

ORIGINAL ARTICLE

Pediatrics

# Association of emergency department characteristics with presence of recommended pediatric-specific behavioral health policies

Ashley A. Foster MD<sup>1</sup> | Jennifer A. Hoffmann MD, MS<sup>2,3</sup> | Rachel Crady MS<sup>4</sup> |  
Hilary A. Hewes MD<sup>4</sup> | Joyce Li MD, MPH<sup>5,6</sup> | Lawrence J. Cook PhD<sup>4</sup> |  
Susan Duffy MD, MPH<sup>7</sup> | Mark Johnson MPA<sup>8</sup> | Merritt Schreiber PhD<sup>9,10</sup> |  
Mohsen Saidinejad MD, MBA<sup>9,10</sup>

<sup>1</sup>Department of Emergency Medicine, University of California, San Francisco, California, USA

<sup>2</sup>Division of Emergency Medicine, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois, USA

<sup>3</sup>Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA

<sup>4</sup>Department of Pediatrics, University of Utah, Salt Lake City, Utah, USA

<sup>5</sup>Division of Emergency Medicine, Boston Children's Hospital, Boston, Massachusetts, USA

<sup>6</sup>Department of Emergency Medicine and Pediatrics, Harvard Medical School, Boston, Massachusetts, USA

<sup>7</sup>Department of Emergency Medicine, Brown University, Providence, Rhode Island, USA

<sup>8</sup>Alaska EMS for Children Advisory Committee, Anchorage, Alaska, USA

<sup>9</sup>David Geffen School of Medicine at UCLA, Los Angeles, California, USA

<sup>10</sup>The Lundquist Institute for Biomedical Innovation at Harbor UCLA, Torrance, California, USA

## Correspondence

Ashley Foster, Department of Emergency Medicine, University of California, 550 16th Street, Box 0649, San Francisco, CA 94143, USA.  
Email: [Ashley.Foster@ucsf.edu](mailto:Ashley.Foster@ucsf.edu)

Abstract presented at the American College of Emergency Physicians Scientific Assembly, Philadelphia PA, USA, October 2023. Poster presented at the Pediatric Academic Societies Meeting, Toronto, Canada, May 2024.

## Funding information

EMSC Data Center; Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS), Grant/Award Numbers: U11MC43532, U11MC45814; EMSC Innovation and

## Abstract

**Objectives:** In the United States, pediatric emergency department (ED) visits for behavioral health (BH) are increasing. We sought to determine ED-level characteristics associated with having recommended BH-related policies.

**Methods:** We conducted a retrospective serial cross-sectional study of National Pediatric Readiness Project assessments administered to US EDs in 2013 and 2021. Changes in responses related to BH items over time were examined. Multivariable logistic regression models examined ED characteristics associated with the presence of specific BH-related policies in 2021.

**Results:** Of 3554 EDs that completed assessments in 2021, 73.0% had BH-related policies, 66.5% had transfer guidelines for children with BH issues, and 38.6% had access to BH resources in a disaster. Of 2570 EDs that completed assessments in both 2013 and 2021, presence of specific BH-related policies increased from 48.6% to 72.0%

Supervising Editor: Mike Wells, MBBCh, PhD

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2024 The Author(s). *Journal of the American College of Emergency Physicians Open* published by Wiley Periodicals LLC on behalf of American College of Emergency Physicians.

Improvement Center, Grant/Award Number: U07MC37471; Pediatric Pandemic Network

and presence of appropriate transfer guidelines increased from 56.2% to 64.9%. The adjusted odd ratios (aORs) of having specific BH-related policies were lower in rural (aOR 0.73; 95% confidence interval [CI] 0.57, 0.92) and remote EDs (aOR 0.65; 95% CI 0.48, 0.88) compared to urban EDs; lower among EDs with versus without trauma center designation (aOR 0.80; 95% CI 0.67, 0.95); and higher among EDs with a nurse and physician pediatric emergency care coordinator (PECC) (aOR 1.89; 95% CI 1.54, 2.33) versus those without a PECC.

**Conclusion:** Although pediatric readiness for BH conditions increased from 2013 to 2021, gaps remain, particularly among rural EDs and designated trauma centers. Having nurse and physician PECCs is a modifiable strategy to increase ED pediatric readiness pertaining to BH.

#### KEYWORDS

behavioral health, mental health, pediatric readiness, pediatrics, policy

## 1 | INTRODUCTION

### 1.1 | Background

Most children in the United States (US) seek emergency care at non-children's hospitals, where pediatric-specific resources vary.<sup>1-3</sup> The National Pediatric Readiness Project (NPRP), a quality improvement initiative sponsored by the Emergency Medical Services for Children in partnership with several national organizations, has strived over the last two decades to ensure that all US emergency departments (EDs) can provide high-quality emergency care to children.<sup>1,4,5</sup> A large component of this effort emphasizes adhering to specific pediatric care guidelines, which outline recommended equipment, policies, procedures, and personnel that should be present in EDs that provide care to children.<sup>5-7</sup> These guidelines recommend designating both a nurse and physician pediatric emergency care coordinator (PECC). Sometimes called a pediatric champion, this individual serves an administrative role with responsibilities specific to pediatric care, including ensuring compliance with national pediatric care guidelines.<sup>4,5</sup> High compliance with pediatric emergency care guidelines, also known as high pediatric readiness, has been associated with lower mortality for children with critical illness and injury.<sup>8-11</sup>

Children with behavioral health (BH) conditions, inclusive of mental health and substance use disorders,<sup>12</sup> often utilize the ED as a safety net when in crisis.<sup>13</sup> The COVID-19 pandemic further escalated BH crisis for youth, resulting in prolonged stays in the ED, while awaiting evaluation and psychiatric inpatient placement (ED boarding).<sup>13-16</sup> Although the highest increase in BH ED visits by youth in the last decade has been in urban areas, rural areas have also experienced substantial rises in BH visits.<sup>17</sup> Challenges in caring for youth with BH symptoms in the ED include ED boarding, limited availability of mental health professionals, ED staff discomfort managing children with BH

conditions, and development of worsening BH symptoms while in the ED.<sup>3,18-22</sup>

### 1.2 | Importance

Behavioral-health specific policies and standardized processes to care for youth with BH conditions that integrate evidence-based practice can improve care quality. For instance, screening protocols have increased identification of children at risk of suicide, and standardized algorithms have decreased use of physical restraint for children with acute agitation.<sup>23-25</sup> NPRP-endorsed guidelines for pediatric emergency care published in 2018 and assessed in 2021 recommend that all EDs have presence of: (1) BH issues policies, procedures, or plans for children of all ages; (2) a written guideline for the transfer of children with BH issues out of participant's facility to an appropriate facility; (3) child maltreatment policies, procedures, or plans; and (4) access to BH resources for children in the event of disaster.<sup>5</sup> In a 2013 assessment of national ED pediatric readiness performance, fewer than half of responding EDs had these BH-related and social policies in place, and rural EDs were less likely to have these policies.<sup>26</sup> A subsequent NPRP assessment, administered in 2021, showed that overall readiness of US EDs to care for children increased slightly from 2013.<sup>27</sup> However, the presence of recommended BH policies within US EDs during recent years has not been well characterized.

### 1.3 | Goals of this investigation

We aimed to evaluate ED-level characteristics associated with the presence of NPRP recommended pediatric BH-related assessment items in 2021, and to evaluate changes in the percentage of EDs with BH-related assessment items and social policies from 2013 to 2021.

## 2 | METHODS

### 2.1 | Study design and data source

We conducted a retrospective serial cross-sectional study of two NPRP assessment surveys, administered from January–August 2013 to May–August 2021. The assessments consisted of 55 and 92 web-based questions, respectively, sent to all EDs across every US state and territory. Assessments were developed using a modified Delphi process based on national guidelines for the emergency care of children, previously described in the literature.<sup>1</sup> Questions were completed by ED leadership and assessed ED compliance with the national care guidelines.<sup>5,28</sup> The development and administration of both NPRP assessments, as well as characteristics of respondents and non-respondents, have been previously described.<sup>27,29</sup> This study was reviewed and approved by the Institutional Review Board at University of Utah.

### 2.2 | Data inclusion

Of the 5150 EDs where invitations were sent to complete the NPRP assessment in 2021, 3647 (70.8%) responded and 3554 (69.0%) completed all scored assessment items. Similarly, of the 5017 invitations which were sent to EDs to complete the NPRP assessment in 2013, 4149 (82.7%) EDs responded and 4146 (82.6%) completed all assessment items.<sup>1</sup> We analyzed all completed assessments from both time periods.

### 2.3 | Main outcome measures

The wording of a few assessment items was changed from 2013 to 2021 to align with the updates to national care guidelines. Overall domain scores, however, did not change between assessment periods. The BH items and social policies in 2013 assessment were: (1a) presence of a policy on care for children with social and mental health issues; (1b) written guideline for the transfer of children with social and mental health issues out of participant's facility to an appropriate facility; and (1c) presence of child maltreatment policies and procedures. Relevant items from the 2021 assessment were presence of: (1) BH issues policies, procedures, or plans for children of all ages; (2) a written guideline for the transfer of children with BH issues out of participant's facility to an appropriate facility; (3) child maltreatment policies, procedures, or plans; and (4) access to BH resources for children in the event of disaster. Hereafter, we will refer to the group of 2013 NPRP-recommended mental health and social policies (1a–1c) as "2013 BH-related and social policies," the group of 2021 NPRP-recommended BH and social policies (2a–2d) as "2021 BH-related and social policies," and the subset of presence of BH issues, policies, procedures, or plans from 2021 policies (2a) as "specific BH-related policies."

#### The Bottom Line

Through analysis of 2021 emergency department pediatric readiness assessment responses, we found that many emergency departments lack pediatric-specific behavioral health policies and guidelines, and remote and rural emergency departments and trauma centers were less likely to have recommended pediatric resources. When comparing 2013 and 2021 pediatric readiness assessment responses, the percentage of emergency departments with these important pediatric-specific behavioral health policies increased over time.

### 2.4 | Measurements

Hospital setting was classified by US Census Region<sup>30</sup> (urban, suburban, rural, or remote) using the 2013 US Department of Agriculture urban influence codes classification scheme.<sup>31</sup> ED characteristics were defined as follows. Total annual ED volume was described as quartiles (0–5799 patients, 5800–16,999 patients, 17,000–36,999 patients, and  $\geq 37,000$  patients). Annual pediatric volume was defined as low (<1800 patients), medium (1800–4999 patients), medium-high (5000–9999 patients), and high ( $\geq 10,000$  patients).<sup>1</sup> A composite variable representing both hospital and ED configuration was created: general hospital with a general ED, general ED with a separate pediatric ED, children's hospital (including stand-alone children's hospitals and children's hospitals within general hospitals, with any associated ED configuration), critical access hospital (with any associated ED configuration), and other (micro-hospitals, off-site hospitals or satellite EDs, freestanding EDs, and other hospital and ED configurations). Additional characteristics included Indian Health Service/Tribal ED; trauma center designation; the percentage of children living below the federal poverty level in the county where the hospital was located (categorized in quartiles); and presence of a PECC (nurse, physician, both).<sup>4</sup> The weighted pediatric readiness score, a measure of adherence to care guidelines on a scale of 0–100 points, previously developed by an expert panel,<sup>1</sup> was calculated and categorized in quartiles based on distribution of scores among respondents (<59, 59 to <69.5, 69.5 to <84, >84).

### 2.5 | Analysis

ED characteristics from the 2021 NPRP assessment were summarized using frequencies and percentages, overall and by the presence of specific BH-related policies; presence of a written guideline for the transfer of children with BH issues; and access to BH resources in the event of disaster.

Using 2021 NPRP assessment data, univariable logistic regression models were developed to evaluate associations between ED characteristics and the aforementioned BH-related policies. Variables were selected for multivariable models based on statistical significance in univariable models or clinical relevance determined a priori based on prior literature.<sup>1,26,32-34</sup> ED characteristics impacted by multicollinearity were removed from the final model. ED characteristics included in the final models were US Census region, urbanicity, ED patient volume, hospital and ED configuration, trauma center designation, percentage of children living below the federal poverty level, and presence of a nurse and/or physician PECC.

The group of 2013 BH-related and social policies were matched with 2021 BH-related and social policies (Supplementary Figure S1). Among EDs that completed NPRP assessments in both years, the percentage of EDs with BH-related and social policies was compared between the 2013 and 2021 assessments using McNemar tests. Analyses were conducted in SAS software version 9.4 (SAS Institute). An alpha level of 0.05 was used to determine significance.

### 3 | RESULTS

#### 3.1 | Characteristics of responding emergency departments

Of 3554 EDs analyzed from 2021, 62.9% of EDs were urban, 44.9% had trauma center designation, and 55.8% were general hospitals with a general ED (Table 1). Of responding EDs, 8.9% had only a nurse PECC, 8.7% had only a physician PECC, and 28.0% had both nurse and physician PECCs.

#### 3.2 | Specific behavioral health-related policies, procedures, or plans

In 2021, specific BH-related policies were present in 95.8% of children's hospitals, 75.4% of general hospitals with a general ED, and 57.8% of critical access hospitals (Table 1).

In multivariable analyses (Figure 1), the adjusted odds ratio (aOR) of having specific BH-related policies were lower in rural (aOR 0.73; 95% confidence interval [CI] 0.57, 0.92) and remote EDs (aOR 0.65; 95% CI 0.48, 0.88) compared with urban EDs. The adjusted odds of having specific BH-related policies were lower among hospitals with trauma center designation (aOR 0.80; 95% CI 0.67, 0.95) compared with hospitals without a trauma center designation. The adjusted odds of having specific BH-related policies were higher in EDs with a physician PECC (aOR 1.66; 95% CI 1.22, 2.29) and with both nurse and physician PECC (aOR 1.89; 95% CI 1.54, 2.33) compared with EDs with no PECC.

#### 3.3 | Written guidelines for the transfer of children with behavioral health issues

A written guideline for transfer of children with BH issues was present in 89.8% of children's hospitals, and 69.1% of general hospitals with

general EDs. In multivariable analyses (Figure 2), the adjusted odds of having a written guideline for transfer of children with BH issues were lower in suburban (aOR 0.71; 95% CI 0.54, 0.93), rural (aOR 0.61; 95% CI 0.48, 0.76), and remote EDs (aOR 0.54; 95% CI 0.40, 0.72) compared with urban EDs. The adjusted odds of having a transfer guideline were lower among hospitals with a trauma center designation (aOR 0.81; 95% CI 0.69, 0.95) compared with hospitals without a trauma center designation. The adjusted odds of having a transfer guideline were higher in EDs with both a nurse and physician PECC (aOR 1.69; 95% CI 1.40, 2.04) compared with EDs with no PECC.

#### 3.4 | Access to behavioral health resources in the event of a disaster

A total of 81.2% of hospitals with a disaster plan had access to BH resources in event of disaster. Access to BH resources in the event of a disaster was available in 90.2% of children's hospitals and 81.2% of general hospitals with a general ED. In multivariable analyses (Figure 3), the adjusted odds of having access to BH resources in the event of a disaster were higher in the Midwest (aOR 1.72; 95% CI 1.21, 2.46) compared with the South. The adjusted odds of having access to BH resources were lower among hospitals with a trauma center designation versus without (aOR 0.53; 95% CI 0.40, 0.71), and higher in EDs with both a nurse and physician PECC (aOR 2.12; 95% CI 1.54, 2.92) compared with EDs with no PECC.

#### 3.5 | Change in presence of behavioral health-related and social policies between 2013 and 2021

Of 2570 EDs that completed NPRP assessments in both 2013 and 2021, 48.6% reported having a policy on how to care for children with social and mental health issues in 2013, which increased to 72.0% in 2021 ( $p < 0.001$ ) (Table 2). The percentage of EDs with transfer guidelines for children with BH conditions also increased, from 56.2% in 2013 to 64.9% in 2021 ( $p < 0.001$ ). Access to BH resources in the event of a disaster was not evaluated in 2013 but was available in 38.6% of EDs in 2021.

### 4 | LIMITATIONS

First, item phrasing between 2013 and 2021 assessments differed slightly and the influence of this difference on question interpretation and response selection is unknown. Additionally, data obtained from the NPRP assessment were self-reported and may not represent all knowledge about pediatric readiness elements across all ED staff. Additionally, presence or absence of policies was not verified onsite, which may have resulted in overreporting or underreporting. Furthermore, data on non-responders to the 2013 and 2021 NPRP surveys are not available. Finally, patient-level BH outcomes were not measured.

**TABLE 1** Recommended pediatric readiness behavioral health assessment items in 2021, by emergency department (ED) characteristics.

	Overall (N = 3554)	Presence of specific behavioral health- related policies, procedures, or plans (n = 2596)	Presence of written guideline for transfer of children with behavioral health issues (n = 2364)	Access to behavioral health resources in event of disaster <sup>a</sup> (n = 1372)
<b>Hospital and ED configuration</b>				
General hospital and general ED	1982 (55.8)	1494/1982 (75.4)	1369/1982 (69.1)	773/952 (81.2)
General hospital and pediatric ED	114 (3.2)	108/114 (94.7)	95/114 (83.3)	71/81 (87.7)
Children's hospital	215 (6.0)	206/215 (95.8)	193/215 (89.8)	175/194 (90.2)
Critical access hospital	933 (26.3)	539/933 (57.8)	475/933 (50.9)	230/325 (70.8)
Other	310 (8.7)	249/310 (80.3)	232/310 (74.8)	123/137 (89.8)
<b>Annual ED volume</b>				
Quartile 1 (0–5799)	881 (24.8)	509/881 (57.8)	480/881 (54.5)	233/322 (72.4)
Quartile 2 (5800–16,999)	887 (25.0)	630/887 (71.0)	542/887 (61.1)	300/379 (79.2)
Quartile 3 (17,000–36,999)	871 (24.5)	693/871 (79.6)	640/871 (73.5)	366/430 (85.1)
Quartile 4 (37,000–811,000)	885 (24.9)	742/885 (83.8)	680/885 (76.8)	464/547 (84.8)
Unknown	30 (0.8)	22/30 (73.3)	22/30 (73.3)	9/11 (81.8)
<b>Pediatric patient volume</b>				
Low (<1800)	1791 (50.4)	1153/1791 (64.4)	1051/1791 (58.7)	520/675 (77.0)
Medium (1800–4999)	1102 (31.0)	877/1102 (79.6)	790/1102 (71.7)	448/546 (82.1)
Medium-high (5000–9999)	376 (10.6)	297/376 (79.0)	268/376 (71.3)	187/231 (81.0)
High (≥10,000)	285 (8.0)	269/285 (94.4)	255/285 (89.5)	217/237 (91.6)
<b>Trauma center designation</b>				
No	1959 (55.1)	1453/1959 (74.2)	1333/1959 (68.0)	718/855 (84.0)
Yes	1594 (44.9)	1142/1594 (71.6)	1030/1594 (64.6)	653/833 (78.4)
Unknown	1 (0.0)	1/1 (100.0)	1/1 (100.0)	1/1 (100.0)
Indian Health Service/Tribal Emergency Department	34 (1.0)	25/34 (73.5)	21/34 (61.8)	5/5 (100.0)
<b>Urbanicity</b>				
Urban	2237 (62.9)	1782/2237 (79.7)	1666/2237 (74.5)	1011/1202 (84.1)
Suburban	299 (8.4)	225/299 (75.3)	185/299 (61.9)	113/138 (81.9)
Rural	674 (19.0)	411/674 (61.0)	355/674 (52.7)	184/255 (72.2)
Remote	344 (9.7)	178/344 (51.7)	158/344 (45.9)	64/94 (68.1)
<b>Census region</b>				
Midwest	1107 (31.1)	792/1107 (71.5)	703/1107 (63.5)	449/536 (83.8)
Northeast	316 (8.9)	248/316 (78.5)	219/316 (69.3)	120/144 (83.3)
South	1322 (37.2)	971/1322 (73.4)	900/1322 (68.1)	470/589 (79.8)
West	745 (21.0)	541/745 (72.6)	496/745 (66.6)	305/378 (80.7)
Unknown	64 (1.8)	44/64 (68.8)	46/64 (71.9)	28/42 (66.7)
<b>Percentage of children 0–17 years living below Federal Poverty Level per county</b>				
Quartile 1 (0%–14.5%)	895 (25.2)	661/895 (73.9)	602/895 (67.3)	355/425 (83.5)
Quartile 2 (14.5%–20.5%)	858 (24.1)	618/858 (72.0)	550/858 (64.1)	322/394 (81.7)
Quartile 3 (20.5%–25.1%)	860 (24.2)	650/860 (75.6)	606/860 (70.5)	388/476 (81.5)
Quartile 4 (25.1%–66.3%)	863 (24.3)	609/863 (70.6)	550/863 (63.7)	274/347 (79.0)
Unknown	78 (2.2)	58/78 (74.4)	56/78 (71.8)	33/47 (70.2)

(Continues)

**TABLE 1** (Continued)

	Overall (N = 3554)	Presence of specific behavioral health- related policies, procedures, or plans (n = 2596)	Presence of written guideline for transfer of children with behavioral health issues (n = 2364)	Access to behavioral health resources in event of disaster <sup>a</sup> (n = 1372)
PECC				
No PECC	1913 (53.8)	1272/1913 (66.5)	1158/1913 (60.5)	501/669 (74.9)
Nurse PECC	318 (8.9)	227/318 (71.4)	203/318 (63.8)	107/139 (77.0)
Physician PECC	310 (8.7)	249/310 (80.3)	218/310 (70.3)	122/152 (80.3)
Nurse and physician PECC	1013 (28.5)	848/1013 (83.7)	785/1013 (77.5)	642/729 (88.1)
Quartile of weighted pediatric readiness score				
Quartile 1 (<59)	890 (25.0)	348/890 (39.1)	340/890 (38.2)	64/137 (46.7)
Quartile 2 (59 to <69.5)	888 (25.0)	686/888 (77.3)	592/888 (66.7)	244/332 (73.5)
Quartile 3 (69.5 to <84)	884 (24.9)	739/884 (83.6)	650/884 (73.5)	387/475 (81.5)
Quartile 4 (84–100)	892 (25.1)	823/892 (92.3)	782/892 (87.7)	677/745 (90.9)
Presence of a quality improvement/ performance improvement plan for pediatric patients	1774 (49.9)	1478/1774 (83.3)	1369/1774 (77.2)	976/1130 (86.4)
Presence of a triage policy that specifically addresses ill and injured children	2217 (62.4)	1888/2217 (85.2)	1719/2217 (77.5)	1129/1327 (85.1)
Presence of a policy for promoting family-centered care	2221 (62.5)	1852/2221 (83.4)	1752/2221 (78.9)	1119/1313 (85.2)
Presence of child maltreatment policies, procedures, plans	3227 (90.8)	2510/3227 (77.8)	2254/3227 (69.8)	1333/1619 (82.3)

Abbreviation: PECC, pediatric emergency care coordinator.

<sup>a</sup>Gateway question in survey—participants had to answer “yes” to: “Does your hospital disaster plan address issues specific to care of children (e.g., pediatric surge capacity, patient tracking and reunification, pediatric decontamination)?” Of total respondents, 1689 answered yes to this question. Of 1689 respondents, 1372 provided an answer to: “If yes, does your hospital disaster plan include each of the following ... access to behavioral health resources for children in the event of a disaster?”

**TABLE 2** Responses to presence of pediatric readiness behavioral health and social policies, 2013 and 2021.

Assessment item in 2013	Assessment item in 2021	EDs with positive response in 2013 (%)	EDs with positive response in 2021 (%)	p-Value <sup>a</sup>
Does your hospital have a policy on how to care for children with social and mental health issues?	Does your ED have any of the following policies, procedures, or plans... behavioral health issues policies, procedures, or plans for children of all ages	48.6	72.0	<0.001
Does your hospital have a written guideline for the transfer of children with social and mental health issues out of your facility to an appropriate facility?	Does your ED have a written guideline for the transfer of children with behavioral health issues out of your facility to an appropriate facility?	56.2	64.9	<0.001
Does your ED have each of the following listed policies and procedures ... child maltreatment	Does your ED have any of the following policies, procedures, or plans ... child maltreatment policies, procedures, or plans	89.9	90.4	0.526

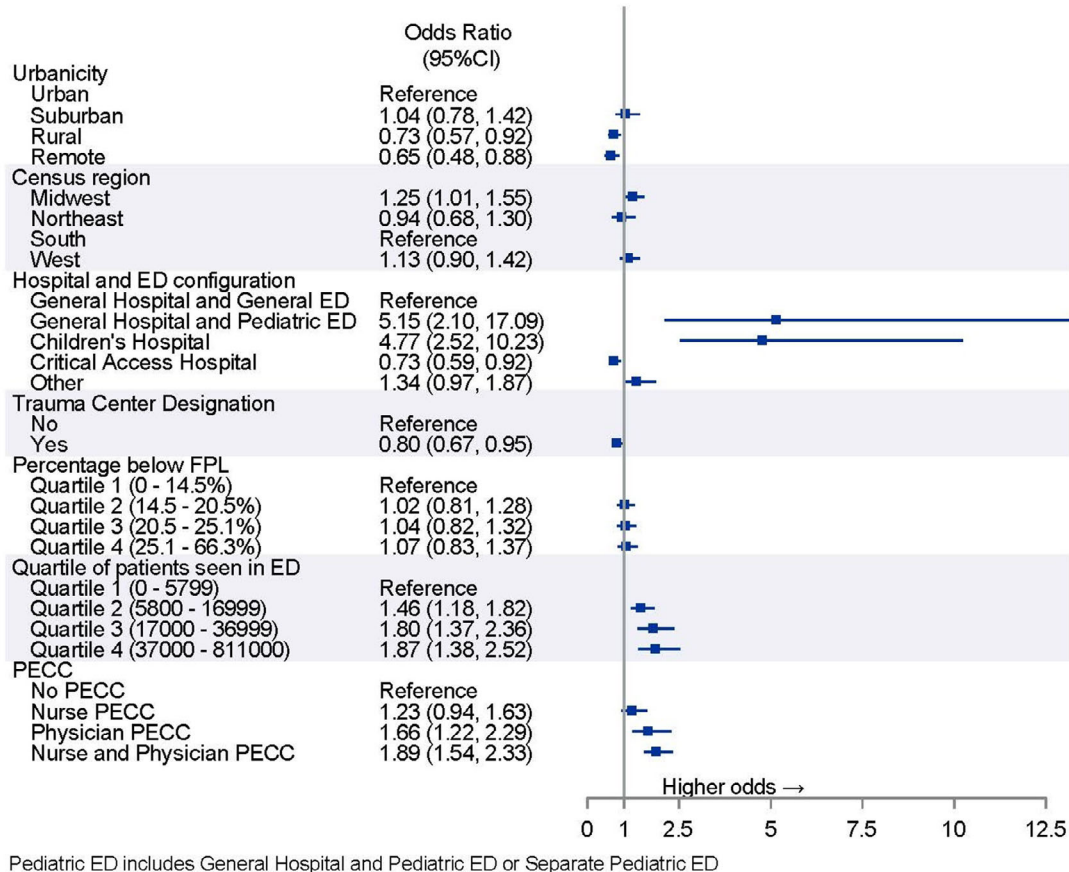
Abbreviation: ED, emergency department.

<sup>a</sup>McNemar test.

## 5 | DISCUSSION

In this retrospective serial cross-sectional study of responses to the 2021 NPRP assessment survey, the presence of BH-related policies

varied by ED characteristics. The odds of having specific BH-related policies were higher among EDs with both a nurse and physician PECC compared to those with no PECC and were lower among designated trauma centers compared to EDs without trauma designation. Critical



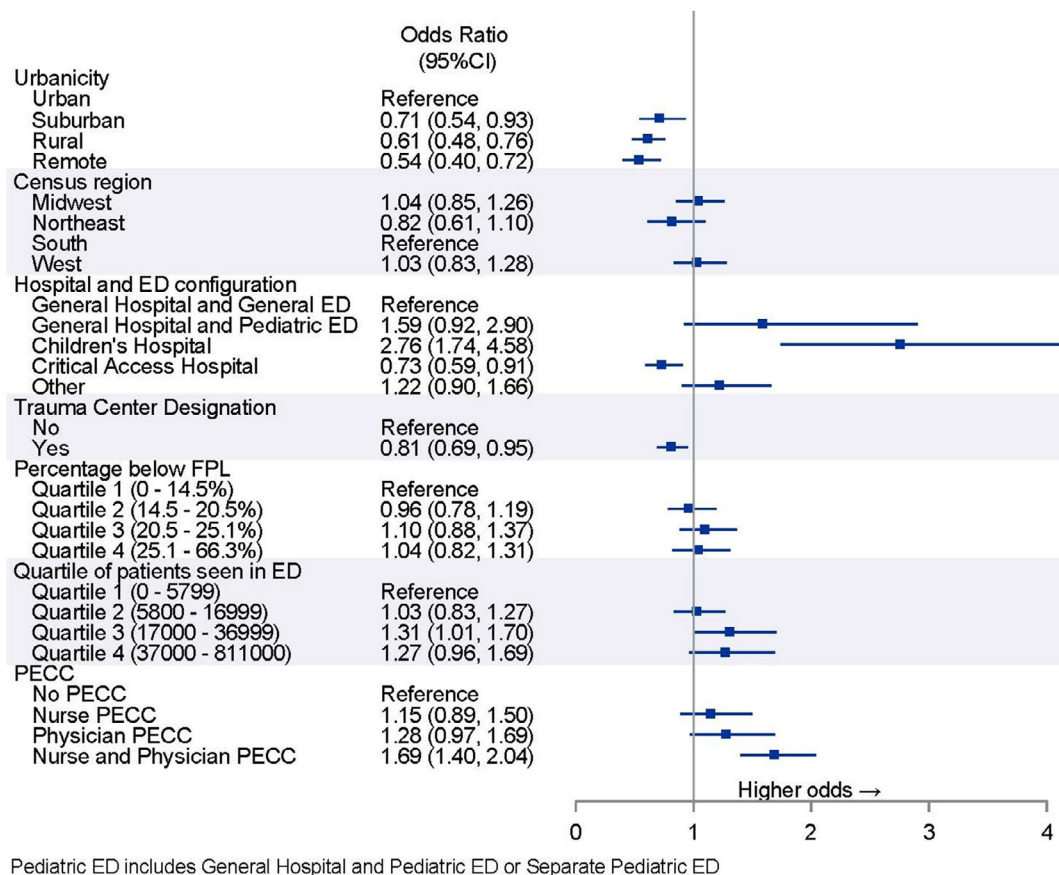
**FIGURE 1** Emergency department (ED)-level factors associated with presence of specific behavioral health (BH)-related policies, procedures, or plans in 2021, adjusted. The adjusted odds of having specific BH-related policies were higher in EDs with a physician pediatric emergency care coordinator (PECC) (adjusted odds ratio [aOR] 1.66; 95% confidence interval [CI] 1.22, 2.29) and with both nurse and physician PECC (aOR 1.89; 95% CI 1.54, 2.33) compared with EDs with no PECC. Census region and percentage of children below the federal poverty level were not significantly associated with presence of behavioral health policies.

access hospitals had lower odds of having positive responses to two of the three BH-related assessment items compared to general hospitals. When comparing 2013 and 2021 NPRP assessments, the percentage of EDs with pediatric BH-related and social policies significantly increased.

EDs with both a nurse and physician PECC had higher odds of positive responses to all three NPRP BH-related assessment items. Although both a physician and nurse PECC are recommended, the presence of at least one PECC (nurse or physician) has also been associated with higher pediatric readiness, independent of other factors, including pediatric annual ED volume.<sup>1</sup> From 2013 to 2021, most domains of pediatric readiness (measured by weighted pediatric readiness score) improved, but the domain of administration and coordination (defined by presence of a PECC) decreased, most substantially for EDs with low and medium pediatric ED volume, signaling a concerning national decline in the presence of ED PECCs.<sup>27</sup> Given that PECCs are a modifiable factor regardless of ED location or size, and their presence is associated with increased compliance with nationally endorsed BH recommendations, one potential solution to improve BH care is to

ask hospital systems to prioritize formalizing nurse and physician PECC positions and ensuring appropriate role compensation.<sup>35</sup>

Rural or remote location, as well as critical access hospital designation, were associated with lower odds of having specific BH-related policies and written guidelines for transfer of children with BH issues. This is consistent with prior studies showing rural and remote EDs are less likely to have BH-related policies compared to urban EDs and more likely to transfer children with BH conditions.<sup>26,36</sup> Children with BH conditions living in rural areas face inequitable access to BH care and are almost twice as likely to die by suicide, with the disparity widening over time.<sup>37,38</sup> Rural ED utilization by children with suicidal ideation and self-harm is increasing, and admission rates are increasing, signaling a need for enhanced pediatric mental health resources in rural areas.<sup>39-41</sup> An additional emerging solution is regionalization of care with a shared resources framework, also known as the hub-and-spoke model. In this model, regional pediatric specialty centers work with community and rural hospitals to develop protocolized approaches, provide resources, and conduct training.<sup>42-44</sup> Another strategy to assist rural EDs in their care of children with BH crisis is the use of



**FIGURE 2** Emergency department (ED)-level factors associated with presence of written guideline for transfer of children with behavioral issues in 2021, adjusted. The adjusted odds of having a transfer guideline were higher in EDs with both a nurse and physician pediatric emergency care coordinator (PECC) (adjusted odds ratio [aOR] 1.69; 95% confidence interval [CI] 1.40, 2.04) compared with EDs with no PECC. Census region, percentage of children below the federal poverty level, and quartile of patients seen in the ED were not significantly associated with presence of a written transfer guideline.

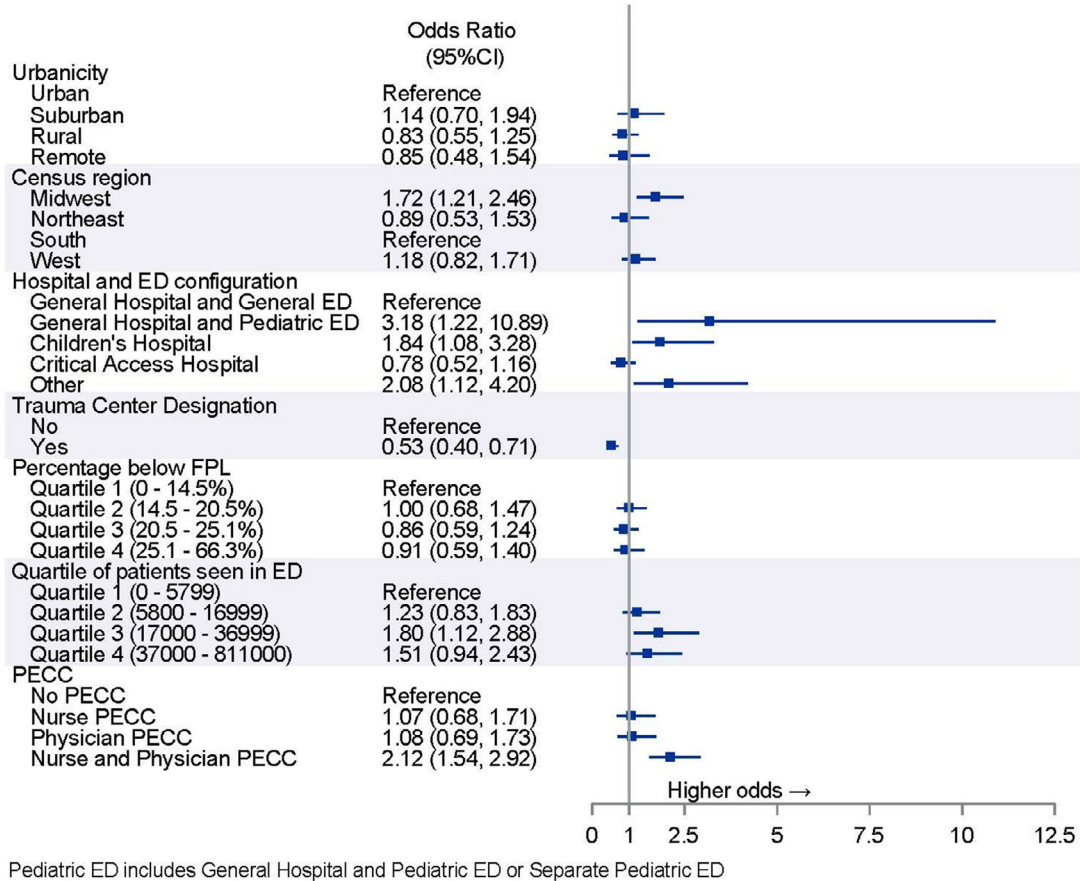
telepsychiatry to enable remote assessment and treatment.<sup>45</sup> Studies are needed to assess whether these models improve patient outcomes.

Surprisingly, trauma center designation was associated with lower odds of having any of the three BH-related assessment items. Prior literature demonstrates trauma centers have variable pediatric readiness and that, among trauma centers, high pediatric readiness is associated with lower child mortality.<sup>10,33</sup> In a study examining the association between ED pediatric readiness and mortality at trauma centers, this association persisted even after adjusting for ED pediatric annual volume and annual pediatric trauma volume.<sup>10,33</sup> Although some components of the guidelines for pediatric readiness have been previously characterized among trauma centers,<sup>32</sup> data on compliance with presence of BH-related policies was notably absent, despite high rates of comorbid psychiatric disease among trauma patients.<sup>46</sup> In a survey of US trauma surgeons practicing at academic level 1 trauma centers, almost half (48%) reported admitting one to five patients a week with comorbid psychiatric disease, 55% noted no outpatient follow-up for acute or chronic psychiatric issues for trauma patients, and the majority (73%) felt expanded psychiatric services were needed for their trauma center.<sup>46</sup> In order to address gaps in BH care at trauma centers,<sup>46</sup> in December 2022, the American College of Sur-

geons Trauma Standard began to require that trauma centers institute screening to identify patients at high risk of having mental health symptoms following injury, along with referrals to mental health services when indicated. Additionally, the Trauma Standard also mandates assessment of pediatric readiness of trauma center EDs and the development of plans to identify gaps in readiness, which include guidance on pediatric BH-related care.<sup>47</sup> Future work is needed to determine how these new accreditation requirements influence patient outcomes for children with BH conditions who receive care at US trauma centers.<sup>46</sup>

Nearly a 50% relative increase in the presence of pediatric ED BH-related policies in US EDs from 2013 to 2021 was identified. The percentage of EDs with transfer guidelines for children with BH conditions also increased, but not as substantially. Although these increases mark progress for EDs, as of 2021, nearly 20% of responding EDs did not respond affirmatively to one of these two BH-related assessment items. This gap may carry significant consequences for children in BH crisis who present to the ED for care,<sup>48</sup> as the proportion of children utilizing the ED in BH crisis is substantially increasing.<sup>13,48,49</sup> Additional studies investigating how pediatric policies implemented in the ED impact BH outcomes are needed.





**FIGURE 3** Emergency department (ED)-level factors associated with access to behavioral health (BH) resources for children in event of a disaster in 2021, adjusted. The adjusted odds of having access to BH resources were lower among hospitals with versus without a trauma center designation (adjusted odds ratio [aOR] 0.53; 95% confidence interval [CI] 0.40, 0.71), and higher in EDs with both a nurse and physician pediatric emergency care coordinator (PECC) (aOR 2.12; 95% CI 1.54, 2.92) compared with EDs with no PECC. Urbanicity, percentage of children below the federal poverty level, and quartile of patients seen in the ED were not significantly associated with access to behavioral health resources in the event of a disaster.

Despite increases in the presence of BH-related policies for children among EDs nationally from 2013 to 2021, significant gaps remain, which are particularly notable for rural, remote, and critical access hospitals and at designated trauma centers. The presence of both nurse and physician PECCs within EDs is a modifiable factor that can increase pediatric readiness for providing care to children with BH conditions. Additional resources and support are needed to optimize BH readiness across all US EDs. This work is needed to strive toward providing high-quality BH care for all children in crisis, regardless of the location where they are seen.

#### ACKNOWLEDGMENTS

We thank Lorah Ludwig, Health Resources and Services Administration, Emergency Medical Services for Children, for her advice on this paper. Dr. Hewes received funding as a PI from the EMSC Data Center, supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of the Emergency Medical Services for Children Data Center award totaling \$3,200,000 with 0% financed with non-governmental

sources. Dr. Saidinejad received funding from the EMSC Innovation and Improvement Center, supported by the HRSA of the U.S. Department of HHS as part of an award (U07MC37471) totaling \$2.5M with 0% financed with non-governmental sources. Drs. Schreiber, Hewes, Saidinejad, Hoffmann, and Foster received funding outside of the submitted work from the Pediatric Pandemic Network. Dr. Schreiber is also supported by the HRSA of the US Department of HHS as part of grant awards U11MC43532 and U11MC45814 with 0% financed with non-governmental sources. The content presented here is that of the author(s) and does not necessarily represent the official views of, or an endorsement by HRSA, ASPR, HHS, or the US Government. For more information, visit HRSA.gov.

#### CONFLICT OF INTEREST STATEMENT

The authors declare they have no conflicts of interest.

#### REFERENCES

1. Gausche-Hill M, Ely M, Schmuhl P, et al. A national assessment of pediatric readiness of emergency departments. *JAMA Pediatr.* 2015;169(6):527-534.

2. Whitfill T, Auerbach M, Scherzer DJ, Shi J, Xiang H, Stanley RM. Emergency care for children in the United States: epidemiology and trends over time. *J Emerg Med*. 2018;55(3):423-434.
3. Foster AA, Saidinejad M, Duffy S, et al. Pediatric agitation in the emergency department: a survey of pediatric emergency care coordinators. *Acad Pediatr*. 2023;23(5):988-992.
4. Institute of Medicine. *Emergency Care for Children: Growing Pains*. National Academies Press; 2007.
5. Remick K, Gausche-Hill M, Joseph MM, et al. Pediatric readiness in the emergency department. *Pediatrics*. 2018;142(5):e20182459.
6. American Academy of Pediatrics Committee on Pediatric Emergency Medicine, American College of Emergency Physicians Pediatric Committee. Care of children in the emergency department: guidelines for preparedness. *Pediatrics*. 2001;107(4):777-781.
7. American Academy of Pediatrics Committee on Pediatric Emergency Medicine, American College of Emergency Physicians Pediatric Committee, Emergency Nurses Association Pediatric Committee. Joint policy statement—guidelines for care of children in the emergency department. *J Emerg Nurs*. 2013;39(2):116-131.
8. Ames SG, Davis BS, Marin JR, et al. Emergency department pediatric readiness and mortality in critically ill children. *Pediatrics*. 2019;144(3):e20190568.
9. Hansen M, Fleischman R, Meckler G, Newgard CD. The association between hospital type and mortality among critically ill children in US EDs. *Resuscitation*. 2013;84(4):488-491.
10. Newgard CD, Lin A, Goldhaber-Fiebert JD, et al. Association of emergency department pediatric readiness with mortality to 1 year among injured children treated at trauma centers. *JAMA Surg*. 2022;157(4):e217419.
11. Newgard C, Lin A, Malveau S, et al. Emergency department pediatric readiness and short- and long-term mortality among children receiving emergency care. *JAMA Netw Open*. 2023;6(1):e2250941.
12. Agency for Healthcare Research and Quality. *What is Integrated Behavioral Health?* Accessed February 5, 2024. <https://integrationacademy.ahrq.gov/about/integrated-behavioral-health>
13. Ibeziako P, Kaufman K, Scheer KN, Sideridis G. Pediatric mental health presentations and boarding: first year of the COVID-19 pandemic. *Hosp Pediatr*. 2022;12(9):751-760.
14. Rider EA, Ansari E, Varrin PH, Sparrow J. Mental health and wellbeing of children and adolescents during the COVID-19 pandemic. *BMJ*. 2021;374:n1730.
15. Krass P, Dalton E, Douplik SK, Esposito J. US pediatric emergency department visits for mental health conditions during the COVID-19 pandemic. *JAMA Netw Open*. 2021;4(4):e218533.
16. Bolt J, Patel F, Stone L, Pandian D, Manuel MM, Gaines N. Impact of COVID-19 on pediatric mental and behavioral health visits to the emergency department. *Pediatr Emerg Care*. 2022;38(8):409-415.
17. Lo CB, Bridge JA, Bridge JA, et al. Children's mental health emergency department visits: 2007–2016. *Pediatrics*. 2020;145(6):2007-2016.
18. Foster AA, Sundberg M, Williams DN, Li J. Emergency department staff perceptions about the care of children with mental health conditions. *Gen Hosp Psychiatry*. 2021;73:78-83.
19. McEnany FB, Ojugbele O, Doherty JR, McLaren JL, Leyenaar JAK. Pediatric mental health boarding. *Pediatrics*. 2020;146(4):e20201174.
20. Hoffmann JA, Stack AM, Monuteaux MC, Levin R, Lee LK. Factors associated with boarding and length of stay for pediatric mental health emergency visits. *Am J Emerg Med*. 2019;37(10):1829-1835.
21. Sethuraman U, Kannikeswaran N, Farooqi A, Richards K, Chamberlain J. Antipsychiatric medication errors in children boarded in a pediatric emergency department. *Pediatr Emerg Care*. 2021;37(9):e358-e542.
22. Bakhsh HT, Perona SJ, Shields WA, Salek S, Sanders AB, Patanwala AE. Medication errors in psychiatric patients boarded in the emergency department. *Int J Risk Safety Med*. 2014;26(4):191-198.
23. Hoffmann JA, Pergijka A, Liu L, et al. Standardizing and improving care for pediatric agitation management in the emergency department. *Pediatrics*. 2023;152(1):e2022059586.
24. King CA, O'Mara RM, Hayward CN, Cunningham RM. Adolescent suicide risk screening in the emergency department. *Acad Emerg Med*. 2009;16(11):1234-1241.
25. Sullivan SA, Brookstein D, Camerer M, et al. Implementing universal suicide risk screening in a pediatric hospital. *Jt Comm J Qual Patient Saf*. 2021;47(8):496-502.
26. Cree RA, So M, Franks J, et al. Characteristics associated with presence of pediatric mental health care policies in emergency departments. *Pediatr Emerg Care*. 2021;37(12):e1116-e1121.
27. Remick KE, Hewes HA, Ely M, et al. National assessment of pediatric readiness of US emergency departments during the COVID-19 pandemic. *JAMA Netw Open*. 2023;6(7):e2321707.
28. Krug SE, Bojko T, Fein JA, et al. Joint policy statement—guidelines for care of children in the emergency department. *Pediatrics*. 2009;124(4):1233-1243.
29. Gausche-Hill M, Ely M, Schmuhl P, et al. A national assessment of pediatric readiness of emergency departments. *JAMA Pediatr*. 2015;169(6):527.
30. US Census Bureau. *Geographic Levels*. Accessed April 25, 2023. <https://www.census.gov/programs-surveys/economic-census/guidance-geographies/levels.html>
31. USDA Economic Research Service. *Urban Influence Codes*. Accessed April 25, 2023. <https://www.ers.usda.gov/data-products/urban-influence-codes.aspx>
32. Remick K, Gaines B, Ely M, Richards R, Fendya D, Edgerton EA. Pediatric emergency department readiness among US trauma hospitals. *J Trauma Acute Care Surg*. 2019;86:803-809.
33. Newgard CD, Lin A, Olson LM, et al. Evaluation of emergency department pediatric readiness and outcomes among US trauma centers. *JAMA Pediatr*. 2021;175(9):947-956.
34. Remick K, Kaji AH, Olson L, et al. Pediatric readiness and facility verification. *Ann Emerg Med*. 2016;67(3):320-328.
35. Foster AA, Li J, Wilkinson MH, et al. Pediatric emergency care coordinator workforce: a survey study. *JACEP Open*. 2023;4(4):e13006.
36. Horeczko T, Marcin JP, Kahn JM, et al. Urban and rural patterns in emergent pediatric transfer: a call for regionalization. *J Rural Health*. 2014;30(3):252-258.
37. Fontanella CA, Hiance-Steelesmith DL, Phillips GS, et al. Widening rural-urban disparities in youth suicides, United States, 1996–2010. *JAMA Pediatr*. 2015;169(5):466-473.
38. Thomas K, Ellis A, Konrad T, Holzer C, Morrissey J. County-Level estimates of mental health professional shortage in the United States. *Psychiatr Serv*. 2009;60(10):1323-1328.
39. Arakelyan M, Emond JA, Leyenaar JAK. Suicide and self-harm in youth presenting to a US rural hospital during COVID-19. *Hosp Pediatr*. 2022;12(10):E336-E342.
40. Bettenhausen JL, Hall M, Douplik SK, et al. Hospitalization outcomes for rural children with mental health conditions. *J Pediatr*. 2021;229:240-246.e1.
41. Hoffmann JA, Hall M, Lorenz D, Berry JG. Emergency department visits for suicidal ideation and self-harm in rural and urban youths. *J Pediatr*. 2021;238:282-289.
42. Yashwant Kothari S, Haynes SC, Sigal I, et al. Resources for improving pediatric readiness and quality of care in rural communities and emergency departments. *Pediatr Emerg Care*. 2022;38(3):e1069-e1074.
43. Whitfill T, Gawal M, Auerbach M. A simulation-based quality improvement initiative improves pediatric readiness in community hospitals. *Pediatr Emerg Care*. 2018;34(6):431-435.
44. Abulebda K, Lutfi R, Petras EA, et al. Evaluation of a nurse pediatric emergency care coordinator-facilitated program on pediatric readiness and process of care in community emergency departments after collaboration with a pediatric academic medical center. *J Emerg Nurs*. 2021;47(1):167-180.
45. Fairchild RM, Ferng-Kuo SF, Rahmouni H, Hardesty D. Telehealth increases access to care for children dealing with suicidality,

- depression, and anxiety in rural emergency departments. *Telemed e-Health*. 2020;26(11):1353-1362.
46. Ortiz D, Barr JV, Adams SD, et al. A survey of trauma surgeon perceptions of resources for patients with psychiatric comorbidities. *J Surg Res*. 2020;256:31-35.
  47. American College of Surgeons. *Resources for the Optimal Care of the Injured Patient: 2022 Standards*. American College of Surgeons: Chicago, Illinois. 2022. Accessed February 5, 2024. [https://emlrc.org/wp-content/uploads/2022\\_VRC\\_Injured-Patient-StandardsManual\\_Final.pdf-ACS.pdf](https://emlrc.org/wp-content/uploads/2022_VRC_Injured-Patient-StandardsManual_Final.pdf-ACS.pdf)
  48. Bommersbach TJ, Mckean AJ, Olfson M, Rhee TG. National trends in mental health-related emergency department visits among youth, 2011–2020. *JAMA*. 2023;329(17):1469-1477.
  49. Chadi N, Spinoso-Di Piano C, Osmanliu E, Gravel J, Drouin O. Mental health-related emergency department visits in adolescents before and during the COVID-19 pandemic: a multicentric retrospective study. *J Adolesc Health*. 2021;69(5):847-850.

### SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Foster AA, Hoffmann JA, Crady R, et al. Association of emergency department characteristics with presence of recommended pediatric-specific behavioral health policies. *JACEP Open*. 2024;5:e13266.  
<https://doi.org/10.1002/emp2.13266>

### AUTHOR BIOGRAPHY



Ashley A Foster MD, is an Assistant Professor in Emergency Medicine and Pediatrics, in the Department of Emergency Medicine at the University of California, San Francisco.