

Quality and Safety in Hospital Pediatrics During COVID-19: A National Qualitative Study

Nadia Roessler De Angulo, MD,^{1,*} Nicole Penwill, MD, MPH,^{1,*} Priya R. Pathak, MD, MPH,¹ Clairissa Ja,² Martha J. Elster, MD,¹ Daniela Hochreiter, MD,³ Jacqueline M. Newton, RN,⁴ Karen M. Wilson, MD, MPH,⁵ Sunitha V. Kaiser, MD, MSc^{1,6}

ABSTRACT

OBJECTIVE: To describe challenges in inpatient pediatric quality and safety during the coronavirus disease 2019 (COVID-19) pandemic.

METHODS: In a previous qualitative study, our team sought to broadly describe changes in pediatric inpatient care during the pandemic. For both that study and this ancillary analysis, we purposefully sampled participants from community and children's hospitals in the 6 US states with the highest COVID-19 hospitalization rates from March to May 2020. We recruited 2 to 3 participants from each hospital (administrators, front-line physicians, nurses, caregivers) for semistructured interviews. We used constant comparative methods to identify themes regarding quality and safety challenges during the pandemic.

RESULTS: We interviewed 30 participants from 12 hospitals. Participants described several impacts to clinical workflows, including decreased direct clinician-patient interactions and challenges to communication, partly addressed through innovative use of telehealth technology. Participants reported changes in the discharge and transfer process (eg, discharges, difficulties accessing specialized facilities). Participants also described impacts to hospital operations, including changes in quality monitoring and operations (eg, decreased staff, data collection), increased health risks for clinicians and staff (eg, COVID-19 exposure, testing delays), and staff and supply shortages. Participants voiced concerns that negative quality and safety impacts could include increased risk of preventable safety events and hospital readmissions, and decreased patient engagement, education, and satisfaction.

CONCLUSIONS: We identified several impacts to clinical workflows and hospital operations during the pandemic that may have affected inpatient pediatric care quality and safety. Our findings highlight potentially important areas of focus for planning pandemic recovery, preparing for future pandemics, and conducting future research on inpatient pediatric quality and safety.



^aUniversity of California, San Francisco, California;

^bUniversity of California, Davis, California; ^cYale School of Medicine, New Haven, Connecticut;

^dChildren's National Hospital, Washington, District of Columbia; ^eThe Kravis Children's Hospital at the Icahn School of Medicine at Mount Sinai, New York City, New York;

and ^fPhilip R. Lee Institute for Health Policy Studies, San Francisco, California

*Contributed equally as co-first authors

www.hospitalpediatrics.org

DOI: <https://doi.org/10.1542/hpeds.2021-006115>

Copyright © 2021 by the American Academy of Pediatrics

Address correspondence to Dr. Nadia Roessler De Angulo, Department of Pediatrics, 550 16th St San Francisco, CA 94158. E-mail: nadia.roesslerdeangulo@ucsf.edu

HOSPITAL PEDIATRICS (ISSN Numbers: Print, 2154-1663; Online, 2154-1671).

FUNDING: Funded by the Agency for Healthcare Research and Quality (K08 HS024592-05S1). The funder played no role in designing, conducting, or preparing the manuscript for this study.

CONFLICT OF INTEREST: The authors have indicated they have no potential conflict of interest to disclose.

Dr Roessler De Angulo helped conceptualize and design the study, assisted in data collection, analysis, and interpretation of the data, and drafted the initial manuscript; Drs Penwill and Kaiser helped conceptualize and design the study, assisted in data collection, analysis, and interpretation of the data, and reviewed and revised the manuscript; Drs Elster, Pathak, and Hochreiter and Ms Ja assisted in data collection, analysis, and interpretation of the data, and reviewed and revised the manuscript; Dr Wilson and Ms Newton helped conceptualize and design the study, helped with analysis and interpretation of the data, and reviewed and revised the manuscript; and all authors approved the final manuscript as submitted.

The coronavirus disease 2019 (COVID-19) pandemic caused major, rapid changes in health care delivery in the United States.¹ Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) impacted adults most directly, with substantial increases in health care utilization, morbidity, and mortality.²⁻⁴ Faced with surges in adult cases, hospitals rapidly adapted policies, workflows, and staffing in ways that impacted the care of children. Pediatric units sometimes closed or transferred patients to increase capacity for adults, quickly modified staffing models, restricted caregiver presence, halted family-centered rounds (FCR), and reallocated resources and supplies.⁵⁻⁹

We are beginning to better understand the pandemic's effects on inpatient pediatric admissions and significantly declined use due to the pandemic.¹⁰⁻¹⁴ Two studies used the Pediatric Health Information System (a database of >50 US children's hospitals) to examine the pandemic's effects on quality and safety indicators. Markham et al found decreases in hospital readmission and no changes in length of stay, cost, ICU use, or mortality early in the pandemic.¹² Masonbrink et al¹⁵ found increases in postoperative sepsis, while rates of other preventable safety events, such as catheter-associated bloodstream infections, remained stable. In a single-center qualitative study by Diskin et al, authors describe unintended consequences of the pandemic on the care of children. They suggest potential adverse quality outcomes due to decreases in patient/family-centeredness and timeliness of care.¹⁶ However, these previous studies mainly focus on free-standing children's hospitals, where <30% of children are hospitalized nationally.¹⁷ In addition, to our knowledge, there have been no multicenter studies exploring the mechanisms by which challenges during the pandemic may have impacted inpatient pediatric quality and safety.

Our research team conducted a previous qualitative study with the broad goal of understanding changes in inpatient pediatric care delivery during the COVID-19

pandemic and lessons learned.⁹ Participants described how hospitals rapidly developed new policies, optimized communication with staff, and increased use of videoconference and telehealth, and how clinicians newly provided care for hospitalized adults and experienced negative impacts of the pandemic on their mental health. Upon piloting our interview guide, distinct and potentially important quality and safety data emerged, prompting us to collect and analyze these data separately. The objective of this ancillary qualitative study was to describe challenges in inpatient pediatric quality and safety during the pandemic using a diverse sample of both community and children's hospitals. Our findings can potentially help in identifying areas of focus for planning pandemic recovery and future research.

METHODS Framework

Two resources informed this study: the hospital disaster resilience framework (which outlines major domains of hospital resiliency) and the AcademyHealth report: "Health Systems Respond to COVID-19: Priorities for Rapid-Cycle Evaluation" (which identifies high-priority research questions for improving quality and safety of care during and after the pandemic).^{18,19} We used these resources to identify key questions that we organized in a semistructured interview guide (see Supplemental Tables 2 and 3). The interview guide was pilot tested and refined over 3 interviews to ensure participant comprehension and ability to elicit descriptive, narrative answers. Data from pilot interviews were included in the final analysis. This study was reviewed and deemed exempt by our institution's institutional review board.

Participants

We used The COVID Tracking Project database to identify the 6 US states with the highest incidence of COVID-related hospitalizations during the first quarter of the pandemic, from March to May 2020 (Connecticut, District of Columbia, Louisiana, Massachusetts, New Jersey,

New York). In each of these states, we identified 1 community hospital and 1 children's hospital. We sampled a first participant (pediatric clinician involved in inpatient care during the COVID-19 surge) by direct or indirect contact with our team members. That participant then helped identify additional knowledgeable participants (snowball sampling).²¹ We included participants with pediatric administrative and/or front-line clinical roles (nurses, physicians). We also interviewed caregivers who had used medical care during the pandemic from family advisory councils at 3 sites. We concluded interviews when we reached saturation amongst the cohort as a whole (ie, when new data became repetitive with no emergent themes generated).²²

Data collection

We conducted one-on-one interviews of participants via videoconference. After obtaining consent to record, we started with open-ended questions followed by semistructured probes from our interview guide. Interviews were transcribed, proofread, and deidentified.

Analysis

We analyzed qualitative interview data in Dedoose 8.3.45 (Manhattan Beach, CA) using constant comparative methods.^{22,23} Four authors simultaneously and independently analyzed the first 4 transcripts and developed a preliminary codebook. Subsequently, all members of the research team reviewed and finalized the codebook. Each transcript was then independently coded by 2 authors, who met periodically to verify consistency. Our team iteratively examined and discussed primary data to identify emerging common themes across the whole sample (both community and children's hospitals). Five authors developed memos on the basis of these themes to facilitate further discussion and exploration by the larger team. We analyzed the data in parallel with ongoing interviews until we achieved saturation. To ensure study rigor, we used triangulation, reflexivity, and member-checking. Triangulation involved the use of

investigators from multiple roles (eg, administrator, physicians, nurse, fellows, resident, student), to gain an in-depth understanding of relevant themes from different perspectives. All team members were engaged and encouraged to contribute their viewpoints through all stages of the study, so we could benefit from different perspectives (eg, trainees provided insights into workflow changes from the perspective of workers with up to 80 hours of duty per week). Team members promoted reflexivity throughout the study process by writing memos on and discussing their potential sources of bias (eg, professional role, experiences during the pandemic). We also used member-checking to strengthen the rigor of our analysis by returning data to 3 participants to check for accuracy; notably, we clarified that a particularly compelling passage about communication was intended to reflect safety concerns.^{22,24}

RESULTS

We interviewed 30 participants from 12 hospitals (1 community and 1 children's hospital in each of the 6 states). Fifteen participants had both administrative and clinical roles (6 nurses, 9 physicians), 9 were front-line physicians, and 6 were caregivers or parents (from 3 children's hospitals). Duration of interviews ranged from 16 to 35 minutes for caregivers (average 27 minutes) and from 22 to 69 minutes for clinicians (average 41 minutes).

Below, we summarize the major themes that emerged, in order of highest coded frequency. Additional illustrative quotes for each theme are displayed in Table 1.

Changes in Clinical Workflows

Declines in Direct Clinician-Patient Interactions

Participants reported a decrease in face-to-face interactions between clinicians and patients and caregivers due to fear of exposure to SARS-CoV-2 and the need to preserve personal protective equipment (PPE). Participants reported they were going into patient rooms less often, in

smaller teams, and examining patients less frequently. PPE deterred clinicians from performing examinations and rendered examinations more difficult, which occasionally led to decreased clinical monitoring and to complications potentially going undiagnosed for longer.

Participants felt that halting FCR may have decreased patient and caregiver engagement (eg, involvement in decision-making, opportunities to clarify care plans). Many hospital leaders and clinicians raised concerns that these changes may have impacted patient safety by leaving caregivers less informed regarding care plans both during and after the hospitalization (eg, plans to ambulate regularly to prevent deep vein thrombosis, oral hydration goals). Some caregivers reported feeling "abandoned" and expressed decreased satisfaction. Other caregivers appreciated smaller rounding groups and fewer interruptions.

"We don't see [the physician team] as often, or we see them incredibly infrequently. [During] our last stay, it was very clear we weren't going to see anybody. It was frustrating not to be able to ask questions."

Caregiver, Hospital 5

Challenges to Communication

Decreased direct interaction with patients impacted communication. In addition, participants described other communication challenges, including isolation status and PPE. Loud filtration systems, face shields, and masks impeded both verbal and nonverbal communication. Clinicians and caregivers alike reported difficulties exchanging information (ie, history, plan of care), especially with families whose preferred language was not English. This was exacerbated by restricted visitation policies, which left additional parents and caregivers out of direct communication. Participants raised concerns that these challenges to communication could compromise safety and patient and caregiver involvement in their child's care.

All participants described increasing use of telehealth, which offered opportunities

for safe, distanced communication. However, participants reported important technical difficulties (eg, lacking electronic tablets, poor Internet connection). They also noted challenges with caregiver teaching via phone or video call (eg, feeding pump teaching over the phone feeling suboptimal) and interpreter services via telehealth (eg, accessing services; hearing and understanding speakers).

"It was a real challenge with non-English speaking parents because we were trying to use an interpreter phone with an N95 mask, an extra mask, and the negative pressure circulator running in the background. Trying to really get a good history and... to make sure you provide quality care in that situation was really brutal." 88

Administrator, Hospital 10

Changes in the Hospital Discharge and Transfer Process

Participants described several changes in the hospital discharge process. Clinicians often tried to discharge patients earlier to minimize risk of COVID-19 exposure and optimize bed availability/access (eg, children with infections, respiratory illnesses, newborns/births). Some participants were concerned this could potentially lead to increased risk of hospital readmission, especially in the context of greater difficulties accessing timely outpatient follow-up. For instance, several clinicians described worries about expedited discharges of newborns impacting the risk of severe hyperbilirubinemia. Additionally, a caregiver described earlier-than-expected discharge of a child with febrile neutropenia (at lower cell counts than usual) and her concerns about severe infection risk. Participants described efforts to try to better leverage telehealth resources to arrange and ensure follow-up after discharge.

In addition, participants reported lacking appropriate facilities to transfer patients in need of specialized care (eg, psychiatric care, rehabilitation), especially when

TABLE 1 Themes and Exemplary Quotes on Inpatient Pediatric Quality and Safety During the COVID-19 Pandemic

Themes	Quotes
Declines in direct clinician-patient interactions	"[For] the first kid with COVID-confirmed respiratory illness, there was yellow tape around a 6-foot perimeter around the door, so nobody would even walk by the door ... I don't know how patient-centered our care was in the beginning..." Physician, Hospital 11
Challenges to communication	"Translators were not going in the room because we were trying to minimize exposure. So fewer in-person translators, which we know can help with the discussion ... particularly in uncertain clinical conditions, rather than doing it over the phone ... Family meetings didn't really happen in the way they used to allow family to really ask questions. Only one caretaker there. No linguist and interpreter. I think all of these things that were done to protect staff, and clearly were needed, unfortunately do impact children of families where English wasn't the first language ... with the hardship of only having 1 caretaker there, and not being able to relay all the information." Physician, Hospital 3
Changes in the hospital discharge process	"[My son has] neutropenia, so standard procedure for him would be to get his numbers at a certain point before we discharge. And I remembered us doing the blood work and them coming back low but then the doctors [said] 'We understand that it's low, but given the risk of him being here, we're going to send you home ...'. I felt like from a non-medical mom standpoint, the quality was less." Caregiver, Hospital 10
Changes in quality and safety monitoring and operations	"Everything nonessential stopped. Meetings were canceled, research was put on hold, IRB were halted, labs were shut down, but that means everything else too ... From a quality and safety perspective, we have mandatory reporting on things like sepsis. No mandatory reporting during COVID, there was too much else going on. We stopped measuring the things that require somebody walking around with a checklist. That did not happen because that was not the priority. So, we don't have data on certain things because it was chosen to be stopped, and I think that a lot of that was appropriate." Physician, Hospital 1
Increased health risks for clinicians/staff	"I remember in the beginning asking about wearing cloth masks to work each day or all day long. At the time, that's not what the CDC was recommending, so that's not what the hospital was recommending ... You didn't have to wear an N95 if you were doing the viral panel testing, but then it turned that you did need to wear the N95, and you shouldn't enter that room for 30 minutes ... Just yesterday I was told I didn't need that. Did I put myself at risk of exposure? ... Recommendations kept changing, that caused some frustration in the beginning." Physician, Hospital 11
Staff shortages	"[There] was a realization early on that staffing was going to be challenging, that it might not make sense to have adult patients in a hospital with a team of all-pediatric attendings, residents, nurses. And that it might not be the safest model for the patient." Physician, Hospital 10
Supply shortages	"Early on, just like every other hospital, we had a PPE shortage, and we were recycling N95 masks. We were trying to minimize the number of staff that went into the room to conserve and preserve PPE." Nurse, Hospital 3

patients had COVID-19. Consequently, they described longer admissions in pediatric units while awaiting transfer, which increased exposure risk. They also described more time and effort spent on trying to find these specialized services. Some participants were able to newly harness telehealth services to provide mental health care on general inpatient pediatric units (which was not used before the pandemic).

"We saw an increase in the number of kids coming in with behavioral crises, and getting them placed in a facility that could manage them at

the next phase of care was so hard... These kids languished in a facility that was not designed to get them through the crisis in an optimal way."

Physician, Hospital 7

Changes in Hospital Operations

Changes in Quality and Safety Monitoring and Operations

Quality and safety leaders and staff often had to take on key roles in planning COVID-19 response. Some participants reported that these shifts in prioritization led to lapses in ongoing quality and safety

monitoring and stalls in starting new quality initiatives. However, other participants reported that decreases in inpatient volumes freed up time for leaders to launch new quality improvement tools (eg, clinical pathways) and initiatives.

Participants also reported mixed effects on safety events. Some noted increased safety events, such as pressure injuries and hospital readmissions, and they felt that these may be driven by changes in clinical monitoring and follow-up, respectively. Others described stable or decreased quality and safety events (eg,

central line-associated bloodstream infections) and felt that decreased volumes led to improved patient-to-staff ratios and safety.

Participants reported challenges in ensuring quality and safety in the care of patients with COVID-19 and Multisystem Inflammatory Syndrome in Children due to the lack of evidence-based guidelines to define high-quality care and quality for these populations. They often relied on external resources to help navigate clinical care for children with these novel diseases (eg, POPCoRNetwork resources).²⁵

“Nobody crunched that data in real time because all of those people were repurposed for other things, but we did crunch it later... We had an uptick in every health care-associated condition that we were capable of tracking after the fact, because that was not what the priority was.”

Physician, Hospital 10

Increased Health Risks for Clinicians/ Staff

Hospital policies on PPE use, patient isolation, and visitor restriction constantly evolved with emerging new evidence, leading to concerns that suboptimal evidence and policies put staff and patients at risk for exposure. Participants reported confusion and difficulty remaining up to date with policies, which were usually made with guidance from outside resources (eg, Centers for Disease Control). Caregivers feared getting infected in the hospital and appreciated strict guidelines.

Additionally, early in the pandemic limited testing access and supplies resulted in slow turnaround of results. This made it difficult to isolate potentially infected patients and staff, prevent exposures, and provide timely care. PPE shortages also contributed to the risk of exposure for clinicians and staff.

“One day they're wearing a regular face mask, the next day an N95. These algorithms are really complicated, so it took some time to get

everybody comfortable and feeling confident that we had the best evidence, and we were giving them the very best PPE to protect them.”

Nurse, Hospital 3

Staff Shortages

Surges in adult cases and COVID-19 exposures or illness led to staff shortages, prompting clinicians to take on new care tasks. Pediatric-trained clinicians were redeployed to adult care roles or new hospital units (eg, from surgical to new isolation units, from operating/recovery rooms to medical units, from acute to critical care units). As clinicians practiced out of their usual scope, safety and competency concerns arose. Some participants described increased safety events in units staffed with cross-covering clinicians. Helpful resources included consultation support from adult hospitalists, refresher training (eg, advanced life support), and educational resources.

“Nurses are caring for a completely different scope of kids. These kids are pretty sick; we have more rapid responses and more codes in this area... In response, we've done more training, more support.”

Nurse, Hospital 5

Supply Shortages

Participants reported challenges meeting usual standards of care due to shortages in supplies (eg, PPE, oxygen delivery systems), clinical care spaces, and medications (eg, antibiotics), especially during the initial surge. Reallocation of resources to adult patients occurred in some children's hospitals nested within larger hospitals.

“Medication shortages impacted kids... They were looked at differently because they weren't impacted the same way medically as the rest of the population.”

Physician, Hospital 7

DISCUSSION

In this multicenter, qualitative study of children's and community hospitals, we

identified several challenges in clinical workflows and hospital operations during the pandemic that may have impacted quality and safety of inpatient pediatric care. Impacts on clinical workflows included decreased direct clinician-patient interactions, challenges to communication, and changes in the hospital discharge and transfer process. Operational changes included lapses in quality and safety monitoring, increased health risks for employees, and staff and supply shortages. Participants voiced concerns about several potential negative impacts, including increased risk of preventable safety events, decreased care quality, lower patient involvement and education, decreased patient satisfaction, and increased risk of readmission. Further quantitative research focused in those areas of concern is necessary to better define actual impacts. As hospitals return to normal operations, the quality and safety implications of these challenges will need to be closely measured, monitored, and addressed as needed.

Our findings largely align with previous research. In a single-center qualitative study, Diskin et al¹⁶ describe similar impacts of the pandemic on the quality of inpatient pediatric care in a free-standing children's hospital. They describe how visitor policies and changes in communication decreased patient and family engagement and discuss the limitations of telehealth. Previous quantitative studies have described the declines in inpatient pediatric volumes reported by our participants.¹⁰⁻¹⁴ Additionally, a study by Masonbrink et al early in the pandemic found an increase in preventable safety events.¹⁵ Some of our participants described concerns regarding potential increases in hospital readmissions, which were not demonstrated in a previous quantitative study by Markham et al. However, this previous study focused on children's hospitals early in the pandemic; thus, may not represent the full spectrum of the pandemic's effects.¹² Future research is needed to quantitatively analyze the impacts of the pandemic on pediatric quality and safety metrics, including how those impacts may differ by hospital type.¹⁷

Our participants reported decreases in the quantity and quality of direct interactions and communication with patients and families, with potentially concerning implications for quality and safety. It will be important to safely resume and increase direct interactions with patients by applying growing evidence around SARS-CoV-2 transmission to inform hospital policies, maximizing vaccination efforts, and ensuring adequate PPE and testing supplies. To optimize care quality and safety, it will also be essential to continue developing and refining innovative communication strategies that include verbal (eg, talking without PPE through windows and tablets; clear masks) and nonverbal communication (eg, exaggerating nonverbal cues when wearing PPE) to maximize patient and caregiver involvement in their care.²⁶ Additionally, hospitals will need to continue to enhance infrastructure for successful technology-enhanced communication (eg, videoconference, phone, E-mail) to mitigate the negative impacts of decreased patient-clinician interactions. This includes ensuring availability of functioning, user-friendly equipment (eg, tablets, workstations-on-wheels/in-room computers, smartphones), server capabilities for videoconferencing, information technology support personnel, and staff training. Furthermore, implementing safe practices for resuming and maintaining FCR can maximize patient and family involvement, as these rounds have been associated with decreases in harmful medical errors.²⁷ Our findings also indicate that when planning patient and caregiver education, it may be important to prioritize resources for equipment and skills teaching to be done in person for optimal understanding (eg, feeding pump management, drain management, dressing changes).

Our participants sometimes reported lapses in quality and safety monitoring as quality and safety staff took on new COVID-19-related tasks. Ensuring staff are reallocated to resume prepandemic monitoring will be important, given our participants reported concerns of increased safety events during the pandemic, as was also reported in a study by Masonbrink et al.¹⁵ It will be essential

for hospitals to rebuild quality and safety infrastructure and monitoring, including close monitoring of hospital readmissions (since they can potentially increase when discharges are expedited). The pandemic also prompts us to consider expansion of quality and safety monitoring in certain areas. Participants noted a lack of quality and safety measures related to the care of children with COVID-19 or Multisystem Inflammatory Syndrome in Children.

Those developing evidence-based guidelines and pathways focused on these novel diseases might consider developing associated quality and safety measures to monitor care quality, such as receipt of recommended treatments. We also currently lack robust metrics for capturing patient and caregiver education and engagement, which our study indicates may have been adversely affected by the pandemic. An important future area of focus is the development and implementation of new monitoring strategies for patient and caregiver engagement.²⁸

Although our participants expressed concerns about potential links between the challenges they reported and quality and safety outcomes, this qualitative study is hypothesis-generating and cannot establish causality. Likewise, our stated aim was to investigate quality and safety challenges related to the pandemic and as such our study did not reveal the positive changes that may have occurred. Furthermore, our study was not designed to compare experiences between community and children's hospitals. Additionally, we sampled hospitals in US states with high COVID-19 rates (located predominantly in the Northeast and South), so our findings may have limited generalizability to other geographic areas or those with lower COVID-19 rates. Also, despite optimizing triangulation with team members from 6 different disciplines and 4 different states, our team did not comprise members from disciplines such as respiratory trainees, therapists, child life services, or pharmacists. Furthermore, our study team members' experiences may have introduced bias into our analytic process (for instance, 4 team members worked in one of the selected states with high COVID-19 incidence during the pandemic, which may have increased

their tendency to focus on data that aligned with their own experiences). However, we tried to minimize this risk through triangulation of our analytic process across our whole study team and reflexivity. We interviewed English-proficient caregivers only and, therefore, did not capture the experience of patients who might have encountered added challenges in communication. We also acknowledge that some of the patterns we observed varied by hospital. For instance, some participants reported staff shortages while others reported improved patient-to-staff ratios due to lower pediatric case volumes. Such differences were likely a reflection of the varied experiences of this diverse group of hospitals. For example, staff shortages were reported more often by hospitals in which pediatric clinicians were commonly redeployed for adult care.

In conclusion, we identified several challenges in clinical workflows and hospital operations during the pandemic that may have impacted quality and safety of inpatient pediatric care. These findings indicate that hospital leaders should quickly reestablish robust quality and safety monitoring and consider development of new areas of monitoring. Further research is also needed to quantify the quality and safety impacts of the pandemic on the whole spectrum of inpatient pediatric care, including community hospitals.

ABBREVIATIONS

COVID-19: coronavirus disease 2019
FCR: family-centered rounds
PPE: personal protective equipment
SARS-CoV-2: severe acute respiratory syndrome coronavirus 2

REFERENCES

1. Health Systems Respond to COVID-19. Priorities for Rapid-Cycle Evaluations. Available at: https://academyhealth.org/sites/default/files/healthsystems_respondtocovid_april202395_0.pdf. Accessed January 12, 2021
2. Ludvigsson JF. Systematic review of COVID-19 in children shows milder cases

- and a better prognosis than adults. *Acta Paediatr Oslo Nor 1992*. 2020;109(6): 1088–1398
3. CDC. COVID Data Tracker. Centers for Disease Control and Prevention. Available at: <https://covid.cdc.gov/covid-data-tracker>. Accessed April 3, 2021
 4. Children and COVID-19. State-Level Data Report. <http://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-403-infections/children-and-covid-19-state-level-data-report/>. Accessed April 2, 2021
 5. CDC. Interim infection prevention and control recommendations for healthcare personnel during the coronavirus disease 2019 (COVID-19) pandemic. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html>. Accessed April 3, 2021
 6. Jenkins A, Ratner L, Caldwell A, Sharma N, Uluer A, White C. Children's hospitals caring for adults during a pandemic: Pragmatic considerations and approaches. *J Hosp Med*. 2020;15(5):311–313
 7. Coordinating Pediatric Hospital Care to Increase Capacity for Adults with COVID-19. Available at: <https://www.childrenshospitals.org/Quality-and-Performance/COVID19/Resources/Consolidating-Pediatric-Hospital-Care-Increase-Capacity-Adults-COVID19>. Accessed April 9, 2021
 8. Jain PN, Finger L, Schieffelin JS, Zerr DM, Hametz PA. Responses of three urban U.S. Children's Hospitals to COVID-19: Seattle, New York and New Orleans. *Paediatr Respir Rev*. 2020;35:15–19
 9. Penwill NY, Roesler De Angulo NL, Pathak PR, et al. Changes in Pediatric Hospital care during the COVID-19 Pandemic: A National Qualitative Study. Paper presented at the: Pediatric Academic Societies conference; May 2021; Society of Hospital Medicine Converge; May 2021; Annual Research Meeting; June 2021; Pediatric Hospital Medicine Meeting; August 2021
 10. Pelletier JH, Rakkar J, Au AK, Fuhrman D, Clark RSB, Horvat CM. Trends in US Pediatric Hospital Admissions in 2020 Compared With the Decade Before the COVID-19 Pandemic. *JAMA Netw Open*. 2021;4(2):e2037227
 11. Thurm C. The COVID-19 pandemic and changes in healthcare utilization for pediatric respiratory and nonrespiratory illnesses in the United States. *J Hosp Med*. 2021; 16(5):294–297. doi: <https://doi.org/10.12788/jhm.3608> 429.
 12. Markham JL, Richardson T, DePorre A, et al. Inpatient utilization and outcomes at children's hospitals during the early COVID-19 pandemic. *Pediatrics*. 2021; 147(6): e2020044735. doi: <https://doi.org/10.1542/peds.2020-044735>
 13. Wilder JL, Parsons CR, Growdon AS, Toomey SL, Mansbach JM. Pediatric hospitalizations during the COVID-19 pandemic. *Pediatrics*. 2020;146(6): e2020005983
 14. Hartnett KP, Kite-Powell A, DeVies J, et al; National Syndromic Surveillance Program Community of Practice. Impact of the COVID-19 pandemic on emergency department visits - United States, January 1, 2019-May 30, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(23):699–704
 15. Masonbrink AR, Harris M, Hall M, et al. Safety events in children's hospitals during the COVID-19 pandemic. *Hosp Pediatr*. 2021;11(6):e95–e100. doi:<https://doi.org/10.1542/hpeds.2020-004937>
 16. Diskin C, Orkin J, Agarwal T, Parmar A, Friedman JN. The secondary consequences of the COVID-19 pandemic in hospital pediatrics. *Hosp Pediatr*. 2021;11(2):208–212
 17. Leyenaar JK, Ralston SL, Shieh M-S, Pekow PS, Mangione-Smith R, Lindenauer PK. Epidemiology of pediatric hospitalizations at general hospitals and freestanding children's hospitals in the United States. *J Hosp Med*. 2016;11(11):743–749
 18. Rao S, Kwan BM, Curtis DJ, et al. Implementation of a rapid evidence assessment infrastructure during the coronavirus disease 2019 (COVID-19) pandemic to develop policies, clinical pathways, stimulate academic research, and create educational opportunities. *J Pediatr*. 2021;230:4–8.e2
 19. Zhong S, Clark M, Hou X-Y, Zang Y-L, Fitzgerald G. Development of hospital disaster resilience: conceptual framework and potential measurement. *Emerg Med J*. 2014;31(11):930–938
 20. The COVID Tracking Project. About Us. Available at: <https://covidtracking.com/about>. Accessed May 2, 2021
 21. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Adm Policy Ment Health*. 2015;42(5):533–544
 22. Charmaz K. *Constructing Grounded Theory*. 2nd ed. London, United Kingdom: SAGE; 2014
 23. Version D. 8.3.343, *Web Application for Managing, Analyzing, and Presenting Qualitative and Mixed Method Research Data*. Los Angeles, CA: SocioCultural Research Consultants, LLC; 2021. Available at www.Dedoose.com
 24. Creswell J. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage; 2012
 25. POPCoRNetwork. Available at: <https://www.popcornnetwork.org/>. Accessed May 20, 2021.
 26. Schlögl M, A Jones C. Maintaining our humanity through the mask: mindful communication during COVID-19. *J Am Geriatr Soc*. 2020;68(5):E12–E13
 27. Khan A, Spector ND, Baird JD, et al. Patient safety after implementation of a coproduced family centered communication programme: multicenter before and after intervention study. *BMJ*. 2018;363:k4764
 28. Kuo DZ, Houtrow AJ, Arango P, Kuhlthau KA, Simmons JM, Neff JM. Family-centered care: current applications and future directions in pediatric health care. *Matern Child Health J*. 2012;16(2): 297–305