Inpatient Use and Outcomes at Children’s Hospitals During the Early COVID-19 Pandemic

Jessica L. Markham, MD, MSc,a,b Troy Richardson, PhD,a,b Adrienne DePorre, MD,a,b Ronald J. Teufel, II, MD, MSCR,d Adam L. Hersh, MD, PhD,e Eric W. Fleegler, MD, MPH,f,g Ryan M. Antiel, MD, MSME,h Daniel C. Williams, MD, MSCR,d Adam B. Goldin, MD, MPH,i Samir S. Shah, MD, MSCEj,k

abstract

BACKGROUND AND OBJECTIVES: The coronavirus disease 2019 (COVID-19) pandemic has led to changes in health care use, including decreased emergency department visits for children. In this study, we sought to describe the impact of the COVID-19 pandemic on inpatient use within children’s hospitals.

METHODS: We performed a retrospective study using the Pediatric Health Information System. We compared inpatient use and clinical outcomes for children 0 to 18 years of age during the COVID-19 period (March 15 to August 29, 2020) to the same time frame in the previous 3 years (pre-COVID-19 period). Adjusted generalized linear mixed models were used to examine the association of the pandemic period with inpatient use. We assessed trends overall and for a subgroup of 15 medical All Patient Refined Diagnosis Related Groups (APR-DRGs).

RESULTS: We identified 424,856 hospitalizations (mean: 141,619 hospitalizations per year) in the pre-COVID-19 period and 91,532 in the COVID-19 period. Compared with the median number of hospitalizations in the pre-COVID-19 period, we observed declines in hospitalizations overall (35.1%), and by APR-DRG (range: 8.5%–81.3%) with asthma (81.3%), bronchiolitis (80.1%), and pneumonia (71.4%) experiencing the greatest declines. Overall readmission rates were lower during the COVID-19 period; however, other outcomes, including length of stay, cost, ICU use, and mortality remained similar to the pre-COVID-19 period with some variability by APR-DRGs.

CONCLUSIONS: US children’s hospitals observed substantial reductions in inpatient admissions with largely unchanged hospital-level outcomes during the COVID-19 pandemic. Although the impact on use varied by condition, the most notable declines were related to inpatient admissions for respiratory conditions, including asthma, bronchiolitis, and pneumonia.

WHAT’S KNOWN ON THIS SUBJECT: After the US declaration of a national emergency for the coronavirus disease 2019 pandemic, studies reported declines in pediatric emergency department visits and delayed presentations across health care settings for several conditions (eg, diabetes), leading to increased complication rates (eg, severe diabetic ketoacidosis).

WHAT THIS STUDY ADDS: This study of US children’s hospitals revealed a near 40% reduction in pediatric inpatient admissions during the coronavirus disease 2019 pandemic, with even greater declines observed for some specific diagnoses compared with the same time frame in previous years.


Departments of Pediatrics, Children’s Mercy Kansas City and School of Medicine, University of Missouri-Kansas City, Kansas City, Missouri; a,bDepartment of Pediatrics, School of Medicine, University of Kansas, Kansas City, Kansas; cChildren’s Hospital Association, Lenexa, Kansas; dDepartment of Pediatrics, Medical University of South Carolina, Charleston, South Carolina; eDivision of Infectious Diseases, Department of Pediatrics, University of Utah, Salt Lake City, Utah; fDivision of Emergency Medicine, Boston Children’s Hospital, Boston, Massachusetts; gDepartments of Pediatrics and Emergency Medicine, Harvard Medical School, Harvard University, Boston, Massachusetts; hDivision of Pediatric Surgery, Department of Surgery, School of Medicine, Washington University in St Louis, St Louis, Missouri; iDepartment of Surgery, Seattle Children’s Hospital and School of Medicine, University of Washington, Seattle, Washington; jDivisions of Hospital Medicine and Infectious Diseases, Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio, and kDepartment of Pediatrics, College of Medicine, University of Cincinnati, Cincinnati, Ohio.
Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2, emerged as a global threat in early 2020 and has impacted patients and health systems. As the incidence of COVID-19 cases rose, reports of delays in access to emergency medical services and reductions in the provision of hospital care for non–COVID-related medical problems emerged.1–6 These delays or avoidances in care were associated with poorer health outcomes (eg, adults with myocardial infarction experienced more in-hospital complications when care was delayed).7 Social isolation recommendations coupled with public concern regarding risk of exposure while visiting health care facilities during the pandemic also contributed to these declines.3,4 At a systems level, changes in health care use during the COVID-19 pandemic led to fiscal strain and staffing concerns across hospitals and health care systems.8–10

As the scope of the pandemic became apparent, a national emergency was declared and stay-at-home orders were issued in the United States in March 2020. Within weeks of this declaration, Hartnett et al11 observed a substantial decline of 42% in emergency department (ED) visits compared with the same time period the previous year, with greater reductions among children compared with adults. Declines in ED use were similarly observed across continents within 3 weeks of the start of the pandemic, with continued declines in use experienced 5 months later.12 Other studies reported delayed presentations of specific pediatric conditions, such as solid tumors, diagnosis of new onset diabetes leading to increased incidence of diabetic ketoacidosis, and increased complications related to appendicitis.13–15 However, the broader impact of the COVID-19 pandemic on pediatric hospitalizations nationally and associated outcomes have not been described.

Better understanding the effects of the pandemic on children’s health care use may help inform policymakers and guide hospitals on potential interventions to impact health care access. Thus, the objective of this current study was to describe the impact of the COVID-19 pandemic on US pediatric inpatient admissions and hospital use. We hypothesized that we would observe reductions in overall pediatric hospital use but that these reductions may vary by condition.

METHODS

Study Design and Data Source
This multicenter, cross-sectional study of hospitalized children (inpatient and observation status stays) used the Pediatric Health Information System (PHIS). PHIS is an administrative database of 49 tertiary care pediatric hospitals affiliated with the Children’s Hospital Association (Lenexa, KS). The PHIS database includes patient-level data, including demographic data, diagnosis and procedural codes, and resource use (eg, laboratory and diagnostic imaging). Encryption of patient identifiers allows for tracking of individual patients across multiple hospital visits. Four hospitals were excluded for data quality issues, including failure to report billing data through the end of the study period and for length of stay (LOS) data not reported in hours; the remaining 45 hospitals were included.

Exposures
COVID-19 and Pre-COVID-19

The COVID-19 period was defined as index hospitalizations and discharges occurring between March 15, 2020, and August 29, 2020. Notably, the beginning of the COVID-19 period corresponded approximately to the US declaration of a national emergency, which occurred on March 13, 2020. Index admissions that occurred after August 29th were excluded from analyses to allow a full 30-day readmission window. To define the pre-COVID-19 period, we examined hospitalizations during the same time frame within the preceding 3 years (ie, March 15 to August 29 of 2017, 2018, and 2019). To account for fluctuations in inpatient admissions and severity of diseases across seasons and years, we describe the pre-COVID-19 period using the median number of inpatient admissions for the preceding 3 years of hospitalizations. Because we examined the same dates over multiple years, we normalized all dates using 7-day
increments (ie, day of the week was not considered in describing weeks).

Selected Medical Conditions
In addition to describing overall hospitalizations, we describe hospitalizations for 15 selected medical All Patient Refined Diagnosis Related Groups (APR-DRGs) (version 36; 3M Corporation, St Paul, MN). We defined hospitalizations within remaining APR-DRG categories as “all other” APR-DRGs are a patient classification scheme that groups patients on the basis of the principal diagnosis for medical patients and incorporates severity of illness and risk of mortality by using demographics and comorbidities.\(^{17}\) Individual APR-DRG categories were chosen on the basis of prevalence within the top 80% of discharges annually and/or frequency of admissions across a majority of hospitals during the study period (eg, APR-DRGs with admissions in >90% of included hospitals, Supplemental Table 4). Within the COVID-19 period, we also describe the number of children hospitalized with COVID-19.

Main Outcome Measures
Our primary outcome was the number of inpatient admissions. In addition to examining numbers of admissions, we identified a group of clinical and financial outcomes. The clinical outcomes included LOS measured in hours, 14- and 30-day readmission rates within the same major diagnostic category, ICU use, mortality, and mechanical ventilation. We examined LOS for the index admission and the total episode of care (index and readmission). Standardized costs remove the high interhospital variation in item costs and thus allow for a meaningful comparison of resource use and costs across hospitals. We used previously described methods for calculating standardized costs using billing data.\(^{17}\) In PHIS, standardized unit costs are calculated yearly, and, for this analysis, standardized costs from previous years were inflated to 2020 dollars by using the component of the consumer price index.

Covariates
We examined demographic characteristics, including age, sex, race and ethnicity, primary payer, and median household income quartile. Race and ethnicity was included as a covariate within analyses because authors of multiple studies have reported the differential impacts of the COVID-19 pandemic based on race and ethnicity.\(^{18-21}\) Race and ethnicity data are collected at the patient-level within PHIS. We examined patient characteristics, including the number of noncomplex chronic conditions and the mean Hospitalization Resource Intensity Score for Kids (H-RISK).\(^{22}\) Noncomplex chronic conditions were identified by using the Healthcare Cost and Utilization Project chronic condition indicator, and patients were classified on the basis of the number of chronic conditions.\(^{23}\) The chronic condition indicator describes conditions that last \(\geq 12\) months and result in the need for ongoing health care services. H-RISK was developed to quantify severity of illness among hospitalized children and assigns relative weights to each APR-DRG and severity of illness level, facilitating comparison across APR-DRG groups. We also examined hospitalization characteristics, including hospital region and source of admission (through the individual hospital’s ED versus direct admission).

Statistical Analysis
Descriptive statistics described demographic, patient, and hospital characteristics. A \(\chi^2\) test compared differences in categorical characteristics and unadjusted outcomes between pre-COVID-19 and COVID-19 periods. A Wilcoxon rank test compared nonnormally distributed continuous variables between the COVID-19 and pre-COVID-19 periods, and an independent Student’s \(t\) test compared normally distributed continuous variables. Generalized linear mixed models (GLMMs) were used to examine the association of COVID-19 period and outcomes, adjusting for age, race and ethnicity, payer, median household income, presence of a chronic condition, admission through the ED, census region, and severity. GLMMs for readmission assumed an underlying binomial distribution and a logit link; GLMMs for LOS and cost assumed underlying log-linear distribution. All GLMMs included a random hospital effect to account for clustering. In a subanalysis, we divided the COVID-19 period into early (March 15 to May 31, 2020) and extended (June 1 to August 29, 2020) periods to assess for differences in outcomes over time. All statistical analyses were performed by using SAS 9.4 (SAS Institute, Inc, Cary, NC), and \(P\) values <.001 were considered statistically significant. The Office of Research Integrity at Children’s Mercy Kansas City (Kansas City, MO) deemed this study using deidentified data exempt from institutional board review.

RESULTS
Patient Demographic and Clinical Characteristics
Our study included a total of 516 388 hospitalizations for 501 459 children, of which 424 856 hospitalizations occurred in the pre-COVID-19 period (mean: 141 619 hospitalizations per...
The mean H-RISK was greater for those with 2 chronic conditions.

Inpatient admissions varied across the 15 specific APR-DRGs, with declines in hospital admissions during COVID-19 ranging from 8.5% to 81.3% compared with median admissions in the pre-COVID-19 period. The largest reductions were observed for asthma (81.3% reduction), bronchiolitis (80.1% reduction), pneumonia (71.4% reduction), and upper respiratory tract infections (URTIs) (68.9% reduction). The smallest admission reductions were observed for diabetes (8.5% reduction) and urinary tract infections (14.2% reduction).

In examinations of trends over time, we observed that changes in inpatient admissions varied by APR-DRG (Fig 1). Diagnoses such as diabetes and seizure experienced substantial initial declines with return toward pre-COVID-19 numbers.
numbers of admissions between weeks 18 and 24, whereas diagnoses such as asthma, bronchiolitis, pneumonia, URTI, and nonbacterial gastroenteritis experienced sustained declines through the end of the study period.

**Hospital-Level Clinical and Financial Outcomes**

Overall adjusted LOS (index and total) and costs were similar during the COVID-19 period compared with the pre-COVID-19 period (Table 2). ICU use, mortality, and mechanical ventilation also remained similar between time periods, although adjusted readmission rates were lower during the COVID-19 period at both 14 and 30 days. Unadjusted outcomes are presented within Supplemental Table 6. In a subanalysis of the early versus extended COVID-19 period, LOS and ICU use were slightly higher during the early COVID-19 period (Supplemental Table 7).

Index (adjusted ratio of means [aRM] 0.86–0.88, all \( P < .0001 \)) and total episode of care LOS (aRM 0.85–0.89, all \( P < .0001 \)) were shorter during the COVID-19 period for bronchiolitis, asthma, pulmonary edema and respiratory failure, and other gastrointestinal diagnoses, although absolute differences in LOS were small (Table 3). URTI was the only condition associated with longer index (aRM 1.12 [99.9% confidence interval (CI) 1.04–1.20]) and total episode of care LOS (aRM 1.10 [99.9% CI 1.02–1.19]) during the COVID-19 period. ICU use was lower during COVID-19 for bronchiolitis. Readmissions were similar during pre-COVID-19 and COVID-19 periods for all APR-DRG categories.

Costs of care were lower during the COVID-19 period for 3 specific categories.
TABLE 2 Overall Adjusted Clinical and Financial Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Pre-COVID-19</th>
<th>COVID-19</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS, geometric mean (99.9% CI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index admission, h</td>
<td>44.9 (42.3–47.7)</td>
<td>44.4 (41.8–47.2)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Total episode of care, h</td>
<td>47.5 (44.7–50.4)</td>
<td>46.8 (44.1–48.8)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Days between index admission and readmission</td>
<td>9.0 (8.3–8.7)</td>
<td>9.0 (8.2–8.8)</td>
<td>.93</td>
</tr>
<tr>
<td>Readmission rates (99.9% CI), %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 d</td>
<td>3.2 (2.8–3.5)</td>
<td>2.9 (2.6–3.3)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>30 d</td>
<td>4.9 (4.4–5.4)</td>
<td>4.5 (4.0–5.0)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Geometric mean cost (99.9% CI), $ (US dollars)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index admission</td>
<td>6038 (5252–6842)</td>
<td>6174 (5368–7088)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Total episode of care</td>
<td>6345 (5514–7300)</td>
<td>6473 (5624–7449)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>ICU use (99.9% CI), %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any ICU</td>
<td>8.9 (6.9–11.2)</td>
<td>8.8 (6.9–11.2)</td>
<td>.56</td>
</tr>
<tr>
<td>ICU on day 0</td>
<td>7.9 (6.2–10.0)</td>
<td>8.0 (6.3–10.1)</td>
<td>.29</td>
</tr>
<tr>
<td>Mechanical ventilation (99.9% CI), %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality (99.9% CI), %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index admission</td>
<td>0.0 (0.0–0.1)</td>
<td>0.0 (0.0–0.1)</td>
<td>.08</td>
</tr>
<tr>
<td>Total episode of care</td>
<td>0.0 (0.0–0.1)</td>
<td>0.0 (0.0–0.1)</td>
<td>.06</td>
</tr>
</tbody>
</table>

Total episode of care = index admission and readmission.

APR-DRGs, including bronchiolitis (aRM 0.86 [99.9% CI 0.80–0.94]), pulmonary edema and respiratory failure (aRM 0.90 [99.9% CI 0.83–0.98]), and asthma (aRM 0.92 [99.9% CI 0.87–0.97]). Costs were higher for infections of the upper respiratory tract (aRM 1.13 [99.9% CI 1.05–1.22]) and nonbacterial gastroenteritis (aRM 1.07 [99.9% CI 1.01–1.14]).

DISCUSSION

In this multicenter study of pediatric hospitalizations, we observed considerable reductions in use during the COVID-19 pandemic, as seen by overall inpatient admissions declining nearly 40%. Despite reductions in overall admissions, the overall clinical and financial outcomes were similar between COVID-19 and pre-COVID-19 periods. In assessments of use by APR-DRG, we observed considerable variation in inpatient admissions by diagnosis between the two time periods, with notable declines for the common pediatric conditions of asthma, bronchiolitis, and pneumonia. Many of the reductions to inpatient admissions were sustained through the end of the study period.

Similar to global reports of decreased health care use during the early pandemic, we observed substantial declines in pediatric inpatient admissions among generally healthy children compared with previous years, especially in the early pandemic period. These data align with a study of hospitalization and ICU admissions from 5 pediatric hospitals around the world, in which researchers noted a 32% to 49% decrease in hospitalization rates and a 12% to 38% decrease in ICU admission (with the exception of a hospital in Paris, at which admissions increased by 2%) during the first 6 weeks of the pandemic. In a study of ED resource use within the United States, Hartnett et al reported substantial declines in ED visits, with the greatest reductions observed for children ≤14 years of age in age-stratified analyses. Similarly, Wilder et al describe declines in overall hospitalizations per week at a single tertiary care pediatric hospital. The substantial reductions that we observed likely reflect a complex interplay of factors, including, among others, the influence of fear on health-seeking behavior, adherence to social distancing policies, knowledge about when to seek health care, and the impact of social distancing and school closures on transmission of respiratory infections.

The greatest declines in inpatient admissions we observed were for asthma, bronchiolitis, pneumonia, and URTIs. Although reductions in hospitalizations for some specific APR-DRGs, such as asthma, may be expected with the provision of high-quality ambulatory pediatric care (eg, ambulatory care sensitive conditions), we observed declines greater than expected across many APR-DRG categories, and the degree of impact was not consistently observed across other ambulatory care sensitive conditions (eg, diabetes stays were reduced only 8.5% during the COVID-19 period). Our observation of declines in inpatient care for many infections and infection-mediated diseases (eg, asthma) are consistent with other studies in which researchers examined ED and inpatient resource use during COVID-19, including asthma, croup, bronchiolitis, and pneumonia. Notably, the specific conditions with the greatest declines in our study are all conditions that may be affected by changes in community viral and bacterial transmission. Thus, social distancing and policies including school closures may have had a cumulative impact on declines in admissions in addition to the factors described above.

With overall patient and caregiver avoidance of health care facilities during the pandemic, one might expect a delay in presentation, leading to patients who are potentially sicker being admitted and worse patient outcomes (eg, increased ICU use). Previous studies of the COVID-19 pandemic in children have reported delayed presentations of pediatric solid tumors, diagnosis of new onset diabetes leading to increased...
TABLE 3 Adjusted Clinical and Financial Outcomes by APR-DRG

<table>
<thead>
<tr>
<th>APR-DRG</th>
<th>Index LOS</th>
<th>Total LOS</th>
<th>Readmission, 14 d</th>
<th>Readmission, 30 d</th>
<th>Cost</th>
<th>ICU Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ratio (95% CI)</td>
<td>P</td>
<td>Ratio (95% CI)</td>
<td>P</td>
<td>Ratio (95% CI)</td>
<td>P</td>
</tr>
<tr>
<td>Seizure</td>
<td>0.97 (0.94–1.01)</td>
<td>.005</td>
<td>0.97 (0.93–1.01)</td>
<td>.006</td>
<td>0.85 (0.85–1.25)</td>
<td>.07</td>
</tr>
<tr>
<td>URTI</td>
<td>1.12 (1.04–1.20)</td>
<td>&lt;.0001</td>
<td>1.10 (1.02–1.19)</td>
<td>&lt;.0001</td>
<td>0.75 (0.83–1.0)</td>
<td>.11</td>
</tr>
<tr>
<td>Pulmonary edema and respiratory failure</td>
<td>0.91 (0.84–0.98)</td>
<td>&lt;.0001</td>
<td>0.89 (0.82–0.97)</td>
<td>&lt;.0001</td>
<td>0.88 (0.83–1.0)</td>
<td>.16</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>0.84 (0.78–0.91)</td>
<td>&lt;.0001</td>
<td>0.82 (0.76–0.89)</td>
<td>&lt;.0001</td>
<td>0.85 (0.87–1.38)</td>
<td>.05</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>0.93 (0.86–1.01)</td>
<td>.0007</td>
<td>0.92 (0.85–1.01)</td>
<td>.002</td>
<td>0.73 (0.25–2.09)</td>
<td>.22</td>
</tr>
<tr>
<td>Asthma</td>
<td>0.92 (0.89–0.97)</td>
<td>&lt;.0001</td>
<td>0.93 (0.88–0.98)</td>
<td>&lt;.0001</td>
<td>1.20 (0.51–2.81)</td>
<td>.39</td>
</tr>
<tr>
<td>Nonbacterial gastroenteritis</td>
<td>1.00 (0.96–1.06)</td>
<td>1.02</td>
<td>0.96 (0.90–1.06)</td>
<td>1.08</td>
<td>1.44 (0.90–2.23)</td>
<td>.002</td>
</tr>
<tr>
<td>Other GI diagnoses</td>
<td>0.93 (0.88–0.98)</td>
<td>&lt;.0001</td>
<td>0.93 (0.87–0.99)</td>
<td>&lt;.0001</td>
<td>0.73 (0.43–1.25)</td>
<td>.02</td>
</tr>
<tr>
<td>Cellulitis</td>
<td>0.98 (0.93–1.03)</td>
<td>.16</td>
<td>0.98 (0.93–1.04)</td>
<td>.24</td>
<td>1.07 (0.57–1.99)</td>
<td>.89</td>
</tr>
<tr>
<td>Diabetes</td>
<td>0.99 (0.95–1.03)</td>
<td>.23</td>
<td>0.99 (0.95–1.03)</td>
<td>.23</td>
<td>0.92 (0.33–2.61)</td>
<td>.75</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>0.95 (0.85–1.06)</td>
<td>.04</td>
<td>0.94 (0.85–1.05)</td>
<td>.02</td>
<td>0.91 (0.44–1.89)</td>
<td>.60</td>
</tr>
<tr>
<td>Hypovolemia</td>
<td>0.99 (0.92–1.07)</td>
<td>.64</td>
<td>1.00 (0.92–1.08)</td>
<td>.99</td>
<td>1.05 (0.53–2.09)</td>
<td>.78</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>0.95 (0.90–1.01)</td>
<td>.002</td>
<td>0.96 (0.90–1.02)</td>
<td>.006</td>
<td>0.86 (0.41–1.84)</td>
<td>.44</td>
</tr>
<tr>
<td>Anemia</td>
<td>0.98 (0.89–1.08)</td>
<td>.51</td>
<td>1.00 (0.90–1.11)</td>
<td>.94</td>
<td>1.05 (0.50–2.18)</td>
<td>.79</td>
</tr>
<tr>
<td>Other health</td>
<td>0.95 (0.88–1.02)</td>
<td>.006</td>
<td>0.94 (0.86–1.02)</td>
<td>.002</td>
<td>0.78 (0.39–1.88)</td>
<td>.18</td>
</tr>
<tr>
<td>All other APR-DRG</td>
<td>0.97 (0.96–0.98)</td>
<td>&lt;.0001</td>
<td>0.97 (0.96–0.98)</td>
<td>&lt;.0001</td>
<td>0.89 (0.80–0.98)</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

Ratio refers to adjusted odds ratio or aRM. "All other" refers to all other APR-DRG categories combined. A Bonferroni correction for 16 comparisons was applied to determine statistical significance. GI, gastrointestinal.
in billing and coding could contribute to misclassification bias. Because PHIS is rigorously monitored for any data quality issues, the impact of misclassification bias is expected to be small. Differences in the prevalence of COVID-19 within individual communities could have also impacted some of the variability we observed. Previous reports describe the impact of the COVID-19 pandemic on socioeconomic factors, including an increased proportion of publicly insured individuals. Finally, within our models, we adjusted for sociodemographic and clinical factors, including payer, which may have adjusted away some of the indirect effects of the pandemic by biasing our results toward the null.

CONCLUSIONS
This study of US children’s hospitals revealed overall reductions in pediatric inpatient admissions, with substantial reductions observed for many infections and infectious-mediated processes (eg, asthma). Although we observed small reductions in overall LOSs, ICU use, and readmission rates during the early COVID-19 pandemic compared with the same time frame in previous years, the impact by diagnosis was variable.

ABBREVIATIONS
APR-DRG: All Patient Refined Diagnosis Related Group
aRM: adjusted ratio of means
CI: confidence interval
COVID-19: coronavirus disease 2019
ED: emergency department
GLMM: generalized linear mixed model
H-RISK: Hospitalization Resource Intensity Score for Kids
LOS: length of stay
PHIS: Pediatric Health Information System
URTI: upper respiratory tract infection

Dr Markham directed the study design, analysis, and interpretation of the data and wrote the first draft of the manuscript, providing critical intellectual content throughout the study. Dr Richardson performed all statistical analyses, participated in the study design and interpretation of the data, and provided critical intellectual content in the revision of the manuscript; Drs DePorre, Teufel, Hersh, Fleegler, Antiel, Williams, and Goldin participated in the study design, analysis, and interpretation of the data and provided critical intellectual content in the revision of the manuscript; Dr Shah supervised the study design, analysis, and interpretation of the data and provided critical intellectual content in the revision of the manuscript; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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Address correspondence to Jessica L. Markham, MD, MSc, Children’s Mercy Kansas City, 2401 Gillham Rd, Kansas City, MO 64108. E-mail: jlmarkham@cmh.edu
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Inpatient Use and Outcomes at Children's Hospitals During the Early COVID-19 Pandemic

Jessica L. Markham, Troy Richardson, Adrienne DePorre, Ronald J. Teufel II, Adam L. Hersh, Eric W. Fleegler, Ryan M. Antiel, Daniel C. Williams, Adam B. Goldin and Samir S. Shah

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