUBJECT:** Emerging research reveals that the federal parity law has been effective in moderately reducing the financial burden on adults and increasing access to mental health services among children with autism spectrum disorder.

**WHAT THIS STUDY ADDS:** One of parity's objectives is to reduce catastrophic costs for individuals with substantial mental health service needs. This is the first study in which federal parity's impact on children with particularly high levels of mental health expenditures is examined.

**To cite:** Kennedy-Hendricks A, Epstein AJ, Stuart EA, et al. Federal Parity and Spending for Mental Illness. *Pediatrics*. 2018;142(2):e20172618

Mental disorders are prevalent in children and adolescents. Although estimates vary, a summary of previous studies reveals the median annual prevalence of any mental health condition in children and adolescents to be 25% and 12%, respectively, for mental health conditions that are severely functionally impairing.<sup>1</sup> Approximately half of children with mental health conditions do not receive treatment.<sup>2,3</sup> Families of children with mental health conditions experience financial strain because of the challenges of maintaining full labor market participation and high out-of-pocket (OOP) health care costs, even relative to families of children with other special health care needs of similar demographic background and illness severity.<sup>4-6</sup> Among commercially insured children, those with mental health care needs are nearly 70% more likely than children with other special health care needs to have OOP spending exceeding \$5000 annually even after adjusting for the severity of the child's condition.<sup>5</sup>

A primary aim of insurance is protection from the catastrophic costs of illness. However, insurers have long been reluctant to provide coverage of mental health services on par with coverage of other medical services.<sup>7</sup> Insurers have applied more restrictive cost-sharing requirements for mental health services and have avoided covering services typically used by individuals with mental health conditions because this group tends to incur higher than average costs.<sup>8</sup>

Policies that require insurance coverage of mental health services on par with general medical care are designed to counteract these market failures.<sup>9</sup> Passed in 2008, the Wellstone-Domenici Mental Health Parity and Addiction Equity Act (MHPAEA) is a federal law that builds on more limited previous federal reforms and state parity laws.<sup>9</sup>

MHPAEA prohibits group health plans that offer mental health and substance use disorder (MHSUD) benefits from applying different standards for cost sharing, deductibles, and visit limits for in- and out-of-network providers of MHSUD services than for general medical services.<sup>9</sup> Parity was enforced beginning July 1, 2010, when an interim final regulation (IFR) went into effect.<sup>10</sup> The IFR clarified that insurers could not apply more restrictive nonquantitative treatment limitations (NQTLs), which include managed care techniques for controlling costs such as previous authorization requirements, to MHSUD benefits. MHPAEA applies to commercial self-insured plans exempt from state parity laws because of the Employee Retirement Income Security Act. Given that approximately half of individuals covered by employer-sponsored insurance are in self-insured plans,<sup>11</sup> MHPAEA extends benefits to large swaths of people who were unprotected in states with parity laws. An unaddressed gap was small group plans with 2 to 50 enrollees; these plans were exempt both from many state parity laws and MHPAEA until Patient Protection and Affordable Care Act (ACA) requirements went into effect in 2014.

In theory, federal parity might result in either an increase or a decrease in OOP spending as a result of changes in mental health spending. If parity led to a relatively small increase in the use of mental health services, for instance, the dollar amount spent by a family might decrease as the share of OOP spending shifts from the insured individual to the insurer. This pattern was observed when parity was implemented in the Federal Employees Health Benefits (FEHB) program.<sup>12</sup> Alternatively, if MHPAEA substantially increased the use of mental health services, the amount paid OOP might actually

increase after parity in the context of this increase in total spending.

A growing body of research that is focused primarily on adults reveals that MHPAEA may be having positive but small impacts on financial burden.<sup>13-16</sup> To our knowledge, only 2 studies to date have examined MHPAEA's implications for children. In a pre-post study with no comparison group, Walter et al<sup>17</sup> found increased outpatient behavioral health therapy use and OOP spending on this service among children with mental health conditions after MHPAEA's implementation. Stuart et al<sup>18</sup> found that the federal parity law was associated with small increases in mental health service use among children with autism spectrum disorder, with no corresponding increase in OOP spending.

No researchers have examined the impact of MHPAEA on children with high levels of mental health spending. Given that a goal of insurance parity is to provide protection from catastrophic costs sometimes associated with obtaining treatment of mental health conditions, one might hypothesize that greater benefits would accrue to children on the higher end of the spending distribution. Importantly, this was not the case when parity was implemented in the FEHB program. Barry et al<sup>4</sup> found that parity was associated with a 5% reduction in the share of total mental health spending that was paid OOP among children with particularly high levels of mental health spending; however, this reduction was arguably too small in magnitude to have a meaningful impact on families' financial burden. However, the FEHB parity policy was more limited in scope than MHPAEA and did not include provisions related to NQTLs or out-of-network coverage.

In this study, we build on this previous research by using national commercial insurance claims data

to estimate the effects of MHPAEA on mental health service use and spending among (1) children with mental health conditions and (2) children with high levels of spending on mental health services before MHPAEA's implementation. Following the approach of Haffajee et al in their evaluation of MHPAEA's impact on adults, we compare changes in outcomes among children enrolled in large self-insured plans newly subject to parity under MHPAEA to changes in a comparison group of children enrolled in small group plans exempt from parity both pre- and post-MHPAEA (R.L.H., M.M. Mello, F. Zhang, A.B.B. A.M. Zaslavsky, J.F. Wharam, unpublished data).

## METHODS

### Data

We used inpatient, outpatient, and pharmaceutical claims data from 3 national insurers (UnitedHealthcare, Aetna, and Humana) for January 1, 2008, through December 31, 2012. These data are available through the Health Care Cost Institute, which houses data representing >50 million commercially insured adults and children per year in 50 states and the District of Columbia. We restricted our focus to children born during 1990–2005 ( $\geq 3$  and  $\leq 18$  years in 2008) who were continuously enrolled in medical, mental health, and pharmacy coverage during 2008–2012. The study population included children in large, self-insured plans and those enrolled in small group plans in 23 states that either had never enacted a parity law or exempted small group plans from compliance with the state parity law. In earlier work, Haffajee et al identified those states with parity laws exempting small group plans (R.L.H., M.M. Mello, F. Zhang, A.B.B. A.M. Zaslavsky, J.F. Wharam, unpublished data). We excluded enrollees in 1 state (HI) because of insufficient observations and

excluded individuals in managed behavioral health carve out plans because their mental health services were not included in these data.

We identified children with mental health conditions by the presence of at least 2 uniquely dated claims during the study period with any of the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) diagnosis codes for mental health conditions (codes 295–309 and 311–314, excluding substance use disorder-specific codes 303–305). Given the potential for different effects of parity on individuals with substance use disorders,<sup>19</sup> we excluded children with only a substance use disorder diagnosis and no other psychiatric diagnoses from our sample. We then identified the subset of children with mental health diagnoses who had expenditures at or exceeding the 85th percentile of the total mental health spending distribution summed over the 2 preparity years, 2008–2009, and the 2 postparity years, 2011–2012.

The unit of analysis was the child-calendar year. All children contributed 4 years of data for 2008–2009 and 2011–2012. We treated 2010 as a transition year and excluded it from the analysis. Although many plans implemented components of parity, such as dropping noncompliant quantitative treatment limits, during 2010,<sup>20,21</sup> parity provisions were only enforced for plans renewed on or after July 1, 2010, which, for most plans, was January 1, 2011. In the interim, plans had to make only a good faith effort to comply and did not yet have to implement other components of parity, such as those aspects related to NQTLs. In a sensitivity analysis retaining 2010 and treating it as a preparity year, results were qualitatively similar (Supplemental Table 3). The final analytic samples included 69 233 children with mental health conditions and 4292 children

with high mental health expenditures over the course of the study period. This study was determined to be exempt by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

### Measures

We examined 6 outcomes: average annual mental health spending, OOP mental health spending, OOP share of total mental health spending, number of outpatient mental health visits, number of inpatient mental health days, and average annual spending on psychotropic medications. For all measures, we identified claims as mental health-related if they included an ICD-9-CM diagnosis for a mental health condition or an ICD-9-CM or Current Procedural Terminology procedure code specific to mental health services.<sup>4</sup> Total mental health spending included the sum of the insurer-covered and OOP portions of mental health-related inpatient and outpatient claims and pharmacy claims with National Drug Code codes for psychotropic medications. Total OOP mental health spending was the sum of the child's OOP spending on mental health services. OOP share of total mental health spending was calculated by dividing OOP spending by total mental health spending. Total psychotropic medication spending included the sum of the insurer and OOP portions of pharmacy claims with National Drug Code codes for psychotropic medications. We adjusted spending to 2012 US dollars using the Centers for Medicare and Medicaid Services Office of the Actuary's Personal Health Care Index for total spending and the Consumer Price Index for medical care for OOP spending measures.<sup>22</sup> We calculated the average number of outpatient mental health visits as the number of uniquely dated mental health-related outpatient claims. The number of inpatient mental health days was defined as the total number

**TABLE 1** Descriptive Characteristics of the Study Sample

	Children With Mental Health Conditions <sup>a</sup> (N = 69 233)	Subset With High Mental Health Expenditures <sup>b</sup> (N = 4292)
Sex, % female (M)	45.2 (31 285)	35.5 (1524)
Age at baseline (2008), % (M)		
3–7 y	21.1 (14 577)	15.9 (682)
8–11 y	24.7 (17 065)	29.8 (1278)
12–15 y	31.7 (21 941)	33.4 (1432)
16–18 y	22.6 (15 650)	21.0 (900)
Insurance product, % (M)		
Health maintenance organization	7.1 (4901)	6.1 (262)
Point of service	61.1 (42 271)	62.5 (2682)
Preferred provider organization	25.0 (17 329)	25.7 (1102)
Other (eg, indemnity, exclusive provider organization)	6.8 (4732)	5.7 (246)
Consumer-directed health plan, % (M)	8.6 (5949)	7.8 (336)
Mental health diagnoses, % (M) <sup>c</sup>		
Schizophrenia	0.1 (91)	Blinded <sup>d</sup>
Psychosis	0.6 (412)	3.2 (136)
Bipolar disorder	2.7 (1852)	16.9 (732)
Depression	8.8 (6098)	20.2 (865)
Major depressive disorder	5.1 (3539)	15.1 (648)
Anxiety or posttraumatic stress disorder	12.4 (8556)	29.2 (1253)
Phobia or obsessive-compulsive disorder	2.5 (1726)	9.3 (397)
Attention-deficit/hyperactivity disorder	28.8 (19 928)	65.5 (2813)
Any conduct disorder	3.8 (2656)	12.1 (519)
Personality disorder	0.4 (270)	2.0 (86)
Adjustment disorder	14.3 (9882)	19.9 (856)
Substance use disorder	1.5 (1010)	4.6 (196)
Health service use and spending preparity (2008–2009)		
Any mental health outpatient or inpatient service use, %	58.3 (40 386)	96.9 (4161)
Average annual total mental health spending, \$	824	5453
Average annual OOP mental health spending, \$	327	1603
Average annual OOP share of total mental health spending	0.43	0.33
Average annual No. mental health outpatient visits	2.8	12.4
Average annual No. mental health inpatient days	0.1	1.0
Average annual psychotropic medication spending, \$	298	2335
Average annual non-mental health spending, \$	2513	5096

<sup>a</sup> Children with mental health conditions identified by the presence of  $\geq 2$  outpatient or inpatient claims with any mental health diagnosis occurring on unique dates.

<sup>b</sup> High spenders were the subset of children with mental health conditions who met or exceeded the 85th percentile in total mental health spending summed over 2008 and 2009 (pre-MHPAEA years) and in total mental health spending summed over 2011 and 2012 (post-MHPAEA years).

<sup>c</sup> Child is identified as having a specific condition if the child has  $\geq 2$  claims with ICD-9-CM diagnosis codes for the same condition. Categories are nonexclusive, so children may be classified as having  $> 1$  condition.

<sup>d</sup> Cell sizes with  $< 50$  children represented are blinded.

of inpatient days for all inpatient episodes with at least 1 mental health-related diagnosis code. When inpatient episodes spanned multiple years, days were assigned to the calendar year in which they occurred.

A binary variable indicated assignment to the exposed group,

consisting of enrollees in large, self-insured plans, or to the comparison group, which included children covered through small-group plans (R.L.H., M.M. Mello, F. Zhang, A.B.B. A.M. Zaslavsky, J.F. Wharam, unpublished data). We constructed a pre-post parity variable in which 2008–2009 were coded 0 and 2011–2012 were coded 1.

To characterize mental health diagnoses, we constructed 11 nonexclusive diagnosis categories (Supplemental Table 4). Children with at least 2 claims during the study period with a diagnosis code for the same mental health condition were classified as having the disorder and a child could be included in multiple diagnostic categories.

### Analytic Approach

We used a difference-in-differences model, which compared the average changes in outcomes in the years before parity (2008–2009) to the years after parity (2011–2012) between the exposed and comparison groups. For spending and service count outcomes, we estimated 2-part models,<sup>23</sup> with a logistic model of any spending and/or use in the first part and generalized linear models of spending and/or use in the second part.

We estimated fractional logit models to model the effects of parity on the proportion of total mental health spending that was OOP. We used logistic regression models to estimate whether MHPAEA affected the probability of a child using any mental health inpatient or outpatient service. In all models, we controlled for the following covariates: sex, age, insurance product type, enrollment in a consumer-directed health plan, state of residence, mental health diagnoses, and quintiles of preparity nonmental health total annual spending. In secondary analyses, we estimated models that included postparity year indicators to determine if parity's effects differed by the number of years after implementation.

In all models, we adjusted SEs to account for clustering within states<sup>24</sup> and translated coefficient estimates to average marginal effects on their original scales (eg,

**TABLE 2** Change in Mental Health Service Use and Spending Attributable to MHPAEA, 2008–2012

	Preparity	Postparity	Difference-in-Difference Estimate <sup>a</sup> of Change Attributable to Parity (95% CI)
Children with mental health conditions ( <i>N</i> = 69 233)			
Total mental health spending, \$			
Exposed (self-insured)	733	1691	14 (–114 to 143)
Comparison (small-group fully insured)	712	1656	
Total OOP mental health spending, \$			
Exposed (self-insured)	274	543	–140** (–196 to –84)
Comparison (small-group fully insured)	381	790	
OOP share of total mental health spending, %			
Exposed (self-insured)	44.4	41.6	1.3 (–0.4 to 3.0)
Comparison (small-group fully insured)	55.3	51.2	
No. outpatient mental health visits			
Exposed (self-insured)	2.5	4.8	0.1 (–0.2 to 0.3)
Comparison (small-group fully insured)	2.4	4.6	
No. inpatient mental health days			
Exposed (self-insured)	0.1	0.3	0.0 (–0.0 to 0.1)
Comparison (small-group fully insured)	0.1	0.3	
Total psychotropic medication spending, \$			
Exposed (self-insured)	280	513	–18 (–37 to 0)
Comparison (small-group fully insured)	283	533	
High spenders ( <i>N</i> = 4292 <sup>b</sup> )			
Total mental health spending, \$			
Exposed (self-insured)	5302	8708	–311 (–1069 to 448)
Comparison (small-group fully insured)	5460	9177	
Total OOP mental health spending, \$			
Exposed (self-insured)	1439	2034	–234** (–391 to –76)
Comparison (small-group fully insured)	2191	3019	
OOP share of total mental health spending, %			
Exposed (self-insured)	31.4	29.6	0.6 (–2.0 to 3.2)
Comparison (small-group fully insured)	39.0	36.5	
No. outpatient mental health visits			
Exposed (self-insured)	11.7	16.9	–0.3 (–1.8 to 1.1)
Comparison (small-group fully insured)	11.2	16.7	
No. inpatient mental health days			
Exposed (self-insured)	0.9	1.8	0.5* (0.1 to 0.9)
Comparison (small-group fully insured)	0.9	1.3	
Total psychotropic medication spending, \$			
Exposed (self-insured)	2457	3099	–33 (–234 to 168)
Comparison (small-group fully insured)	2422	3097	

ATT, average treatment effect on the treated.

<sup>a</sup> Difference-in-difference models estimate changes in outcomes between 2008–2009 (preparity) and 2011–2012 (postparity) between children exposed versus those unexposed to MHPAEA. All models estimates are doubly robust; we applied ATT weights and controlled for child demographic and health characteristics. SEs were adjusted to account for clustering within states.

<sup>b</sup> High spenders were the subset of children with mental health conditions who met or exceeded the 85th percentile in total mental health spending summed over 2008 and 2009 (pre-MHPAEA years) and in total mental health spending summed over 2011 and 2012 (post-MHPAEA years).

\* *P* < .05.

\*\* *P* < .01.

counts, dollar spending) to ease interpretation of the change in outcomes attributable to parity.<sup>25</sup> Analyses were conducted in Stata 14 (Stata Corp, College Station, TX).<sup>26</sup> To account for observed differences in the characteristics of our exposed

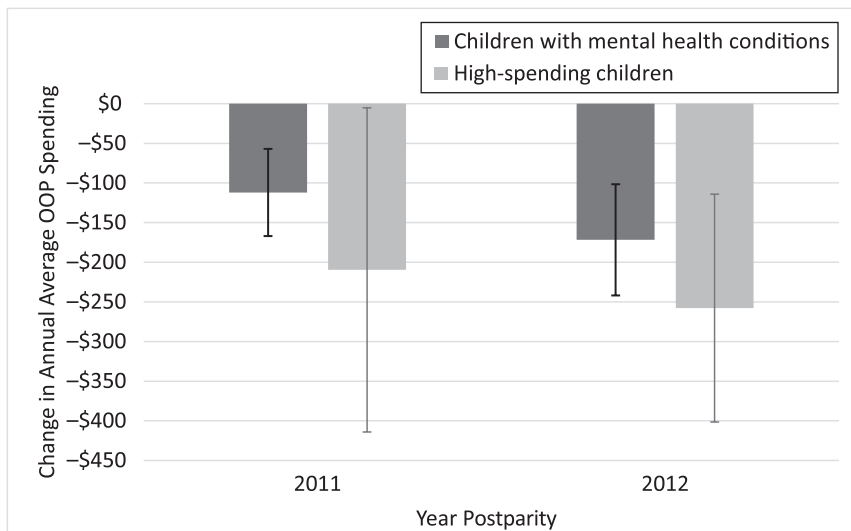
and comparison groups, we used propensity score weighting. For each sample of children, we calculated the propensity to be exposed to parity given observed characteristics. We then estimated all models with propensity score weights to

produce estimates of the average effect of parity on children enrolled in plans subject to parity.<sup>27</sup> Our propensity score weighing strategy is described in detail in Supplemental Information.

## RESULTS

Table 1 displays the characteristics of children in each sample. Compared with all children with mental health conditions, a smaller proportion of children with high levels of preparity spending were in the youngest age category and larger proportions of these children were classified as having specific diagnoses. For instance, 17% of high-spending children had a bipolar disorder diagnosis compared with 3% of all children with mental health conditions. The annual total mental health spending during the preparity years averaged \$864 among all children with mental health conditions and \$5453 among the high-spending children. The average OOP share of total mental health spending was lower in the group with high baseline mental health spending (33% versus 43%); however, in both groups, families shouldered the costs for over a quarter of total mental health spending.

Among all children with mental health conditions, although average annual OOP mental health spending grew pre- to postparity, the growth was slower among enrollees in plans exposed to parity (Table 2). Parity was associated with \$140 (95% confidence interval [CI]: –\$196 to –\$84) lower average annual OOP mental health spending than would have been expected given changes in the comparison group. A similar pattern was observed among children with high levels of mental health spending, with parity associated with \$234 (95% CI: –\$391 to –\$76) lower average annual OOP mental health spending. Among high spenders, parity was



**FIGURE 1** Difference-in-difference estimates of changes in annual OOP mental health spending attributable to MHPAEA each year postparity for children with mental health conditions ( $N = 69233$ ) and children with high spending ( $N = 4292$ ). All models estimates are doubly robust; we applied ATT weights and controlled for child demographic and health characteristics. SEs were adjusted to account for clustering within states. ATT, average treatment effect on the treated.

associated with a small increase of 0.5 (95% CI: 0.1 to 0.9) inpatient mental health days per year. Figure 1 displays the impacts of parity on OOP mental health spending each year postparity among all children with mental health conditions and among the high spenders. OOP mental health spending was \$112 lower (95% CI: -\$167 to -\$57) in the first year and \$171 lower (95% CI: -\$241 to -\$101) in the second year postparity relative to expected changes among all children. Among high spenders, OOP spending was \$210 lower (95% CI: -\$414 to -\$5) in the first year and \$258 lower (95% CI: -\$401 to -\$114) in the second year.

## DISCUSSION

MHPAEA was associated with reductions in OOP spending on average for commercially insured children with mental health conditions and among those at the higher end of the mental health spending distribution. In much of the literature, implementation of parity has been associated with

improved financial protection for individuals with mental health conditions.<sup>9,12,15,16,18,28,29</sup> Our finding of a reduction in OOP mental health spending attributable to parity among all children with mental health conditions is consistent with the limited body of literature focused on children.<sup>28,29</sup> Although the estimated reduction in OOP spending was larger in magnitude for children with high spending than among children with mental health conditions more broadly (-\$234 vs -\$140), given the much higher average annual OOP spending preparity among the high spending group (\$1439 among children enrolled in plans subject to parity), this constitutes a relatively small reduction in OOP spending attributable to the law. Similar to Barry et al's<sup>4</sup> findings in their study of the impact of parity implementation in the FEHB program on children with high mental health expenditures, our estimated effects suggest that parity may not be translating into meaningful reductions in financial burden on these families.

It is unclear why parity has not produced a greater effect on children at the higher end of the spending distribution. One factor may be insufficient time to observe effects. Theoretically, all self-insured commercial plans should have been compliant with parity by 2011.<sup>10</sup> However, it is possible that MHPAEA has had longer-term effects beyond 2012. Another factor might be inadequate enforcement of the law. The aftermath of MHPAEA has involved substantial litigation launched against insurers for failure to comply with parity.<sup>9</sup> A review of plans available on 2 state insurance exchanges, to which the ACA later extended parity protections, revealed a number of inconsistencies with parity law.<sup>30</sup> A third explanation could be that small group plans (comprising our comparison group) also responded to parity despite not being required to do so during our study period, thus biasing results toward the null.

This study must be considered in the context of several limitations. First, children in the exposed group may differ from those in the comparison group. However, we found that these groups were fairly balanced across observable preparity characteristics and applied propensity score weighting techniques to improve comparability of groups. A second related limitation has to do with our selection of the high-spending group based on not only preparity but also postparity, mental health spending. Although this selection criteria enable us to focus on children with consistently intensive mental health service needs (a population of great policy interest), it is possible that some children exposed to parity may have had higher mental health spending postparity because of the policy, potentially biasing selection into the high-spending sample. Third, although restricting our sample to 23 states was necessary to construct the comparison group, MHPAEA's impacts may differ

in the remaining 27 states or among populations enrolled in different types of plans. Fourth, the ACA's dependent care provision went into effect during our study period (2011), although this should not have affected the 2 groups differentially. Fifth, our use and spending outcome measures erred on the side of sensitivity in their inclusiveness of mental health-related services rather than specificity. We may have included some claims for care that would not have been subject to parity provisions (eg, care provided by pediatricians in the primary care setting). Although this might inflate the pre- and postparity predicted use and spending estimates, it should not have affected the study groups differentially. Finally, we did not examine enrollees in behavioral

health carve out plans in this study because these claims were incomplete in the Health Care Cost Institute data. Parity's effects may differ among enrollees in carve out plans.

## CONCLUSIONS

MHPAEA enforcement was associated with improvements in financial protection for the overall population of children with mental health conditions and among those at the higher end of the spending distribution. For those children with high mental health expenditures, however, these effects may not translate to substantial improvements in financial protection for their families.

## ABBREVIATIONS

ACA:	Patient Protection and Affordable Care Act
CI:	confidence interval
FEHB:	Federal Employees Health Benefits
ICD-9-CM:	<i>International Classification of Diseases, Ninth Revision, Clinical Modification</i>
MHPAEA:	Mental Health Parity and Addiction Equity Act
MHSUD:	mental health and substance use disorder
NQTL:	nonquantitative treatment limitation
OOP:	out-of-pocket

Address correspondence to Alene Kennedy-Hendricks, PhD, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, 624 N. Broadway, Hampton House 488, Baltimore, MD 21205. E-mail: alene@jhu.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2018 by the American Academy of Pediatrics

**FINANCIAL DISCLOSURE:** The authors have indicated they have no financial relationships relevant to this article to disclose.

**FUNDING:** Supported by National Institute of Mental Health grant MH093414. Funded by the National Institutes of Health (NIH).

**POTENTIAL CONFLICT OF INTEREST:** Dr Epstein is an employee of Medicus Economics, LLC, a consulting firm with clients in the biopharmaceutical industry; the other authors have indicated they have no potential conflicts of interest to disclose.

**COMPANION PAPER:** A companion to this article can be found online at [www.pediatrics.org/cgi/doi/10.1542/peds.2018-1572](http://www.pediatrics.org/cgi/doi/10.1542/peds.2018-1572).

## REFERENCES

1. Costello EJ, Egger H, Angold A. 10-year research update review: the epidemiology of child and adolescent psychiatric disorders: I. Methods and public health burden. *J Am Acad Child Adolesc Psychiatry*. 2005;44(10):972–986
2. Costello EJ, He JP, Sampson NA, Kessler RC, Merikangas KR. Services for adolescents with psychiatric disorders: 12-month data from the National Comorbidity Survey-Adolescent. *Psychiatr Serv*. 2014;65(3):359–366
3. Merikangas KR, He JP, Brody D, Fisher PW, Bourdon K, Koretz DS. Prevalence and treatment of mental disorders among US children in the 2001-2004 NHANES. *Pediatrics*. 2010;125(1):75–81
4. Barry CL, Chien AT, Normand S-LT, et al. Parity and out-of-pocket spending for children with high mental health or substance abuse expenditures. *Pediatrics*. 2013;131(3). Available at: [www.pediatrics.org/cgi/content/full/131/3/e903](http://www.pediatrics.org/cgi/content/full/131/3/e903)
5. Busch SH, Barry CL. Does private insurance adequately protect families of children with mental health disorders? *Pediatrics*. 2009;124(suppl 4):S399–S406
6. Busch SH, Barry CL. Mental health disorders in childhood: assessing the burden on families. *Health Aff (Millwood)*. 2007;26(4):1088–1095
7. Barry CL, Gabel JR, Frank RG, Hawkins S, Whitmore HH, Pickreign JD. Design of mental health benefits: still unequal after all these years. *Health Aff (Millwood)*. 2003;22(5):127–137
8. Frank RG, McGuire TG. In: Culyer AJ, Newhouse JP, eds. *Handbook of Health Economics*, 1st ed. Amsterdam, The Netherlands: Elsevier B.V.; 2000:893–954
9. Barry CL, Goldman HH, Huskamp HA. Federal parity in the evolving mental health and addiction care landscape. *Health Aff (Millwood)*. 2016;35(6):1009–1016
10. Centers for Medicare and Medicaid Services. The Center for Consumer Information & Insurance Oversight: The Mental Health Parity and Addiction Equity Act (MHPAEA). Available at: <https://www.cms.gov/ccio/programs-and-initiatives/>

other-insurance-protections/mhpaea\_factsheet.html. Accessed May 1, 2017

11. Buchmueller TC, Cooper PF, Jacobson M, Zuvekas SH. Parity for whom? Exemptions and the extent of state mental health parity legislation. *Health Aff (Millwood)*. 2007;26(4):w483–w487
12. Goldman HH, Frank RG, Burnam MA, et al. Behavioral health insurance parity for federal employees. *N Engl J Med*. 2006;354(13):1378–1386
13. McGinty EE, Busch SH, Stuart EA, et al. Federal parity law associated with increased probability of using out-of-network substance use disorder treatment services. *Health Aff (Millwood)*. 2015;34(8):1331–1339
14. Busch SH, Epstein AJ, Harhay MO, et al. The effects of federal parity on substance use disorder treatment. *Am J Manag Care*. 2014;20(1):76–82
15. Ettner SLM, M Harwood J, Thalmayer A, et al. The Mental Health Parity and Addiction Equity Act evaluation study: impact on specialty behavioral health utilization and expenditures among “carve-out” enrollees. *J Health Econ*. 2016;50:131–143
16. Harwood JM, Azocar F, Thalmayer A, et al. The Mental Health Parity and Addiction Equity Act evaluation study: impact on specialty behavioral health care utilization and spending among carve-in enrollees. *Med Care*. 2017;55(2):164–172
17. Walter AW, Yuan Y, Cabral HJ. Mental health services utilization and expenditures among children enrolled in employer-sponsored health plans. *Pediatrics*. 2017;139(suppl 2):S127–S135
18. Stuart EA, McGinty EE, Kalb L, et al. Increased service use among children with autism spectrum disorder associated with mental health parity law. *Health Aff (Millwood)*. 2017;36(2):337–345
19. Barry CL, Sindelar JL. Equity in private insurance coverage for substance abuse: a perspective on parity. *Health Aff (Millwood)*. 2007;26(6):w706–w716
20. Thalmayer AG, Friedman SA, Azocar F, Harwood JM, Ettner SL. The Mental Health Parity and Addiction Equity Act (MHPAEA) evaluation study: impact on quantitative treatment limits. *Psychiatr Serv*. 2017;68(5):435–442
21. Horgan CM, Hodgkin D, Stewart MT, et al. Health plans’ early response to federal parity legislation for mental health and addiction services. *Psychiatr Serv*. 2016;67(2):162–168
22. Centers for Medicare and Medicaid Services. National Health Expenditure Accounts: methodology paper, 2014: definitions, sources, and methods. 2015. Available at: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/dsm-14.pdf>. Accessed May 22, 2018
23. Buntin MB, Zaslavsky AM. Too much ado about two-part models and transformation? Comparing methods of modeling Medicare expenditures. *J Health Econ*. 2004;23(3):525–542
24. Cameron AC, Miller DL. A practitioner’s guide to cluster-robust inference. *J Hum Resour*. 2015;50(2):317–372
25. Kleinman LC, Norton EC. What’s the risk? A simple approach for estimating adjusted risk measures from nonlinear models including logistic regression. *Health Serv Res*. 2009;44(1):288–302
26. Stata Corp. *Stata Statistical Software: Release 14*. College Station, TX: Stata Corp; 2015
27. Stuart EA. Matching methods for causal inference: a review and a look forward. *Stat Sci*. 2010;25(1):1–21
28. Azrin ST, Huskamp HA, Azzone V, et al. Impact of full mental health and substance abuse parity for children in the Federal Employees Health Benefits Program. *Pediatrics*. 2007;119(2). Available at: [www.pediatrics.org/cgi/content/full/119/2/e452](http://www.pediatrics.org/cgi/content/full/119/2/e452)
29. Barry CL, Busch SH. Do state parity laws reduce the financial burden on families of children with mental health care needs? *Health Serv Res*. 2007;42(3, pt 1):1061–1084
30. Berry KN, Huskamp HA, Goldman HH, Barry CL. A tale of two states: do consumers see mental health insurance parity when shopping on state exchanges? *Psychiatr Serv*. 2015;66(6):565–567



## Federal Parity and Spending for Mental Illness

Alene Kennedy-Hendricks, Andrew J. Epstein, Elizabeth A. Stuart, Rebecca L. Haffajee, Emma E. McGinty, Alisa B. Busch, Haiden A. Huskamp and Colleen L. Barry

*Pediatrics* 2018;142;

DOI: 10.1542/peds.2017-2618 originally published online July 23, 2018;

### Updated Information & Services

including high resolution figures, can be found at:  
<http://pediatrics.aappublications.org/content/142/2/e20172618>

### References

This article cites 26 articles, 12 of which you can access for free at:  
<http://pediatrics.aappublications.org/content/142/2/e20172618#BIBL>

### Subspecialty Collections

This article, along with others on similar topics, appears in the following collection(s):

#### Advocacy

[http://www.aappublications.org/cgi/collection/advocacy\\_sub](http://www.aappublications.org/cgi/collection/advocacy_sub)

#### Federal Policy

[http://www.aappublications.org/cgi/collection/federal\\_policy\\_sub](http://www.aappublications.org/cgi/collection/federal_policy_sub)

### Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:

<http://www.aappublications.org/site/misc/Permissions.xhtml>

### Reprints

Information about ordering reprints can be found online:

<http://www.aappublications.org/site/misc/reprints.xhtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



# PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

## **Federal Parity and Spending for Mental Illness**

Alene Kennedy-Hendricks, Andrew J. Epstein, Elizabeth A. Stuart, Rebecca L. Haffajee, Emma E. McGinty, Alisa B. Busch, Haiden A. Huskamp and Colleen L. Barry

*Pediatrics* 2018;142;

DOI: 10.1542/peds.2017-2618 originally published online July 23, 2018;

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://pediatrics.aappublications.org/content/142/2/e20172618>

Data Supplement at:

<http://pediatrics.aappublications.org/content/suppl/2018/07/18/peds.2017-2618.DCSupplemental>

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2018 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

