

# Predictors of adequate depression treatment among Medicaid-enrolled youth

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## Abstract

**Purpose** To determine if Medicaid-enrolled youth with depressive symptoms receive adequate acute treatment, and to identify the characteristics of those receiving inadequate treatment.

**Methods** We used administrative claims data from a Medicaid-enrolled population in a large urban community to identify youth aged 6–24 years who started a new episode of treatment for a depressive disorder between August 2006 and February 2010. We examined rates and predictors of minimally adequate psychotherapy (four visits in first 12 weeks) and pharmacotherapy (filled antidepressant prescription for 84 of the first 144 days) among youth with a new treatment episode during the study period ( $n = 930$ ).

**Results** Fifty-nine percent of depressed youth received minimally adequate psychotherapy, but 13 % received minimally adequate pharmacotherapy. Youth who began their treatment episode with an inpatient psychiatric stay for

depression and racial minorities were significantly less likely to receive minimally adequate pharmacotherapy and significantly more likely to receive inadequate overall treatment.

**Conclusions** While the majority of youth appear to be receiving minimally adequate acute care for depression, a substantial number are not. Given current child mental health workforce constraints, efforts to substantially improve the provision of adequate care to depressed youth are likely to require both quality improvement and system redesign efforts.

**Keywords** Depression · Child and adolescent · Therapy · Medication · Quality of care

## Introduction

Depression in childhood is common and disabling [1, 2], with an estimated 15–20 % of children experiencing a depressive disorder by the age of 18 [1]. Child and adolescent depression is associated with a range of negative academic, social, and health outcomes, including adult depression, suicide, substance abuse, pregnancy, early parenthood, and impaired social and school functioning [1, 3–9]. Fortunately, effective interventions for depressed youth exist, and they can involve a range of treatment options including psychosocial interventions, pharmacologic interventions, or a combination of the two [10, 11].

Childhood depression affects all segments of society, but given the higher rates of depression in youth insured by Medicaid than seen in other youth populations [12, 13], it is especially important to understand the depression treatment provided to Medicaid-enrolled youth. These youth face many stressors that can increase the risk of depression and mental health disorders, such as living in communities with

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high rates of poverty and community violence, being personally exposed to violence and abuse, and living in families with higher rates and greater severity of mental illness [14]. Medicaid-enrolled youth with juvenile justice and/or child welfare system involvement may be at particularly high risk, as studies have found they face even higher rates of mental health disorders [15–17]. For these reasons, it is essential that publically insured youth suffering from depressive disorders receive appropriate care. However, there is currently a paucity of data about Medicaid-enrolled youth's receipt of minimally adequate depression care needed to inform efforts to improve care for this vulnerable population.

To better understand the treatment of Medicaid-enrolled depressed youth, in this paper we examine whether Medicaid-enrolled youth starting treatment for depression receive minimally adequate outpatient depression treatment during the acute treatment period. We also report on the overall rate of minimally adequate care, and examine the association between sociodemographic factors, clinical factors and the receipt of minimally adequate care. Additionally, we explore if there are specific differences in minimally adequate care among children involved in the child welfare and juvenile justice systems. We hypothesize that, consistent with findings in studies of adults initiating treatment for depression, boys, racial/ethnic minority youth, and youth living in rural communities will have lower rates of minimally adequate care than other youth [18–21].

## Methods

We integrated diverse data sources including (1) claims data for Medicaid behavioral health specialty services provided by mental health and substance abuse providers, (2) data from Allegheny County's Department of Human Services integrated data warehouse on child welfare and juvenile probation services and programs, and (3) state provided pharmacy data. Using these sources, we identified 930 youth aged 6–24 who started a new episode of

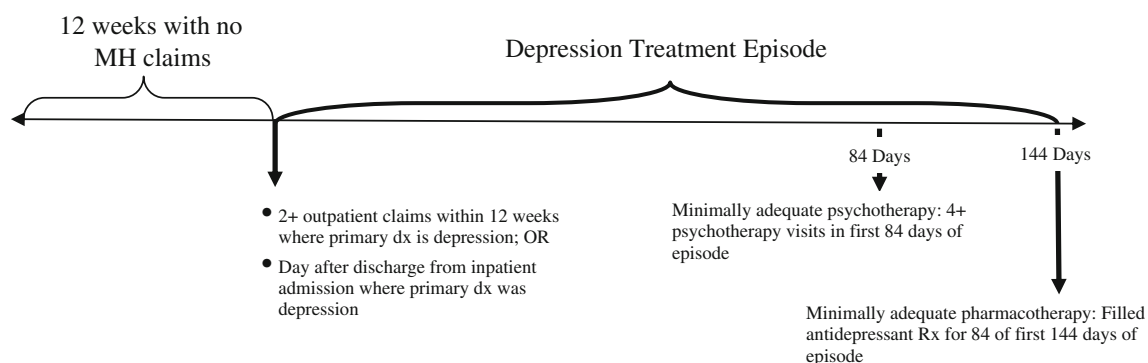
depression treatment between August 2006 and February 2010.

Consistent with studies of adults, youth started a new depression treatment episode when they (1) received two or more outpatient behavioral health services on different days in a 12-week period with a primary depressive diagnosis of major depression, dysthymia, or depressive disorder NOS or (2) were discharged from a psychiatric hospital with a primary depressive diagnosis. The first outpatient service or the day of discharge was considered the index visit. The acute depression treatment period was defined as ending 144 days after the index visit or with any event that would have prevented the youth from receiving outpatient care (e.g., inpatient stay). Depression treatment was categorized as a new episode if a youth had not received any behavioral health services or antidepressant medication in the 2 months prior to the first service with a diagnosis of depression observed between August 2006 and February 2010 (Fig. 1). If a youth had multiple new treatment episodes for depression, we used the first one observed during that period.

We excluded youth who had received a service with a primary diagnosis of schizophrenia, schizoaffective disorder, or bipolar I disorder in the year prior to the index visit or at any point during the depression treatment episode. We excluded dually eligible youth who had Supplemental Security Income with Medicare since Medicaid claims would not reflect all of the treatment they received. We also excluded youth who had fewer than 90 days of Medicaid eligibility in the 144 days following the index visit since these individuals would not be eligible to receive mental health services during the major part of the study timeframe. The study was conducted in compliance with the University of Pittsburgh IRB.

## Independent variables

Sociodemographic variables including age, gender, race, and Medicaid eligibility category were obtained from the state's membership and eligibility files. Race/ethnicity was categorized as white or minority. Age was categorized as



**Fig. 1** Depression treatment episodes

6–11 (pre-adolescent), 12–17 (adolescent), or 18–24 (transition age, a period of increased attention as youth “age-out” of child serving systems into adult service systems). Consistent with other analyses of Medicaid-enrolled individuals [22], we categorized individuals into Medicaid eligibility categories according to whether they were Medicaid-eligible as a result of general assistance, medical or mental health disability (e.g., Supplemental Security Income (SSI)), or income (e.g., Temporary Assistance to Needy Families (TANF)). Youth were categorized as being involved with the child welfare system if they had received child welfare services at any point during the depression treatment episode, and were categorized as being involved with juvenile justice if they had any juvenile justice services during their depression treatment episode.

Variables measuring prior inpatient psychiatric admissions and use of behavioral services for substance abuse were developed using behavioral health claims data. Youth were categorized as having a prior inpatient psychiatric admission if they had an inpatient psychiatric admission in the 12 months prior to the ‘clean period’ (i.e., 3–15 months prior to the start of the depression treatment episode). Youth were categorized as having a comorbid anxiety disorder, Attention Deficit Hyperactivity Disorder (ADHD), or oppositional defiant disorder if they had two or more outpatient behavioral health services or one or more inpatient services with a diagnosis of an anxiety disorder, ADHD, or oppositional defiant disorder, respectively. Youth were categorized as having prior substance abuse treatment if they had received any substance abuse treatment services in the 12 months prior to the start of the depression treatment episode. In addition, we categorized youth based on the type of service use that qualified them for a current depression treatment episode: inpatient, outpatient with the same provider, and outpatient with different providers for the two episode-initiating visits.

#### Dependent variables

Child depression guidelines and practice parameters call for treatment of adequate duration of psychotherapy and/or medication [10, 11, 23], but to the best of our knowledge, these have not been clearly operationalized in the way that has occurred in the adult literature. Therefore, consistent with studies of depression quality of care in adults, [18] we defined minimally adequate psychotherapy during the acute treatment period as four or more individual, group, or family psychotherapy visits during the first 84 days (12 weeks) of a depression treatment episode [18, 24, 25]. We defined minimally adequate pharmacotherapy during the acute treatment period as having a filled prescription for an antidepressant for 84 of the 144 days following the index visit, a modification of the Healthcare Effectiveness

Data and Information Set (HEDIS) acute antidepressant treatment, which measures appropriate pharmacotherapy as a filled prescription for an antidepressant medication on 84 out of the first 114 days of treatment [26]. Since depression treatment episodes could begin with either an outpatient visit or discharge from an inpatient stay, youth initiating treatment for depression may not initially see a prescribing physician (i.e., the index visit may be with a clinical social worker). To account for any lag time between having a visit with a non-physician mental health worker, being referred to a prescribing physician (e.g., psychiatrist or primary care physician), and filling a prescription, we extended the timeframe by 30 days (from 114 days, as per the HEDIS measure, to 144 days).

Adequate combined treatment was defined as having both adequate psychotherapy and adequate pharmacotherapy during the acute treatment period, while inadequate overall treatment was defined as having neither adequate psychotherapy nor adequate pharmacotherapy during the acute treatment period.

#### Analyses

To determine patterns of behavioral health care and antidepressant medication use during a new episode of depression treatment, we examined the rate of minimally adequate psychotherapy, minimally adequate pharmacotherapy, and inadequate overall treatment for the overall population and for independent variable groups. We used multiple logistic regression models to determine which covariates were associated with receiving minimally adequate psychotherapy, minimally adequate pharmacotherapy, and inadequate treatment. For each outcome, the final model included all independent variables, such that assessment of the effect of each individual covariate controlled for the effects of all other measured covariates. Results were considered significant at the  $p < 0.05$  level. All analyses were performed using the Statistical Analysis System (SAS), version 9.2 [27].

## Results

### Sample characteristics and service utilization

We identified 930 youth starting treatment for depressive disorders. Approximately 62 % were females ( $n = 577$ ), the majority were 12–17 years old ( $n = 552$ ; 59.4 %), with 26 % between the ages of 18–24 ( $n = 241$ ), and 15 % ( $n = 137$ ) between the ages of 6–11 (Table 1). The majority were Medicaid eligible based on income ( $n = 635$ ; 68.3 %), approximately half were racial/ethnic minorities ( $n = 469$ ; 50.3 %), and relatively few were

**Table 1** Sociodemographic and clinical characteristics of Medicaid-enrolled youth initiating care for depressive disorders

	<i>N</i>	% of youth
Total	930	
Gender		
Male	353	38.0
Female	577	62.0
Race		
White	461	49.6
Minority	469	50.3
Age		
6–11	137	14.7
12–17	552	59.4
18–24	241	25.9
Medicaid eligibility		
Disability	295	31.7
Income	635	68.3
Child welfare		
No	889	95.6
Yes	41	4.4
Juvenile justice		
No	906	97.4
Yes	24	2.6
Substance abuse		
No	836	89.9
Yes	94	10.1
Depression treatment initiated with hospitalization		
No	783	84.2
Yes	147	15.8
Major depression diagnosis		
No	606	65.2
Yes	324	34.8
Anxiety diagnosis		
No	850	91.4
Yes	80	8.6
ADHD diagnosis		
No	757	81.4
Yes	173	18.6
ODD diagnosis		
No	834	89.7
Yes	96	10.3

involved with the child welfare ( $n = 41$ ; 4.4 %) or juvenile justice systems ( $n = 24$ ; 2.6 %). Clinically, slightly more than a third were diagnosed with major depression ( $n = 324$ ; 34.8 %), approximately 10 % with dysthymia ( $n = 91$ ), and 55 % ( $n = 515$ ) with depressive disorder NOS. Sixteen percent initiated their depression treatment with a hospitalization ( $n = 147$ ), 10 % ( $n = 94$ ) had received prior substance abuse treatment, 19 % ( $n = 173$ )

had been diagnosed with comorbid ADHD, 10 % ( $n = 96$ ) with comorbid oppositional defiant disorder, and 9 % ( $n = 80$ ) with a comorbid anxiety disorder.

#### Minimally adequate psychotherapy

Fifty-nine percent of Medicaid-enrolled youth starting treatment for a depressive episode had four or more psychotherapy visits in the first 12 weeks of the episode (Table 2). Transitional age youth over the age of 18 were significantly less likely to receive adequate psychotherapy than younger children (47 vs. 63 % in 12–17 year olds, 66 % in 6–11 year olds), and youth starting their treatment with a hospitalization were significantly less likely to receive adequate psychotherapy than those starting depression treatment in a non-inpatient setting (39 vs. 63 %; aOR 0.31; CI 0.20–0.46). We also found that youth Medicaid eligible based on income were significantly more likely to receive adequate psychotherapy than those Medicaid eligible based on disability (64 vs. 50 %; aOR 1.70; CI 1.26–2.30), as were youth with a diagnosis of major depression (63 vs. 58 %; aOR 1.49; CI 1.10–2.02). There were no significant differences in rates of adequate psychotherapy by gender, race, presence of a comorbid mental health disorder, or involvement in the child welfare or juvenile justice systems.

#### Minimally adequate antidepressants

Only 12.8 % ( $n = 121$ ) of Medicaid-enrolled youth starting treatment for a depressive episode had a filled prescription for an antidepressant medication for at least 84 days (12 weeks) of the 144 days following the index visit (Table 2). Thirty-seven percent ( $n = 377$ ) of youth received any antidepressant medications (data not shown), and of the 377 receiving any antidepressants, 32 % ( $n = 121$ ) received an antidepressant medication for at least 84 days (12 weeks) of the 144 days following the index visit. Racial/ethnic minority youth were significantly less likely to receive minimally adequate pharmacotherapy than Caucasians (11 vs. 15 %; aOR 0.58; CI 0.38–0.88). Youth who initiated depression treatment with a hospitalization were significantly more likely to receive adequate antidepressants than those who initiate treatment in a non-inpatient setting (27 vs. 10 %; aOR 3.24; CI 1.99–5.28), and individuals diagnosed with major depression were also significantly more likely to receive adequate pharmacotherapy (19 vs. 10 %; aOR 2.00; CI 1.32–3.03). There was no significant difference in receipt of adequate pharmacotherapy by gender, age, presence of a comorbid mental health disorder, or involvement in the child welfare or juvenile justice systems.

**Table 2** Treatment adequacy for depressive disorders: rates and results of multivariate logistic regression

	Minimally adequate psychotherapy		Minimally adequate pharmacotherapy		Inadequate treatment		Adequate psychotherapy and pharmacotherapy	
	%	Adjusted OR (95 % CI)	%	Adjusted OR (95 % CI)	%	Adjusted OR (95 % CI)	%	Adjusted OR (95 % CI)
<b>Gender</b>								
Male	58.9		12.7		36.0		7.65	
Female	59.6	0.95 (0.71–1.28)	12.8	1.03 (0.66–1.59)	37.4	1.15 (0.85–1.55)	9.88	1.34 (0.80–2.25)
<b>Race</b>								
White	62.5		14.8		32.8		10.0	
Minority	56.3	0.89 (0.67–1.17)	10.9	0.58 (0.38–0.88)*	41.0	1.31 (0.99–1.73)	8.1	0.73 (0.46–1.18)
<b>Age</b>								
6–11	65.7		8.0		33.6		7.3	
12–17	63.4	0.92 (0.60–1.40)	12.9	1.23 (0.61–2.49)	47.7	0.98 (0.64–1.49)	9.2	0.90 (0.43–1.90)
18–24	46.5	0.46 (0.29–0.75)*	15.4	1.63 (0.76–3.50)	33.0	1.72 (1.07–2.77)**	9.5	0.91 (0.39–2.12)
<b>Medicaid eligibility</b>								
Disability	50.2		12.9		44.4		7.5	
Income	63.6	1.70 (1.26–2.30)**	12.8	0.94 (0.60–1.46)	33.4	0.64 (0.47–0.87)***	9.8	1.19 (0.70–2.03)
<b>Child welfare</b>								
No	59.4		12.7		37.0		9.1	
Yes	58.5	0.77 (0.39–1.50)	14.6	0.99 (0.37–2.65)	34.2	1.04 (0.52–2.07)	7.3	0.50 (0.14–1.83)
<b>Juvenile justice</b>								
No	59.7		12.7		36.8		9.2	
Yes	45.8	0.72 (0.30–1.75)	16.7	1.68 (0.52–5.51)	41.7	0.93 (0.38–2.24)	4.2	0.55 (0.07–4.37)
<b>Substance abuse</b>								
No	60.2		12.4		36.0		8.6	
Yes	52.1	1.03 (0.64–1.67)	16.0	0.81 (0.42–1.56)	44.7	1.17 (0.72–1.88)	12.8	1.24 (0.60–2.56)
<b>Depression treatment initiated with hospitalization</b>								
No	63.2		10.2		34.1		7.5	
Yes	38.8	0.31 (0.20–0.46)***	26.5	3.24 (1.99–5.28)***	51.7	2.34 (1.58–3.48)***	17.0	2.25 (1.28–3.95)**
<b>Major depression diagnosis</b>								
No	57.6		9.6		36.8		6.4	
Yes	62.7	1.49 (1.10–2.02)**	18.8	2.00 (1.32–3.03)**	32.4	0.63 (0.46–0.85)*	13.9	2.10 (1.30–3.40)**
<b>Anxiety diagnosis</b>								
No	58.9		11.9		37.2		8.0	
Yes	63.8	1.35 (0.81–2.26)	22.5	1.54 (0.84–2.82)	33.8	0.85 (0.51–1.42)	20.0	2.14 (1.13–4.04)*
<b>ADHD diagnosis</b>								
No	59.4		12.0		37.1		8.6	
Yes	59.0	1.10 (0.75–1.61)	16.2	1.35 (0.80–2.26)	35.8	0.87 (0.60–1.28)	11.0	1.33 (0.73–2.43)
<b>ODD diagnosis</b>								
No	58.9		12.9		37.2		9.0	
Yes	63.5	1.37 (0.84–2.23)	11.5	0.74 (0.36–1.52)	34.4	0.81 (0.50–1.32)	9.4	0.92 (0.42–2.02)

\*  $p < 0.05$ \*\*  $p < 0.01$ \*\*\*  $p < 0.001$ 

Adequate combined treatment and inadequate overall treatment

Only 9 % of youth starting treatment for depressive disorders received adequate combined treatment. Rates of

adequate combined treatment were significantly higher in youth who initiated depression treatment with a hospitalization compared with those who initiated treatment in a non-inpatient setting (17 vs. 8 %; aOR 2.25; CI 1.28–3.95), for youth with a diagnosis of major depression versus youth

without such a diagnosis (14 vs. 6 %; aOR 2.10; CI 1.30–3.40), and for youth with a comorbid anxiety disorder compared to those without such a comorbidity (20 vs. 8 %; aOR 2.14; CI 1.13 to 4.04).

Thirty-seven percent of youth starting treatment for depressive disorders received inadequate overall treatment, defined as receiving neither adequate psychotherapy nor adequate pharmacotherapy (Table 2). Rates of inadequate overall treatment were significantly higher in youth who initiated depression treatment with a hospitalization compared with those who started depression treatment in a non-inpatient setting (52 vs. 34 %; aOR 2.34; CI 1.58–3.48), and in transition age youth versus youth 6–11 years old (aOR 1.72, 95 % CI 1.07–2.77). Youth diagnosed with major depression were significantly less likely to receive inadequate overall treatment compared to youth with a depression diagnosis other than major depression (32 vs. 37 %; aOR 0.63; CI 0.46–0.875), as were youth Medicaid eligible based on income compared to youth Medicaid eligible based on disability (33 vs. 44 %; aOR 0.64; CI 0.47–0.87). There were no significant differences in receipt of inadequate overall treatment by gender, involvement in the child welfare or juvenile justice systems, or presence of a comorbid mental health disorder.

## Discussion

We found that approximately 63 % of Medicaid-enrolled youth starting treatment for a depressive episode in specialty mental health care settings received minimally adequate care during the acute treatment period. Among those diagnosed with major depression, the 60 % receiving minimally adequate care was slightly lower than the rate of 70 % observed in a comparable population of Medicaid-enrolled adults diagnosed with major depression [18]. More than half the youth (59 %) were receiving minimally adequate psychotherapy, but only 13 % were receiving minimally adequate pharmacotherapy, patterns paralleling what has been observed in adults. Controlling for other factors, we found that youth diagnosed with major depression were significantly more likely to receive both adequate psychotherapy and pharmacotherapy than youth with other depressive disorders. Consistent with our findings, modest rates of quality care have been reported for youth receiving treatment for ADHD, conduct disorder, and major depression in public mental health clinics [28], emphasizing the importance of interventions to improve the quality of care provided to youth with mental health disorders.

We found that 48 % of transitional age youth were receiving inadequate overall treatment, with significantly higher rates of minimally adequate psychotherapy among

youth aged 18–24 compared with younger children and adolescents. There has been increasing concern about the mental health care of the estimated 1–3 million transitional age youth in the US with serious emotional disorders [29–37]. Many have recently graduated from schools that may have provided important support and encouragement for them to receive mental health care [38]. Others will have recently aged out of special education, juvenile justice, and child welfare services where screening for mental health problems is common [38, 39], and formal linkages to mental health specialty services exist in many communities [40]. Such formal linkages are common in the region in which these children reside [41], and are likely responsible for rates of adequate depression treatment in children involved in the child welfare and juvenile justice system that are comparable to rates seen in children not involved in those systems.

We found substantial racial disparities in the rates of minimally adequate pharmacotherapy for depression, with minority youth significantly less likely to receive adequate pharmacotherapy than white children. This finding is consistent with previous studies documenting racial/ethnic disparities in mental health treatment access and quality [42–45]. These disparities may be due to differences in access to care [46], parent preferences, provider bias or discrimination, stigma, and/or the use of individuals outside the health care system to address mental health issues [13, 47–54]. Policy-level interventions to improve the quality of mental health care overall and to improve access to care for racial minorities [55], and patient-level educational interventions to reduce stigma in minority populations may help to reduce these disparities in the quality of youth depression treatment.

Youth initiating depression treatment with a psychiatric hospitalization had lower rates of minimally adequate care, a concern since such youth likely have more severe depression than those initiating treatment in outpatient settings. Despite being significantly more likely to receive adequate pharmacotherapy, the overall number of youth receiving adequate pharmacotherapy was not large enough to offset the lower rates of minimally adequate psychotherapy among a larger number of youth. Fifty-two percent of youth discharged from a hospital received minimally adequate overall treatment for depression. Low rates of timely follow-up care [56] and high rates of inadequate care [18] have been challenges previously documented in Medicaid-enrolled adults discharged from psychiatric hospitals. Despite the challenges, however, given the disruption in the lives of children and their families caused by psychiatric hospitalization [57], and appropriate follow-up care's association with lower rates of readmission [58], effort to improve the adequacy of outpatient depression treatment for this population is essential.



Our findings must be viewed within the context of the study's limitations. Our study relied primarily on administrative data. We do not know how these data correlate with patient report and medical chart abstraction data; however, Medicaid claim are subject to audit as well as edits to identify erroneous or incomplete claims at the time of submission, and published studies of the validity of Medicaid claims data have found generally high rates of agreement between medical records and claims data for both behavioral health [59, 60] and physical health patients [61]. Claims data also does not provide rich clinical and contextual information such as information on the nature or quality of care provided, such as whether the psychotherapy provided was evidence-based. The provision of adequate amounts of an ineffective intervention is unlikely to result in any better clinical outcomes than the provision of inadequate amounts of effective psychotherapy or medications. Behavioral health claims do not observe treatment services provided in physical health setting such as primary care, nor interventions for which no claim is submitted (e.g., services provided under county block grant funds, funded by charities, or for which a provider does not submit a bill), but the provision of such services is negligible in the communities in which these children live. We also have no information regarding support services that may be provided through the child's school or other child serving organization, but children in Allegheny County seldom receive formal treatment through such organizations due to the robust services available through Medicaid. We also only observe if a child receives juvenile justice or child welfare services during the treatment episode, and do not categorize children if they do not receive any of these services during the acute treatment episode period. This conservative approach may have resulted in our not identifying children chronically involved with those systems, and limited our power to find significant differences.

We examined the care of depressed children and adolescents in Allegheny County, an urban community with a relatively robust and well integrated child service and mental health provider system and generous Medicaid benefits. We do not know if our findings would generalize to other populations or regions, but speculate rates of adequate depression care would likely be lower in communities with less resources, fewer providers, or poorer integration [62]. Because of the racial composition of the community and limitations of the way race was recorded in the state administrative data, we were unable to report on differences in depression care quality by race and ethnicity beyond a simple comparison between white and minority. We could not observe depression treatment services provided outside of the behavioral health system, such as pastoral counseling, school mental health services or primary care settings, and children with depression may be

identified and receive an initial intervention in such systems. While such services may benefit children with depression, we note, however, that they are not commonly considered in assessing the adequacy of psychotherapy provided [25, 63]. We use a clean period of 2 months to identify youth starting a new treatment episode, and it is possible that doing so may misclassify youth who have an extended hiatus in treatment as starting a new treatment episode. We assess treatment during the initial acute treatment period only, and do not know if our findings would also apply to longer, more chronic treatment. We are unable to assess the content or quality of psychotherapy visits, and given that most mental health visits do not contain evidence-based treatment, it is likely that the number of youth receiving effective psychotherapy is low. [64, 65] Our measure of minimally adequate acute-phase psychotherapy also provides for a very low level of treatment intensity; however, even such minimal depression treatment has been associated with improved depression outcomes [25].

Despite these limitations, our finding that a significant proportion of depressed Medicaid-enrolled youth receive inadequate overall treatment suggests the need for quality improvement initiatives. Since depressed youth are at significant risk for adult depression and adverse sequelae, intervening to optimize care during childhood and adolescence may prevent or moderate some of these consequences as youth age into adulthood. Quality improvement initiatives are critical to improving the depression care for youth that is currently being provided in the behavioral health specialty system. However, given the substantial gap between the care currently being provided and what could optimally be provided, quality improvement efforts alone are likely to be insufficient, and innovative approaches to redesigning the delivery care system may also be provided. In addition to focusing on the specialty behavioral health system, such innovative efforts may involve e-health initiatives or the involvement of the primary care system. Internet-assisted depression treatment [66, 67], in person [68] or virtual [69] co-location of mental health specialty providers in primary care settings, the use of care managers [70], and academic detailing (modeled on pharmaceutical detailing in which physicians receive brief office visits from professionals discussing evidence-based treatment) [71] are some of the approaches now being examined to improve the delivery of psychotherapy and pharmacotherapy for youth with mental health disorders. Medicaid youth face significant barriers to receiving quality treatment for depressive disorders. It is essential that systems and policy makers use available information about factors that are related to quality of care and respond in a manner that ensures high-quality depression treatment for this vulnerable population.

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