

Lessons Learned From the Pediatric Overflow Planning Contingency Response Network: A Transdisciplinary Virtual Collaboration Addressing Health System Fragmentation and Disparity During the COVID-19 Pandemic

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As the COVID-19 pandemic surged in March 2020 in the United States, it was clear that severe COVID-19 and rates of hospitalization were much higher in adults than in children.¹ Pediatric facilities grappled with how to leverage empty beds and other underutilized human, clinical, and material resources to offset the overflowing adult facilities.^{2,3} Pediatricians agonized about how to identify adult patients for whom they could provide safe and effective care, not only as individual clinicians, but also with adequate support from their local pediatric facility and health system.

Maria* (*name changed) was a young adult whose experience with her local health system highlighted common and addressable issues that arose when pediatric facilities aimed to care for adult populations. Adult hospitals were already above capacity caring for acutely ill patients with COVID-19, and a local freestanding children's hospital offered to offload young adult patients up to age 30 years. Maria, a 26-year-old, had just been transferred from an adult emergency department (ED) to the children's hospital ED for management of postoperative pain after a recent appendectomy. There was concern for possible abscess formation, but no evidence of sepsis. During his oral presentation, a pediatric resident in the ED reported, "This patient has a history of drug abuse and should not be admitted to a children's hospital. She has been demanding pain meds and I feel she would be better served at the adult hospital." What was driving the discomfort from the pediatric resident? Was a history of substance use disorder the primary driver, or was it related to other uncertainties with pain management or risk of a surgical complication? What parameters were and should have been in place for adult admissions? Did this pediatric facility have the necessary resources to provide Maria safe and effective medical care should she develop sepsis or require further surgical intervention? The dissonance be-

tween the need to respect provider and staff comfort zones, implement new systemwide hospital operations during an emergency, and promote health justice by confronting implicit bias while providing quality care was jarringly evident.

At the intersection of these seemingly impossible questions, dually trained internal medicine and pediatrics (med-peds) physicians had a unique vantage point, as they were accustomed to bridging the divide between adult and pediatric medicine in their practices. While no standardized models of care or quality metrics existed for adults hospitalized in pediatric settings, med-peds groups across the United States had developed healthcare delivery models prior to the pandemic for young adults who had survived chronic childhood medical conditions and continue to receive care in pediatric health systems.⁴⁻⁷ Two med-peds physicians (authors LR, AJ) developed the Pediatric Overflow Planning Contingency Response Network, known as POPCoRN, to facilitate rapid information sharing among pediatric facilities to help implement and deliver equitable care to adults during a crisis. POPCoRN initially blossomed in April 2020 through a combination of easy access to virtual meetings and intentional inclusive recruitment across pediatric and med-peds provider communities. POPCoRN network members from diverse training, geographic, and health system backgrounds (including those from community, rural, and nonacademic centers) joined the network from across the country for real-time collaboration to troubleshoot common obstacles in their home institutions.

As POPCoRN members shared their challenges and institutional learnings, common themes were identified, such as management of intubated patients in non-intensive care unit (ICU) spaces; gaps in staffing with redeployment of residents and hospitalists; and dissemination of education, such as Advanced Cardiac Life Support (ACLS) webinars to frontline staff. POPCoRN prioritized a coordinated response to disseminate this evolving knowledge in multiple ways, including development of online resources, continued virtual meetings, and ultimately writing "Lessons Learned From COVID-19: A Practical Guide for Pediatric Facility Preparedness and Repurposing" (Appendix). This POPCoRN guide is a compilation of obstacles and solutions from providers who worked in pediatric health systems during the COVID-19 pandemic that required

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adjustments in care delivery models. As POPCoRN cofounders and leaders, we highlighted key lessons learned that are described in more detail in the guide.

IDENTIFY THE “CORRECT” PATIENT POPULATION, BUT DO NOT LET PERFECTION BE A BARRIER TO PROGRESS

Many pediatric facilities reported perseverance over the adult age cutoff accepted to the pediatric facility, only to realize the initial arbitrary age cutoff usually did not encompass enough patients to benefit local adult health systems. Using only strict age cutoffs also created an unnecessary barrier to accepting otherwise appropriate adult patients (eg, adult patient with controlled hypertension and a soft tissue infection). The pediatric facilities also created exclusion criteria through an evaluation of their available resources, such as subspecialists, procedural capabilities, and structural resources. For example, if the pediatric facility had access to in-person or telemedicine specialists comfortable with prescribing pain medications in the context of prior substance use disorder, Maria would be appropriate for admission. In contrast, if Maria were over a prescribed weight limit for the pediatric facility’s computed tomography scanner, this could lead to a delay in necessary workup for postsurgical complications. If possible, inclusion criteria should be based on characteristics (eg, age, primary diagnosis, SARS-CoV-2 status, weight) of adults accessing the health system at the time of the local surge to optimize chances of unburdening adult facilities. By using objective data to determine inclusion and exclusion criteria based on pediatric facility capabilities and limitations, Maria’s admission would be less subject to implicit systemic bias in screening.

USE REPETITIVE STAKEHOLDER ANALYSIS TO ADAPT TO A RAPIDLY CHANGING ENVIRONMENT

The pandemic response was rapidly evolving and unpredictable. Planning required all affected parties at the table to effectively identify problems and solutions. Clinical and nonclinical groups were critical to planning operational logistics to provide safe care for adults in pediatric facilities. Though Maria had previously suffered from substance abuse, she had been sober for 4 years—a fact that changed the resource mobilization required for her hospitalization and discharge planning. Supporting equitable and quality healthcare for all patients, especially during a crisis, required intentional diversity in stakeholders and a multidisciplinary approach that included clinicians, social work, financial services, and case management. POPCoRN members found that using existing frameworks (eg, Model for Improvement) to conduct local rapid stakeholder analyses allowed their teams to identify key members of the discussion and understand any resistance to planning.⁸ Diverse teams were then able to contextualize their individual roles and the collaboration required for action. As with many other rationed healthcare resources, iterative stakeholder analysis and inclusion were necessary for prioritizing equity as hospital care for adults was reallocated from adult to pediatric facilities.⁹

COMMUNICATE WITH INTENTION AND TRANSPARENCY: WHEN LESS IS NOT MORE

Across care settings and training levels, the power of timely, honest, and transparent communication with leadership echoed throughout the network and could not be overemphasized. The cadence and modes of communication, while established by facility leaders, was best determined by explicitly asking team members for their needs. Often, leaders attempted to avoid communicating abrupt protocol changes to spare their teams additional stress and excessive correspondence. However, POPCoRN members found this approach often increased the perception among staff of a lack of transparency, which exacerbated feelings of discomfort and stress. While other specific examples of communication strategies are included in the POPCoRN guide, network members consistently noted that virtual open forums with leadership at regular intervals allowed teams to ask questions, raise concerns, and share ideas. In addition to open forums, leaders’ written communications regarding local medicolegal limitations and malpractice protection related to adult care should be distributed to staff. In Maria’s case, would provider discomfort and anxiety have been ameliorated with a proactive open forum to discuss the care of adults at the pediatric facility? Would that forum have called attention to staff educational and preparation needs around taking care of adults with a history substance use disorder? If so, this may have added a downstream benefit of decreasing effects of implicit bias amplified by stress.¹⁰

MAKE “JUST-IN-TIME” RESOURCES AVAILABLE FOR PEDIATRICIANS CARING FOR ADULT PATIENTS

“Just-in-time” resources included not only educational materials related to clinical management or new policies and procedures, but also adult medicine clinical expertise. The clinical team that admitted Maria, for example, would have benefited from an adult medicine–trained hospitalist to provide consultation for adult-specific issues, such as management of venous thromboembolism prophylaxis and appropriate doses of intravenous pain medications in the setting of prior substance use disorder. The type of pediatric facility and their resource availability determined the network of clinical support. Pediatric facilities within an adult institution often had direct access to adult medicine–trained hospitalists, adult subspecialists, and adult-specific procedures. A freestanding pediatric facility, geographically separated from any adult facility, required more frequent use of telehealth adult consultative services. Many facilities relied on med-peds colleagues as the backbone of various care delivery models, as these physicians, residents, fellows, and attendings could bridge both the adult patient’s clinical needs and issues related to health system navigation (eg, postdischarge follow-up).

DESIGN AN EMERGENCY RESPONSE SYSTEM FOR ADULT PATIENTS IN PEDIATRIC FACILITIES

Addressing adult health emergencies efficiently and effectively necessitated identifying differences in pediatric versus

adult code team responses. Pediatric facilities that already admitted patients older than 21 years used their experiences in redesigning rapid-response and code teams pre-COVID-19 to inform team and process variations. For example, how would the pediatric team have responded if Maria developed septic shock? Would they know first-line pressor support in adult patients? Collaboration with pharmacy and supply-management teams was required to ensure code carts were stocked with appropriate doses of adult medications used during ACLS. Operational leadership had to address patient flow factors such as: (1) which adults could receive critical care in the local pediatric ICU; and (2) how to emergently transfer an adult to another facility when necessary. In contrast, some community hospitals with both pediatric and adult departments had easier access to adult code teams and specialists. Although these processes were different among hospital systems and specific examples are included in the POPCoRN guide, the importance of collaboration and contingency planning remained the same.

CONCLUSION

Through intentionally fostering community and collaboration during the COVID-19 pandemic, the POPCoRN network has worked to help pediatric facilities build capacity to care for adult patients and overcome operational obstacles. POPCoRN has continued to bridge the silos in the healthcare system, particularly between pediatric and adult systems, in its larger vision to break down structural barriers leading to inadequate healthcare in vulnerable populations. The POPCoRN guide emphasizes the importance of addressing not only operational and logistical challenges, but centralizing health equity and provider wellness in all discussions and decisions. However, none of the implemented interventions discussed in the POP-

CoRN guide have been formally studied to evaluate outcomes for patients, healthcare staff and providers, or communities. This is an important limitation of this guide and is a necessary next step to effectively grow health-system capacity during crisis situations. Nonetheless, as a collaboratively written pragmatic tool, we hope the POPCoRN guide will serve as a reference for pediatric facilities, not only as COVID-19 continues to impact our communities, but also in the future if called upon to support adult patients during crisis.

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Collaborators: All the collaborating authors listed below have contributed to the guide available in the appendix of the online version of this article, "Lessons Learned From COVID-19: A Practical Guide for Pediatric Facility Preparedness and Repurposing." All the authors have provided consent to be listed.

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