Hospitalization Outcomes for Rural Children with Mental Health Conditions

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Objective To identify where rural children with mental health conditions are hospitalized and to determine differences in outcomes based on location of hospitalization.

Study design This is a retrospective cohort analysis of US rural children aged 0-18 years with a mental health hospitalization between January 1, 2014, and November 30, 2014, using the 2014 Agency for Healthcare Research and Quality's Nationwide Readmissions Database. Hospitalizations for rural children were categorized by children's hospitals, metropolitan non-children's hospitals, or rural hospitals. Associations between hospital location and outcomes were assessed with logistic (readmission) and negative binomial regression (length of stay [LOS]) models. Classification and regression trees (CART) were used to describe the characteristics of most common hospitalizations at a rural hospital.

Results Of 21 666 mental health hospitalizations of rural children, 20.6% were at rural hospitals. After adjustment for clinical and demographic characteristics, LOS was higher at metropolitan non-children's and children's hospitals compared with rural hospitals (LOS: adjusted rate ratio [aRR], 1.35 [95% CI 1.29-1.41] and 1.33 [95% CI, 1.25-1.41]; $P < .01$ for all). The 30-day readmission was lower at metropolitan non-children's and children's hospitals compared with rural hospitals (aOR, 0.73 [95% CI, 0.63-0.84] and 0.59 [95% CI, 0.48-0.71]; $P < .001$ for all). Adolescent males living in poverty with externalizing behavior disorder had the highest percentage of hospitalization at rural hospitals (69.4%).

Conclusions Although hospitalizations at children's and metropolitan non-children's hospitals were longer, patient outcomes were more favorable. *(J Pediatr 2021;229:240-6)*.

Hospitalizations for mental health conditions and suicidal ideation are common and are increasing for children. To illustrate, the proportion of hospitalizations at children's hospitals for suicidal ideation or attempt doubled between 2008 and 2015.[1] In addition, among all hospitalizations for children, a 5-fold overall increase has been reported for those with a mental health condition versus those without a mental health condition.[2] For hospitals, these trends represent a substantial shift from hospitalizations primarily for physical health conditions to hospitalizations either exclusively for or involving mental health conditions.[2] Insufficient outpatient mental health services are linked to poor mental health outcomes, including hospitalizations.[3-5] Thus, increasing hospitalization rates among children likely represent an acute exacerbation of an undiagnosed or undertreated mental health condition.

More than 80% of mental health hospitalizations for children occur at non-children's hospitals, and 40% of non-children's hospitals are located in rural areas.[6] Many rural hospitals are classified as critical access hospitals (≤25 beds, 1 physician or advanced care provider) where pediatric subspecialty health care services are limited.[7,8] Although some rural hospitals have associated psychiatric facilities, very few of these facilities offer services to children.[9,10] In addition, although many children seek care within rural hospitals,[6] shortages of mental health professionals within rural settings complicate the provision of mental health care in these areas.[11] In this way, physicians within rural hospital settings may feel ill-equipped and unsupported when diagnosing and treating children with acute, severe exacerbations of mental health conditions.

Although hospitalization rates for mental health conditions among children have increased overall, the characteristics and outcomes of mental health hospitalizations for rural children are not well described. Hospitalization represents a significant complication of mental health conditions and rural children represent

aRR	Adjusted rate ratio
CART	Classification and regression tree
CCC	Complex chronic conditions
HRISK	Hospital Resource Intensity Scores for Kids
LOS	Length of stay
NRD	Nationwide Readmissions Database

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a vulnerable and underserved population. To better understand the challenges of rural children and their mental health hospitalizations, our objectives were to identify where rural children with mental health conditions are hospitalized (children's hospital, metropolitan non-children's hospital, or rural hospital), and to determine differences in hospital resource utilization (eg, length of stay [LOS], readmissions) based on the location of hospitalization. We hypothesize that rural children admitted to rural hospitals will have worsened outcomes secondary to limited access to mental health services specifically targeted to this population.

Methods

We performed a US-based retrospective cohort analysis using the 2014 Agency for Healthcare Research and Quality Nationwide Readmissions Database (NRD).[12] The NRD is an administrative database that contains data on inpatient stays for all payors from 21 geographically diverse states (representing 49% of the US population) and is weighted to provide national estimates of readmissions for all US individuals. The NRD contains deidentified patient-level data with unique verified patient identifiers to track individuals within and across hospitals in a state.

Study Population

We included all rural children aged 0-18 years with an index admission with a principal diagnosis of a mental health condition starting on or after January 1, 2014, who were discharged by November 30, 2014. We used the urban-rural classification scheme developed by the National Center for Health Statistics, which groups counties using the Office of Management and Budget metropolitan and micropolitan assignments[13] and refines these assignments using information from the Rural-Urban Continuum Code and Urban Influence Code of the Economic Research Service of the US Department of Agriculture,[14,15] as well as county characteristics from the US Census Bureau population estimates.[16,17] For this study, children from nonmetropolitan (eg, micropolitan, noncore) counties were considered rural. We chose to include children to age 18 years because adult mental health services might not be tailored to fit the developmental needs of children.[18] Accordingly, we chose to categorize age groups corresponding to developmental stages (0-9 years, 10-14 years, or 15-18 years).[19] The 11-month time period allows for a 30-day readmission window for all included patients. To ensure accurate hospitalization resource use, patients who were transferred out to another hospital were excluded from the analysis.

Independent Variable

Hospitals were classified as metropolitan (large or small metropolitan areas) or rural (micropolitan, rural, and frontier areas) using a simplified adaptation of the Urban Influence Codes by the American Hospital Association.[20] Hospitals in metropolitan areas were further categorized as children's hospitals and metropolitan non-children's hospitals based on their volume of pediatric discharges, with hospitals in the top 10% of pediatric volume (3000+ yearly pediatric discharges, excluding normal newborns) classified as children's hospitals. All children's hospitals are located within metropolitan areas.

Dependent Variable

Primary outcomes included LOS (in days) and mental health readmissions (eg, 7 and 30 days following discharge) for each patient. LOS served as the primary measure of resource utilization owing to its close relationship with total hospitalization costs.[21] For readmissions, each individual hospitalization serves as an index admission, meaning that a readmission could also be an index admission. Our secondary outcome was the typology of children most likely to be treated for their mental health condition in a rural hospital.

Covariates

Rural children admitted with a principal mental health diagnosis were categorized by demographic characteristics. These included age group, sex, payor (public, private, or other), and median household income. ZIP code level median household income included within the NRD are reported as quartiles (quartile 1, $0-$39 999; quartile 2, $40 000-$50 999; quartile 3, $51 000-$65 999; and quartile 4, $66 000+).[12] We also categorized rural children by clinical characteristics, including the presence of coincident complex chronic conditions (CCCs) using the classification scheme described by Feudtner et al.[22] CCCs are defined as "any medical condition that can be reasonably expected to last at least 12 months (unless death intervenes) and to involve either several different organ systems or 1 organ system severely enough to require specialty pediatric care and probably some period of hospitalization in a tertiary care center."[22] To capture additional related clinical characteristics, we describe chronic conditions with the chronic condition indicator[23] and severity of the hospitalization using the Hospitalization Resource Intensity Scores for Kids (HRISK), a method that uses relative weights to specific diagnoses for children to determine the severity of illness.[24] The principal mental health diagnosis was categorized as attention deficit hyperactivity disorder, anxiety disorder, bipolar disorder, depression, eating disorders, externalizing behavioral disorder, personality disorder, psychosis, reaction disorders, substance abuse, and other, using *International Classification of Diseases, Ninth Revision, Clinical Modification* diagnosis codes according to a scheme developed by Zima et al.[2] The "other" category includes autism, developmental disorder, maternal mental illness, maternal substance abuse, miscellaneous, motor disorders, psychiatry-related neurologic disorder, and psychosomatic conditions. Suicidal ideation and attempt were identified using a hierarchical strategy described by Callahan et al.[25]

Statistical Analyses

Demographic and clinical characteristics of rural children hospitalized with mental health conditions were summarized using frequency with percentage or median with IQR.

Comparisons were made across hospital types with the χ^2 or Kruskal–Wallis test, as appropriate. Logistic regression (for binary outcomes) and negative binomial regression (for continuous outcomes) were used, adjusting for age, sex, payor, median household income, chronic condition indicator, medical complexity (CCCs), and severity, and were clustered on hospital using a random intercept.[22-24]

Finally, we used classification and regression tree (CART) modeling to determine demographic and clinical characteristics of rural children who were most likely to be hospitalized at a rural hospital for a mental health condition. CART is a modeling technique designed to elucidate high-order interactions associated with an outcome that is typically difficult to identify with traditional statistical models.[26] Data are recursively split into 2 groups based on the results of statistical tests performed on all possible candidate characteristics. A split on a specific characteristic is selected if it is significantly associated with the outcome and creates the highest purity among the resulting groups (ie, creates the greatest separation of the outcome). We used the entropy method to grow the tree and allowed the tree to grow to its full potential without pruning. All statistical analyses used the discharge weights for national projections in the NRD and were performed using SAS version 9.4 (SAS Institute, Cary, North Carolina), and P values < .05 were considered statistically significant. The Office of Research Integrity at Children's Mercy Hospital deemed this study exempt from Institutional Board Review owing to the use of deidentified data.

Table I. Hospital-level demographic and clinical characteristics for rural children hospitalized with a principal diagnosis of a mental health condition

Characteristics	Overall	Children's hospitals	Non-children's hospitals	Rural
Discharges, n (%)	21 666	4335 (20.0)	12 871 (59.4)	4459 (20.6)
Age category, n (%)				
≤9 y	2504 (11.6)	656 (15.1)	1572 (12.2)	276 (6.2)
10-14 y	8548 (39.5)	1728 (39.9)	5067 (39.4)	1753 (39.3)
15-18 y	10 614 (49.0)	1951 (45.0)	6233 (48.4)	2430 (54.5)
Sex, n (%)				
Female	12 585 (58.1)	2287 (52.8)	7701 (59.8)	2596 (58.2)
Payor, n (%)				
Public	12 083 (55.8)	2613 (60.3)	7189 (55.9)	2281 (51.1)
Private	8057 (37.2)	1300 (30)	4810 (37.4)	1946 (43.6)
Other	1525 (7.0)	421 (9.7)	871 (6.8)	232 (5.2)
Median household income, n (%)*				
Quartile 1	8914 (42.2)	2087 (49.4)	5290 (42.1)	1537 (35.3)
Quartile 2	8621 (40.8)	1500 (35.5)	5056 (40.3)	2065 (47.4)
Quartile 3	3175 (15.0)	484 (11.5)	1965 (15.7)	726 (16.7)
Quartile 4	421 (2.0)	152 (3.6)	242 (1.9)	27 (0.6)
CCC, n (%)	1480 (6.8)	369 (8.5)	918 (7.1)	193 (4.3)
HRISK, mean (SD)	0.83 (0.41)	0.91 (0.59)	0.82 (0.39)	0.80 (0.25)
Chronic conditions, n (%)				
0	438 (2.0)	170 (3.9)	220 (1.7)	48 (1.1)
1	3246 (15)	545 (12.6)	1888 (14.7)	812 (18.2)
2-3	11 244 (51.9)	2310 (53.3)	6486 (50.4)	2448 (54.9)
4-5	5609 (25.9)	1132 (26.1)	3432 (26.7)	1045 (23.4)
6-7	966 (4.5)	156 (3.6)	712 (5.5)	99 (2.2)
8+	163 (0.8)	22 (0.5)	133 (1.0)	8 (0.2)

P < .001 for all comparisons. The outcomes are calculated from weighted national estimates from the NRD. Data within the NRD are aggregated from 21 geographically diverse states representing 49% of the US population.
*Approximately 2.5% of encounters are missing data for median household income.

Results

Demographic and Clinical Characteristics

Nearly one-half (49.0%) of the 21 666 rural children hospitalized with a principal mental health diagnosis were age 15-18 years, and the majority (58.1%) were female. Most hospitalizations (55.8%) were covered by a public payor, and >80% of the children were in the 2 lowest quartiles of median household income (Table I). Approximately 1 in 5 (20.6%) rural patients were admitted to a rural hospital. Children hospitalized at rural hospitals had a higher proportion of patients aged 15-18 years (54.5%, compared with 48.4% at metropolitan non-children's hospitals and 45.0% at children's hospitals) and less public insurance (51.1%, compared with 55.9% at metropolitan non-children's hospitals and 60.3% at children's hospitals). Children hospitalized at rural hospitals had the lowest incidence of CCCs (4.3%, compared with 7.1% at metropolitan non-children's hospitals and 8.5% at children's hospitals) and lower mean severity (HRISK; mean [SD], 0.80 [0.25], compared with 0.82 [0.39] at metropolitan non-children's and 0.91 [0.59] at children's hospitals; all comparisons P < .001).

Hospitalizations of Rural Children at Children's, Metropolitan Non-Children's, and Rural Hospitals

Hospitalizations for suicidal intent were most common among rural children (n = 9165; 42%) of all nationally weighted principal mental health diagnoses (Table II; available at www.jpeds.com). More than one-half of admissions for externalizing behavior disorders (52.3%; 95% CI, 20.3%-84.3%), and one-third of hospitalizations for substance abuse (35.2%; 95% CI, 18.4%-51.9%) for rural children were in rural hospitals (Figure 1). The majority of rural children hospitalized with bipolar disorder or depression (48.9% [95% CI, 30.6%-67.2%] bipolar disorder and 70.3% [95% CI, 55.2%-85.4%] depression) were cared for in metropolitan non-children's hospitals. With the exception of children with a principal diagnosis of an externalizing behavior disorder, rural children with principal diagnosis of a mental health condition were most commonly hospitalized in metropolitan non-children's hospitals.

LOS and 30-Day Readmission for Rural Children Hospitalized in Children's, Metropolitan Non-Children's, and Rural Hospitals

Overall, the median LOS for children hospitalized with principal mental health diagnoses was 5 days (IQR, 4-7 days) (Table III; available at www.jpeds.com). The LOS varied by hospital location and pediatric volume; children hospitalized at children's hospitals had the longest LOS (6 days; IQR, 4-8 days) and those hospitalized at rural hospitals had the shortest (4 days; IQR, 3-6 days), indicating the greatest resource use in children's hospitals.

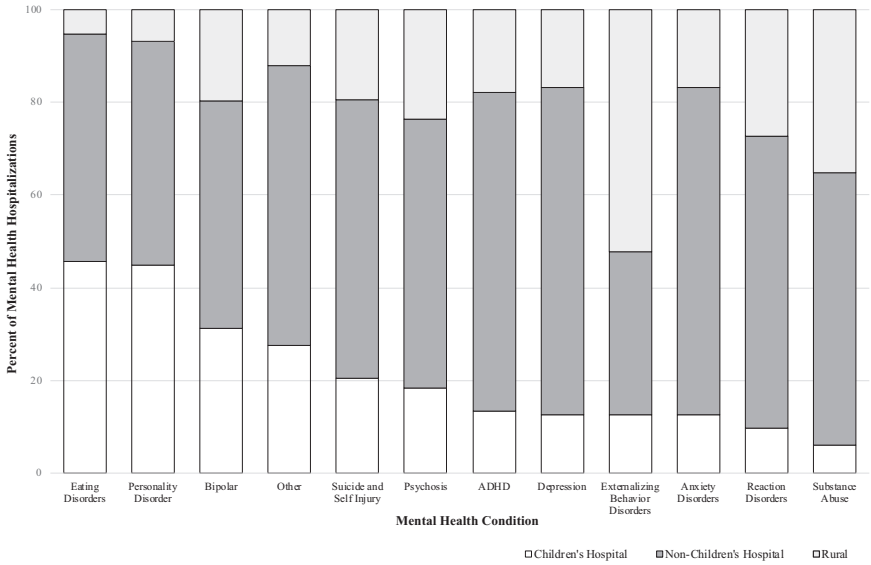

Figure 1. Principal mental health diagnoses among hospitalized rural children. Data are grouped by hospital type. Principal mental health diagnoses were categorized as ADHD, anxiety disorder, bipolar disorder, depression, eating disorders, externalizing behavioral disorder, personality disorder, psychosis, reaction disorders, substance abuse, and other, employing ICD-9-CM diagnosis codes according to a scheme developed by Zima, et al. The 'other' category includes autism, developmental disorder, maternal mental illness, maternal substance abuse, miscellaneous, motor disorders, psychiatry related neurologic disorder, and psychosomatic conditions. The outcomes are calculated from weighted national estimates from the Nationwide Readmissions Database. Data within the NRD are aggregated from 21 geographically diverse states representing 49% of the US population.

Children discharged from rural hospitals had the highest rate of 30-day readmissions (7.4%, compared with 5.6% from metropolitan non-children's hospitals and 4.4% from children's hospitals; $P < .001$).

aORs for LOS and 30-Day Readmissions for Rural Children Hospitalized at Children's, Non-Children's, and Rural Hospitals

After adjustment for age, sex, payor, median household income, CCC, HRISK, and number of chronic conditions, we describe a longer adjusted LOS at metropolitan non-children's and children's hospitals compared with rural hospitals. The adjusted rate ratio (aRR) for LOS was 1.35 (95% CI, 1.29-1.41; $P < .001$) for metropolitan non-children's hospitals and 1.33 (95% CI 1.25-1.41; $P < .001$) for children's hospitals (Table IV).

The adjusted odds of 30-day readmission were lower at metropolitan non-children's hospitals and children's hospitals compared with rural hospitals (aOR, 0.73 [95% CI, 0.63-0.84; $P < .001$] and 0.59 [95% CI, 0.48-0.71; $P < .001$], respectively). Hospitalization at non-children's and children's hospitals was also associated with lower readmissions at 7 days.

CART Analysis

We used CART modeling to describe the clinical and demographic features of children who are most likely to remain

Table IV. Adjusted outcomes for rural children hospitalized with a principal diagnosis of a mental health conditions, by hospital type

Outcomes	Children's hospitals	Non-children's hospitals	Rural
Index hospitalization			
LOS, aRR (95% CI)	1.33 (1.25-1.41) $P < .001$	1.35 (1.29-1.41) $P < .001$	Ref
Readmission for primary mental health*			
7-day readmission rate, aOR (95% CI)	0.64 (0.47-0.86) $P = .003$	0.71 (0.56-0.88) $P = .002$	Ref
30-day readmission rate, aOR (95% CI)	0.59 (0.48-0.71) $P < .001$	0.73 (0.63-0.84) $P < .001$	Ref

$P < .001$ for all comparisons. The outcomes are calculated from weighted national estimates from the NRD. Data within the NRD are aggregated from 21 geographically diverse states representing 49% of the US population. Models were adjusted for age, sex, payor, median household income, chronic condition indicator, medical complexity, severity using HRISK and clustered on hospital. Hospitals were first classified by location (metropolitan, rural). Metropolitan hospitals were then classified by the pediatric volume into children's hospitals (≥3000 discharges/year) and metropolitan non-children's hospitals (<3000 pediatric discharges/year).
*Includes January-November index encounters only.

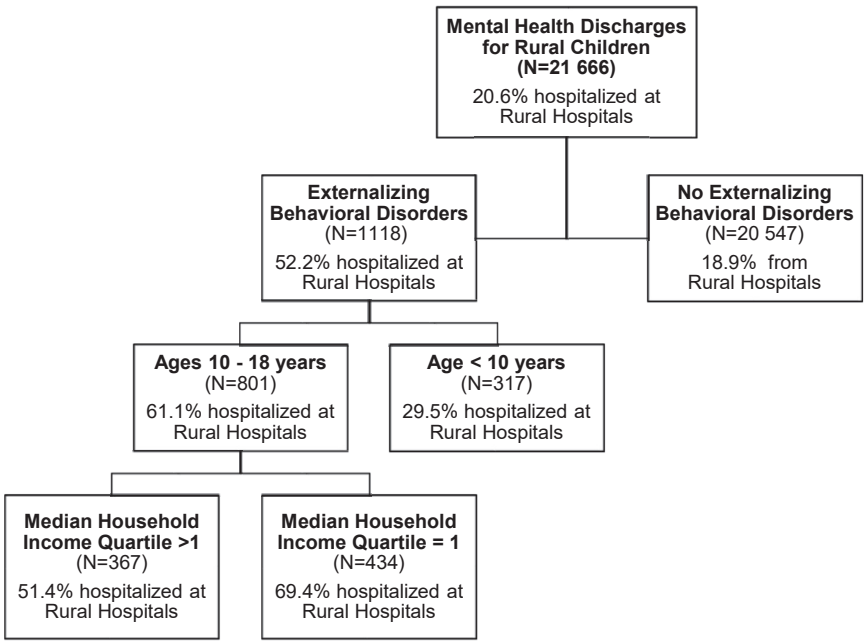

Figure 2. CART analysis describing characteristics of rural children hospitalized at rural hospitals with a primary mental health condition. The outcomes are calculated from weighted national estimates from the NRD. Data within the NRD are aggregated from 21 geographically diverse states representing 49% of the US population. All terminal nodes had a minimum of 100 unweighted observations, and splits were significant at $P < .05$.

hospitalized at rural hospitals (Figure 2). The CART model identified that males age >10 years with a diagnosis of externalizing behavior disorder and in the lowest quartile of household income had the highest percentage (69.4%) of hospitalization at rural hospitals. Male adolescents with externalizing behavior disorders in all other quartiles of household income had a 51.4% rate of hospitalization at rural hospitals.

Discussion

Approximately 20% of rural children hospitalized for mental health conditions were hospitalized in rural hospitals. Hospitalizations at rural hospitals were shorter, and readmissions originating from these hospitalizations were more likely. Adolescents with externalizing behavior disorders were most likely to be hospitalized in rural hospitals. These findings suggest that for rural children with mental health conditions, being hospitalized in rural hospitals is associated with an increased risk of repeat mental health crises.

This study found shorter hospitalizations with increased rates of readmission for children admitted to rural hospitals, which may highlight differences in mental health treatment for young people in rural hospitals. It is possible that access to mental health specialists may be a driver of these disparate outcomes. Children's hospitals are typically situated in urban areas, and most have access to mental health subspecialists, including child psychiatrists, developmental pediatricians, and social workers. Because of their size and urban location, metropolitan non-children's hospitals are likely to have access to mental health providers, but are less likely to have child mental health specialists on staff. Although access is likely better in both situations compared with rural hospitals, they do represent differences in care for children.

Many rural hospitals are critical access hospitals.[7,8] Critical access hospitals require that 1 physician be reachable (not necessarily present) and have fewer than 25 inpatient beds.[7] Primary care physicians are commonly employed within critical access hospitals to address the breadth of physical health presentations that may occur at these hospitals. Although the literature describes similar outcomes among adults and children with minor mental health conditions treated by primary care physicians or by mental health providers, this has not been studied in the inpatient setting, where acute and severe exacerbations of mental health are more common.[27-29] Child psychiatry consultation for acute mental health care could be provided within critical access hospitals via telemedicine; otherwise, patients may require transfer to a children's hospital. Because rural families live an average of 30 minutes from a critical access hospital[30] and hours from a children's hospital,[31] telemedicine may offer the best outcomes to both patients and their families. Early studies of the efficacy of telemedicine describe better access and patient satisfaction.[32-34] Future research to investigate the effectiveness of telemedicine for rural mental health care and initiatives to implement telemedicine for mental health is likely to benefit patients.

Mental health hospitalization represents a severe exacerbation of underlying chronic mental health issues and may be a

patient's first health care system encounter for a mental health concern.[35] These hospitalizations are a critical moment for clinicians to engage patients in treatment and to ensure their safety after hospital discharge. Our study has identified 2 categories of patients who are at greatest risk of poor outcomes after rural hospitalization: patients hospitalized with suicidal intent and adolescent males with externalizing behavior disorders. Externalizing behavior disorders are associated with a 6-fold greater odds of a fatal suicide attempt.[36]

Suicide is the second most common cause of death for young people aged 10-18 years and is more common among males and in rural areas.[37-40] Although we did not directly study suicide deaths, we found that readmissions are more common for children admitted to rural hospitals, raising a concern that these patients are at greater risk of repeat mental health crisis than patients in metropolitan hospitals. This elevated risk of repeat mental health crisis after treatment in a rural hospital might mean that some young people have suicidal crises that go untreated and could result in death, which is consistent with the higher rate of suicide deaths among rural Americans.[41] Our findings underscore the public health importance of initiatives to ensure that rural Americans have access to high-quality crisis mental health services.

We show that rural male adolescents with externalizing behavior disorders were the most likely to be admitted to rural hospitals. Their clinical and demographic characteristics align with risk factors for suicide death and may represent a missed opportunity to tailor interventions to a specific population known to be at risk for significant mortality due to mental illness.[36] In addition, children with externalizing behavior disorders may have coexisting major depression.[42,43] For young people with these risk factors, consultation with a child psychiatrist may improve treatment plans (eg, initiation of cognitive behavioral therapy and pharmacotherapy), and general clinicians and mental health specialists working in or collaborating with rural hospitals should be familiar with the specific needs of this patient population.

The findings of this study should be interpreted in the context of several limitations. First, the NRD does not consistently report observation status hospitalizations. Although clinically similar, observation status may be assigned as an outpatient billing designation to patients hospitalized for <48 hours. Because the NRD is designed to capture inpatient (and not outpatient) stays, children hospitalized under observation status and quickly transferred to an acute care psychiatric facility might be missing from our analysis. Similarly, the NRD does not record patients seen in the ED and transferred or held in observation status and discharged. These missing patients represent a group of children at significant risk. Second, we are unable to determine the demographic and clinical characteristics of patients hospitalized within acute psychiatric hospitals, because this hospital type is not included in the NRD. Third, there may be differences between cases that go to children's and metropolitan non-children's hospitals and cases that go to rural hospitals that cannot be captured by *International Classification of Diseases* coding. In addition, we are unable to determine the exact access to psychiatric services at each hospital. It is possible that some rural hospitals do use telemedicine or proximal mental health providers. As such, the relationship between specific patient clinical characteristics and a hospital's ability to access to mental health consultative services should be the focus of future study. Fourth, mental health conditions can be difficult to diagnose in children of younger ages. We decided to include a wide range of age groups to capture the full extent of mental health conditions from childhood through adolescence. Ultimately, <2% of children aged <5 years were included in our sample. Fifth, we analyzed data from 2014, which will be several years old by the time of the study's publication. However, recent work demonstrates little change in the pattern of hospitalizations and readmissions between 2010 and 2016.[44] Finally, although accessing mental health services may be a protective factor against suicide death, other sociocultural factors outside the scope of this analysis also may encourage or hinder engagement with mental health care. Future work aimed at ensuring that mental health treatment plans align with social and cultural norms, including those of rural communities, may help promote access to mental health services for rural Americans. ■

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Table II. Principal mental health diagnoses among hospitalized rural children

Principal diagnosis	Overall discharges, N	Children's hospital, % (95% CI)	Non-children's hospitals, % (95% CI)	Rural, % (95% CI)
Suicide and self-injury	9165	20.5 (11.4-29.6)	59.9 (43.5-76.3)	19.6 (4.1-35.1)
Depression	4115	12.8 (5.6-20)	70.3 (55.2-85.4)	16.9 (3-30.9)
Bipolar	3113	31.4 (13.4-49.4)	48.9 (30.6-67.2)	19.7 (3.4-36.1)
Other	1600	27.5 (19.9-35)	60.5 (52.5-68.6)	12.0 (8.5-15.5)
Externalizing behavior disorders	1159	12.6 (2.1-23.2)	35.0 (9-61.1)	52.3 (20.3-84.3)
Reaction disorders	655	9.7 (2.3-17.1)	62.9 (38.3-87.4)	27.4 (3.3-51.5)
Anxiety disorders	551	12.6 (4.3-21)	70.5 (55.5-85.5)	16.9 (5.6-28.2)
ADHD	449	13.4 (2-24.9)	68.8 (46.5-91)	17.8 (0.9-34.8)
Psychosis	383	18.5 (8.4-28.5)	57.8 (39-76.6)	23.7 (3.1-44.3)
Substance abuse	290	6.2 (3-9.4)	58.6 (41.3-76)	35.2 (18.4-51.9)
Eating disorders	139	45.6 (16.8-74.3)	49.1 (20.4-77.7)	5.4 (0-15.8)
Personality disorder	46	44.8 (16.4-73.2)	48.4 (17.5-79.4)	6.8 (0-19.8)

Principal mental health diagnoses were categorized as ADHD, anxiety disorder, bipolar disorder, depression, eating disorders, externalizing behavioral disorder, personality disorder, psychosis, reaction disorders, substance abuse, and other, using International Classification of Diseases, Ninth Revision, Clinical Modification diagnosis codes according to a scheme developed by Zima et al.[2] The "other" category includes autism, developmental disorder, maternal mental illness, maternal substance abuse, miscellaneous, motor disorders, psychiatry related neurologic disorder, and psychosomatic conditions. The outcomes are calculated from weighted national estimates from the NRD. Data within the NRD are aggregated from 21 geographically diverse states representing 49% of the US population.

Table III. Unadjusted outcomes for rural children hospitalized with a principal diagnosis of a mental health condition, by hospital type

Outcomes	Overall	Children's hospitals	Non-children's hospitals	Rural
LOS, median (IQR)*	5 (4-7)	6 (4-8)	5 (4-7)	4 (3-6)
7-day readmission rate, n (%)†	455 (2.1)	78 (1.8)	257 (2.0)	120 (2.7)
30-day readmission rate, n (%)*	1235 (5.7)	191 (4.4)	721 (5.6)	330 (7.4)

The outcomes are calculated from weighted national estimates from the NRD. Data in the NRD are aggregated from 21 geographically diverse states representing 49% of the US population. Patient disposition: home (routine and with home health), transfer to acute care (transfer to short-term hospital), or transfer to post-acute care (transfer to psychiatric or another type of facility).
*$P < .001$.
†$P = .008$.