RESEARCH ARTICLE

Pediatric Inpatient-Status Volume and Cost at Children's and Nonchildren's Hospitals in the United States: 2000–2009

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ABSTRACT

OBJECTIVES: The evolving role of children's hospitals (CHs) in the setting of rising health care costs has not been fully explored. We compared pediatric inpatient discharge volumes and costs by hospital type and examined the impact of care complexity and hospital-level factors on costs.

METHODS: A retrospective, cross-sectional study of care between 2000 and 2009 was performed by using the Kids' Inpatient Database. Weighted discharge data were used to generate national estimates for a comparison of inpatient volume, cost, and complexity at CHs and nonchildren's hospitals (NCHs). Linear regression was used to assess how complexity, payer mix, and hospital-level characteristics affected inflation-adjusted costs.

RESULTS: Between 2000 and 2009, the number of discharges per 1000 children increased from 6.3 to 7.7 at CHs and dropped from 55.4 to 53.3 at NCHs. The proportion of discharges at CHs grew by 6.8% between 2006 and 2009 alone. In 2009, CHs were responsible for 12.6% (95% confidence interval: 10.4%–14.9%) of pediatric discharges and 14.7% of major therapeutic procedures, yet they accounted for 23.0% of inpatient costs. Costs per discharge were significantly higher at CHs than at NCHs for all years ($P < .001$); however, the increase in costs seen over time was not significant. Care complexity increased during the study period at both CHs and NCH, but it could not be used to fully account for the difference in costs.

CONCLUSIONS: National trends reveal a small rise in both the proportion of inpatient discharges and the hospital costs at CHs, with costs being significantly higher at CHs than at NCHs. Research into factors influencing costs and the role of CHs is needed to inform policy and contain costs.

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To optimize health system performance, the Institute for Healthcare Improvement has encouraged the adoption of the Triple Aim framework, calling for the delivery of higher-quality care, improvement in population health, and (notably for this study) the reduction of per capita health care costs.[1] Researchers in previous studies have raised concerns about increases in hospital expenditures and resource use in the pediatric population, especially among those treated at children's hospitals (CHs).[2–5] Similar to adult care, there are numerous factors contributing to the balance of cost growth and quality in pediatric care, such as epidemiologic trends in obesity, cardiometabolic disease, and behavioral health diagnoses as well as advances in medical technology, more intensive treatment styles, and more specialized care. The contribution of CHs to the growth in health care costs and changes in both practice patterns and quality has not been fully examined in the literature.

A distinctive feature of the CH is its almost exclusive treatment of pediatric patients. The concept of the CH grew out of the need for better access to comprehensive treatment and prevention services in a child-friendly setting that provides specialists who understand the differential needs and procedural risks associated with the pediatric population.[5,6] Improved access to subspecialty care and the ability to care for patients with medical complexity are often considered to be key reasons for why CHs are preferred over nonchildren's hospitals (NCHs).[6] These same factors are often cited as factors contributing to higher costs at CHs.[6] To substantiate these claims, previous researchers have focused on examining costs and quality for specific chronic and acute pediatric conditions that are uniformly high in cost, prevalence, and resource use.[2,3,7–10] The use of national inpatient databases to examine variation in pediatric costs and hospital resource use, as well as associations between hospital-based factors and health outcomes, has been encouraged.[3,11,12]

In this study, we evaluated pediatric inpatient care volume and cost trends between 2000 and 2009 at both CHs and NCHs using the nationally representative Kids' Inpatient Database (KID). Our objectives were to estimate the scope of the national growth in inpatient discharge volume and hospital costs, explore the factors responsible for this growth, and identify how these estimates vary on the basis of hospital type.

METHODS

Study Design

We used administrative and billing data from 4 past releases (2000, 2003, 2006, and 2009) of the Agency for Healthcare Research and Quality (AHRQ) KID to compare national trends in the volume, cost, and complexity of inpatient care between CHs and NCHs. Developed for the Healthcare Cost and Utilization Project (HCUP), the KID contains hospital discharge–level data for patients <21 years of age.[13] To date, ~3 million pediatric discharge records per year are housed within the database, which are sampled from all community, nonrehabilitation hospitals of states participating in the HCUP. In 2009, that included 44 states spread across all regions of the United States, up from 27 states in the 2000 KID. Changes in the number of states represented in the KID sampling frame have led to greater coverage of the national inpatient discharge population over time (Supplemental Table 4). In the 2012 KID, the definitions of CH and NCH were restructured, precluding inclusion in this study. The KID only includes data for inpatient-status hospital stays based on billing designation. With observation-status admissions accounting for 2% to 45% of discharges across hospitals, it is important to recognize that this study only pertains to inpatient-status admissions.[14]

National estimates of inpatient discharges and total charges were generated by using discharge weights provided in the HCUP that are based on the poststratification of hospitals according to the following characteristics: ownership, bed size, teaching status, rural or urban location, region of the United States, and being a freestanding CH. Records from each hospital are randomly sampled to include 10% of uncomplicated births and 80% of complicated births in addition to other pediatric cases.[13] In the KID, fewer uncomplicated births are sampled because less variation in outcomes among that population is expected. Uncomplicated births were excluded from this study to ensure that we were identifying admissions for pediatric illness rather than admissions of healthy newborns, which may be overrepresented at NCHs compared with CHs. More than 100 clinical and nonclinical data elements are available for each discharge record, including patient demographics, hospital charges, and diagnosis and procedure codes.

Each hospital within the KID during the years studied is a nonrehabilitation, acute-care hospital classified as either a children's general hospital, a children's specialty hospital, a children's unit in a general hospital, or an NCH. Children's specialty hospitals are defined as hospitals that focus on the health requirements of specific patient populations or provide a limited range of medical procedures. For this study, CHs were defined as freestanding hospitals (children's general hospitals and children's specialty hospitals). The Children's Healthcare of Atlanta Institutional Review Board deemed this study to be exempt from review because of the deidentified nature of the KID.

Data Analysis

The primary outcomes of this study were trends in the volume and cost of inpatient care at CHs and NCHs. The volume of care was measured by using both the number of pediatric inpatient discharges and inpatient discharges per 1000 children. Estimates of inpatient discharge volume per 1000 children were generated by US Census Bureau estimates for each year examined.[15] By converting the total charges of each inpatient stay into total weighted costs through the HCUP's cost/charge ratio (CCR) files, we generated estimates of hospital costs. Charges per discharge, total charges, costs per discharge, and total costs were reported. Reported costs reflect the actual cost of production, whereas charges represent the amount the hospital charged for the hospital stay. The CCRs are hospital specific and are determined by all-payer inpatient costs for almost all hospitals

included in the KID. Because <90% of all HCUP hospitals provided usable accounting reports, weighted averages of CCRs for peer groups of hospitals (based on state, urban or rural location, ownership, and bed size) were used to calculate resource costs instead of hospital-specific CCRs.[16] Weighted group average CCRs were provided in the HCUP for each KID year and are weighted according to the proportion of group beds.[13] Costs could not be calculated for 2000 KID data because of the lack of CCRs for that year. Nationally representative estimates of both volume and cost for each year available were calculated by using the sample weights, clusters, and strata included within the KID, and all costs were inflated to 2009 dollars by using the medical care services consumer price index.[17] Because of the log-normal distribution of charges and costs, log transformations were used to calculate per patient means, and mean-logged values were back transformed to actual dollar amounts.

On calculating national, inflation-adjusted cost estimates, multivariable linear regression was used to adjust for hospital and patient characteristics, including payer mix (public, private, or other insurance), bed size (small, medium, and large relative to US region), teaching status, age, sex, race, and disease severity as represented by individual AHRQ comorbidity measures. These covariates were chosen because they improved model fit and revealed differences by CH designation.

To investigate a potential clinical driver of pediatric volume and costs, we also studied the role of care complexity at CHs and NCHs. For the purposes of this study, All Patient Refined Diagnosis-Related Groups (APR-DRG) severity scores and the number of AHRQ comorbidity measures were used in combination with the number of diagnoses per discharge and the number of chronic conditions per discharge as proxies for medical complexity and resource intensity.[8,18,19] The chronic disease metric was only available in the 2009 KID. APR-DRG severity scores are used to classify patients' loss of function and/or complications as minor (1), moderate (2), major (3), or extreme (4). Data revealing the changes in the average severity score per discharge since 2003 are reported, and the impact of severity on hospital costs was determined by using linear regression analysis.

Data on the proportions and costs of major diagnostic procedures (MDPs) and major therapeutic procedures (MTPs) at CHs and NCHs were also determined to examine surgery-specific trends in care complexity. Beginning in the 2006 KID, *International Classification of Diseases, Ninth Revision* procedure codes were categorized into 4 distinct procedure classes, 2 of which being MDPs and MTPs.[20] MDPs are defined as procedures that are performed in the operating room for diagnostic purposes (ie, biopsy of abdominal mass), whereas MTPs are procedures that are completed as part of clinical treatment (ie, appendectomy).

Statistical analyses were performed by using the survey procedures of SAS version 9.4 (SAS Institute, Inc, Cary, NC) and the "survey" package in RStudio version 1.0.136. Statistical significance was defined by $P < .05$.

RESULTS

Trends in Pediatric Care

From 2000 to 2009, total weighted pediatric inpatient discharges from both CHs and NCHs stayed relatively stable, increasing slightly from 4.5 million to 4.6 million (Table 1). Similarly, discharge volume did not significantly change over time, with inpatient discharges at CHs ranging from 6.3 per 1000 children (95% confidence interval [CI]: 4.3–8.3) in 2000 to 7.7 per 1000 children (95% CI: 6.2–9.3) in 2009. Relative inpatient discharges at NCHs ranged from 55.4 (95% CI: 51.9–59.0) to 53.4 (95% CI: 51.0–55.8) discharges per 1000 children during the same time period. However, the growth in the proportion of discharges that are from CHs has increased steadily. This expansion has caused CHs to account for 12.6% of all pediatric discharges as of 2009, a 23.5% increase since 2000 (Fig 1).

Trends in Pediatric Costs

The national weighted estimate of total pediatric care costs in 2009 was $36.9 billion (95% CI: 34.3–39.5), which is 28.1% higher than the total cost in 2003 (Table 1). The cost of care at CHs has risen to account for 23.0% of all pediatric care costs, up from 21.2% 6 years before. Per discharge costs at CHs rose by 16.8% between 2003 and 2009 from ~$6442 to $7524, whereas a small decrease in per discharge costs was observed at NCHs (from $3387 to $3295). Figure 2 includes the trends in cost per discharge at CHs compared with at NCHs between 2003 and 2009. Although there was no significant difference in the cost per discharge between study years, costs per discharge were significantly higher at CHs than at NCHs for each individual year.

Multivariable regression results are provided in Supplemental Table 5. After adjustment for hospital and patient characteristics, significant increases in costs at CHs were observed, with 83% greater adjusted costs seen at CHs compared with at NCHs ($\beta = .605$; SE = 0.060; $P < .001$). Costs were significantly lower in 2009 than in 2003 for NCHs (5% lower; $\beta = -.051$; SE = 0.013; $P < .001$), and there was no difference in costs for 2009 vs 2003 in CHs (5% greater; $\beta = .045$; SE = 0.079; $P = .574$). However, these trends were not significantly different from each other (interaction $\beta = .096$; SE = 0.080; $P = .230$). In addition, increased costs were associated with large-bed hospitals ($\beta = .198$; SE = 0.025; $P < .001$) and teaching hospitals ($\beta = .365$; SE = 0.021; $P < .001$). Increased costs were also associated with male sex ($\beta = .110$; SE = 0.003; $P < .001$) and increased age ($\beta = .475$; SE = 0.011; $P < .001$). Hispanic patients had increased costs compared with white patients ($\beta = .046$; SE = 0.018; $P = .013$), whereas African American patients had decreased costs ($\beta = .036$; SE = 0.013; $P = .005$).

Care Complexity

Between 2003 and 2009, the average APR-DRG severity score increased by 6.8% and 4.4% at CHs and NCHs, respectively (Table 2). Since 2000, the number of diagnoses per discharge at CHs increased by 36.9% to reach 4.90 (95% CI: 4.61–5.18) in 2009. NCHs exhibited consistent growth in care complexity over the 9-year period as well, ranging from 3.30 (95% CI: 3.25–3.34) to 4.29

TABLE 1 Summary of Changes in Discharge Volume and Hospital Costs at CHs and NCHs Between 2000 and 2009

	2000	2003	2006	2009
Discharges, *n* (%) [95% CI]				
CH	453 647 (10.2) [7.2–13.1]	513 957 (11.5) [9.6–13.4]	537 081 (11.8) [9.4–14.2]	574 989 (12.6) [10.4–14.9]
NCH	4 012 846 (89.8) [86.9–92.8]	3 955 540 (88.5) [86.6–90.4]	4 012 289 (88.2) [85.8–90.6]	3 981 997 (87.4) [85.1–89.6]
Total (range)	4 466 494 (4 171 783–4 761 205)	4 469 497 (4 257 003–4 681 991)	4 549 370 (4 324 299–4 774 441)	4 556 986 (4 344 306–4 769 665)
Discharges per 1000 (95% CI)				
CH	6.3 (4.3–8.3)	7.0 (5.7–8.3)	7.3 (5.6–8.9)	7.7 (6.2–9.3)
NCH	55.4 (51.9–59.0)	54.0 (51.4–56.6)	54.2 (51.7–56.8)	53.4 (51.0–55.8)
Total	61.7 (57.6–65.8)	61.0 (58.1–63.9)	61.5 (58.4–64.5)	60.1 (58.3–64.0)
Charges, $, billions (95% CI) [%]				
CH	13.0 (9.9–16.1) [18.4]	17.9 (14.1–21.8) [20.2]	21.7 (17.2–26.3) [21.3]	26.8 (21.4–32.2) [23.6]
NCH	57.4 (53.3–61.6) [81.6]	70.8 (66.1–75.5) [79.8]	79.9 (74.4–85.3) [78.7]	87.0 (81.0–93.0) [76.4]
Total	70.5 (65.3–75.6) [100]	88.8 (82.7–94.8) [100]	101.6 (94.5–108.6) [100]	113.8 (105.7–121.9) [100]
Charges per discharge, $, mean (95% CI)				
CH	14 221 (12 653–15 985)	15 594 (13 959–17 421)	18 428 (16 656–20 388)	21 297 (19 396–23 385)
NCH	6644 (6450–6844)	8063 (7845–8286)	8805 (8548–9071)	9312 (9031–9601)
Total	7162 (6937–7395)	8705 (8446–8971)	9614 (9312–9925)	10 339 (10 006–10 684)
Costs, $, billions (95% CI) [%]				
CH	—	6.1 (4.8–7.4) [21.3]	8.2 (6.6–9.7) [21.3]	8.5 (6.8–10.2) [23.1]
NCH	—	22.7 (20.9–24.4) [78.7]	30.2 (28.2–32.3) [78.7]	28.4 (26.4–30.4) [74.9]
Total	—	28.8 (26.7–30.9) [100]	38.4 (35.8–41.0) [100]	36.9 (34.3–39.5) [100]
Costs per discharge, $, mean (95% CI)				
CH	—	6442 (5784–7175)	6996 (6425–7618)	7524 (6887–8219)
NCH	—	3387 (3291–3485)	3456 (3359–3555)	3295 (3199–3384)
Total	—	3660 (3552–3771)	3758 (3649–3870)	3634 (3523–3748)

No CCRs were available in the 2000 KID to generate total costs in the y 2000. All dollar figures have been adjusted for inflation to 2009 dollar amounts. —, not applicable.

(95% CI: 4.23–4.34) diagnoses per discharge. The number of chronic conditions per discharge at CHs (1.62) was twice that of NCHs in 2009 (95% CI: 1.51–1.72; Table 2). In agreement with other severity measures, the average number of AHRQ comorbidity measures per patient increased over time and was greater at CHs. In 2009, the average number of comorbidities was 2 times greater at CHs. Regression analyses in which we employed AHRQ comorbidity measures revealed that nearly all comorbidities had a significant effect on the increase in costs. This included alcohol abuse, deficiency anemias, arthritis, congestive heart failure, chronic pulmonary disease, coagulopathy, diabetes, hypertension, hypothyroidism, liver disease, lymphoma, fluid disorders, metastatic cancer, neurologic disorders, obesity, paralysis, peripheral vascular disorders, pulmonary circulation disorders, renal failure, solid tumors, peptic ulcer disease, valvular disease, and weight loss. However, severity could not be used to fully account for the differential in costs between CHs and NCHs.

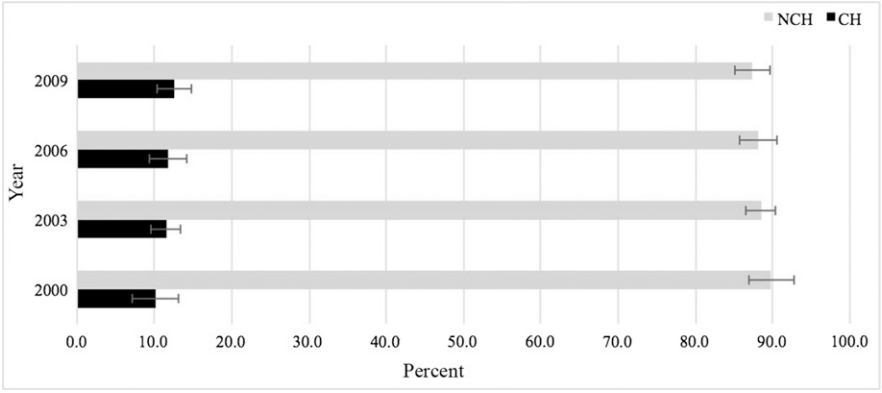

FIGURE 1 National trend in the percentage of total pediatric discharges at CHs versus NCHs between 2000 and 2009.

Although APR-DRGs and nonsurgical measures of severity suggest an increase in

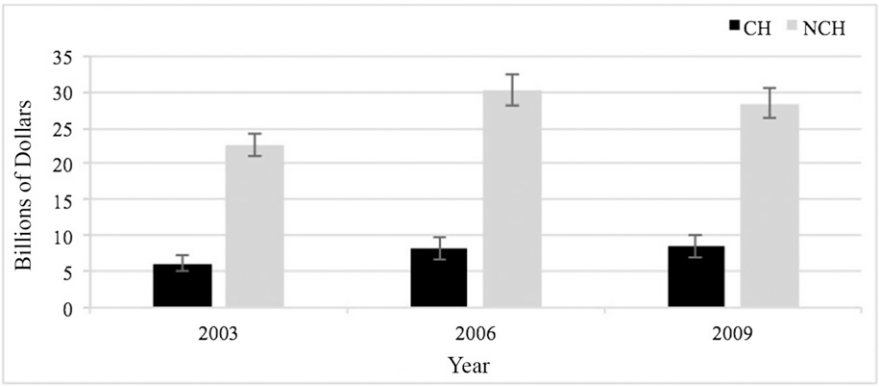

FIGURE 2 National trend in hospital costs for pediatric care at CHs versus NCHs between 2003 and 2009. No CCRs were available in the 2000 KID to generate total costs in the year 2000.

care complexity, changes in the volume of MDPs and MTPs suggest otherwise. Specifically, the proportion of visits in which MTPs were performed decreased from 37.6% in 2006 to 35.9% in 2009. The cost per discharge over those 3 years has decreased from ~$15 530 to $14 668 for MDPs and $6227 to $6040 for MTPs. However, the proportion of both procedure types performed at CHs has increased from 2006 to 2009 (Table 3). In 2009 alone, the 14.7% of MTPs performed at CHs translated to 28.4% of all MTP costs. Hospital costs for those surgeries totaled $3.8 billion that year, representing a 2.5% increase in MTP costs at CHs since 2006. In comparison, NCHs experienced a 10.9% decrease in such costs during that same period.

DISCUSSION

We compared national trends in the volume, cost, and complexity of pediatric inpatient care between CHs and NCHs from 2000 to 2009 to investigate the contribution of inpatient pediatric services to the growth in national health care expenditures. We observed a small rise in both the proportion of discharges and the cost of care at CHs, with costs being significantly higher at CHs than at NCHs. Although comorbidity measures were shown to have a positive effect on costs, severity could not be used to fully account for the differential in costs between CHs and NCHs.

Our national estimates from the current study reveal that in 2009, CHs were responsible for 12.6% of all pediatric admissions yet 23.0% of all inpatient pediatric costs. These estimates are up from 11.5% of all admissions and 21.2% of all pediatric costs in 2003. Although these results did not reach statistical significance, they are notable. The rise in case load at CHs may be explained by a growing pediatric population, a greater acuity of patients (such as those with complex chronic conditions), and an expansion in the type of specialized treatments that are available to children.[8,9,12,21,22] Increased financial risk follows from a case mix with these characteristics, which may be leading hospitals (especially CHs) to maximize bed occupancy, acquire cutting-edge equipment, and (as supported by our results) increase hospital charges. It is important to note, however, that the total volume of pediatric care far exceeds the capacity of CHs, and NCHs play an important role in caring for common medical and surgical problems on a daily basis and often do so at a lower cost to the hospital.[23]

With most current evidence, researchers seem to differentiate CHs solely by their improved health outcomes in rare and complex conditions, but additional research in which quality metrics are compared by hospital type is needed.[8,24,25] The observed increase in care from NCHs to CHs may be related to the concept of regionalization of health care, in which broadly accessible primary-care groups feed into a coordinated referral network to centralized, secondary, and tertiary facilities. Although regionalization may inconvenience patients in rural communities, it allows for a concentration of resources within high-acuity centers, and these facilities often provide a higher level of care with more subspecialists, pediatric-specific equipment, and technologies that allow for the care of patients with even the most complex of conditions.

Higher hospital expenditures at CHs may also be tied to the substantial proportion of care provided at these hospitals that is nonprofitable,[6] heavily subsidized by the federal or state governments,[4] or both. These cost data must be considered with caution, however, because the HCUP CCRs are inherently limited. One must remember

TABLE 2 Average per Discharge Severity Metrics Between 2000 and 2009 at CHs Versus NCHs: Trends in Pediatric Care Complexity

	2000	2003	2006	2009
NDX				
CH	3.58 (3.32–3.84)	3.67 (3.51–3.82)	4.37 (4.16–4.58)	4.90 (4.61–5.18)
NCH	3.30 (3.25–3.34)	3.48 (3.44–3.52)	3.88 (3.84–3.93)	4.29 (4.23–4.34)
NCHRONIC				
CH	—	—	—	1.62 (1.51–1.72)
NCH	—	—	—	0.84 (0.81–0.87)
APR-DRG severity score				
CH	—	1.76 (1.73–1.80)	—	1.88 (1.84–1.92)
NCH	—	1.58 (1.57–1.59)	—	1.65 (1.64–1.66)
No. AHRQ comorbidity measures				
CH	—	0.36 (0.34–0.39)	0.44 (0.41–0.47)	0.49 (0.46–0.52)
NCH	—	0.28 (0.27–0.28)	0.32 (0.31–0.33)	0.36 (0.35–0.36)

No APR-DRG severity scores were available for 2000 through 2006. NCHRONIC, number of chronic; NDX, number of diagnoses; —, not applicable.

TABLE 3 Costs Due to and Percentage of Discharges After MDPs or MTPs Between 2006 and 2009 at CHs Compared With NCHs: Pediatric Volume and Cost Data by Procedure Class

	2006	2009
MDP		
CH		
Discharges, % (95% CI)	29.2 (23.4–34.9)	33.2 (27.4–38.9)
Cost per discharge, $, (95% CI)	20 113 (17 878–22 627)	20 567 (18 161–23 292)
Total cost, $	134 163 839	131 822 954
NCH		
Discharges, % (95% CI)	70.8 (65.1–76.6)	66.8 (61.1–72.6)
Cost per discharge, $, (95% CI)	13 948 (13 242–14 691)	12 524 (11 868–13 216)
Total cost, $	235 517 047	161 855 321
MTP		
CH		
Discharges, % (95% CI)	13.4 (11.0–15.8)	14.7 (12.3–17.1)
Cost per discharge, $ (95% CI)	14 173 (12 906–15 565)	15 167 (13 636–16 870)
Total cost, $	3 674 066 910	3 764 963 826
NCH		
Discharges, % (95% CI)	86.6 (84.2–89.0)	85.3 (82.9–87.7)
Cost per discharge, $, (95% CI)	5483 (5265–5709)	5215 (4984–5456)
Total cost, $	10 633 104 618	9 478 313 663

that the cost data reported are merely an estimation of the actual expenses incurred in the production of hospital services based on conversions in which researchers use the reported charges submitted by the hospital; no actual cost data are available in the KID. The lack of transparency in charge and cost data combined with higher input costs may help to explain why we found a 11.9% increase in discharge volume corresponding to a 39.3% increase in costs at CHs between 2003 and 2009.[26] However, a more detailed understanding of the economic and hospital-level drivers of rising volume and cost trends is required to appropriately study whether higher costs in CHs are associated with higher-quality care.

Care complexity is a commonly studied factor that is known to contribute to hospital costs and resource use. Although our results reveal that disease severity has steadily increased between 2000 and 2009, greater acuity could not be used to wholly explain the difference in costs at CHs compared with at NCHs. Multiple measures of severity were studied and controlled for to interpret this confounder's role in inflation-adjusted cost trends because researchers in previous studies have suggested that more complex care is provided at CHs compared with at NCHs, especially at high-volume centers.[3,7–9,23,25] These specialized centers are known to be resource intensive and high in costs partly because of the increased severity of patients' conditions and their requisite need for resource-intensive care.[27–29] Alternative hospital-level drivers besides the severity of care, such as hospital size, ownership, and teaching status, were examined given their influence on pricing strategies and market responses at CHs and NCHs.[30] Although these variables, along with payer mix, can be used to only partially explain the cost trends in our multivariate regression model, teaching hospitals and facilities with a large bed size were significant predictors of higher costs. The lack of incentives for some hospitals to control costs and either maximize or respond to profitability, whether CHs or NCHs, may be responsible for this finding.[31]

Key limitations of this study pertain to our use of a large, administrative data set with a sampling frame that has changed between 2000 and 2009. These changes may be partially responsible for the change in CH discharges, and costs in particular, as compared with NCHs. Because of the changes in the way that CHs were defined in the 2012 KID release, we were unable to include these data in our analysis because the comparison was not equal. Similar comparisons with newer data will be able to be made with subsequent releases of the KID. Additionally, the KID lacks data on observation-status admissions, which may represent up to 33% of discharges and costs at some hospitals.[14] The lack of hospital-specific CCRs for all participating hospitals also meant using weighted averages of CCRs that were based on peer hospital groups, leading to possible underestimations of the variation in hospital costs. Given the limited number of peer groups in states with few CHs, imputing data specifically for CHs may be challenging. The oversampling of complicated births in the KID may have exaggerated the observed differences in cost and care complexity by hospital type as well because previous studies have revealed that CHs possess a disproportionate share of complicated births and neonatal costs.[21,22] In addition, measures of total costs may be skewed because weighted estimates were not adjusted to account for extreme cost outliers among either CHs or NCHs. Nonetheless, variances in cost estimates were calculated to gauge whether the differences in costs over time were a function of weights and CCRs. The observed trends in costs at both hospital types remained.

CONCLUSIONS

National trends reveal a small rise in both the proportion of discharges and the cost of care at CHs, with costs being significantly higher at CHs than at NCHs. Further research into the causes of these trends is necessary to devise effective cost-reduction strategies for inpatient pediatric facilities. Capturing changes in the value of the inpatient pediatric care provided will require an ongoing study of patient- and hospital-level quality metrics at both CHs and NCHs. Follow-up studies are needed to examine costs and quality metrics to determine whether increases in hospital

costs for pediatric care at CHs are associated with improved health outcomes.

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