

Children's Hospitals Caring for Adults During a Pandemic: Pragmatic Considerations and Approaches

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Health systems around the world have been called upon to expand acute care capacity to manage the current and projected surge of adults with COVID-19, the disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).¹ There has been mixed guidance on how pediatric facilities should consolidate and coordinate pediatric care in a way that optimizes the capacity of hospital beds, staff, and supplies, such as ventilators and medications, for both adults and children in a community.² Furthermore, if and how these pediatric facilities should expand capacity to care for adult patients safely is uncertain.

For the last 5 years, both Boston Children's Hospital and Cincinnati Children's Hospital Medical Center have been caring for specific adult populations in free-standing pediatric hospitals because of the increasing prevalence of young adults with rare, complex, and historically fatal conditions (eg, chromosomal abnormalities). In the past, low life expectancies for children with such conditions contributed to the evolution of specialized care in pediatric health systems that often does not exist in adult health systems. Our teams in Boston and Cincinnati have gained insight into the multifaceted infrastructure and teams necessary to provide safe care for adults hospitalized in a pediatric setting.

In this perspective piece, we will highlight important principles that pediatric facilities and providers should prioritize if they anticipate caring for hospitalized adults during this pandemic. Designing and implementing an adult care model requires iteratively addressing the following key areas: development of a multistakeholder team, system readiness for intensive care unit (ICU) care of adults, institutional situation awareness, scope of practice, staffing considerations, patient safety, and patient populations and special considerations (eg, adults with chronic conditions of childhood onset). With these areas in mind, pediatric facilities should then consider whether they have the capacity to manage hospitalized adults.

DEVELOPMENT OF A MULTISTAKEHOLDER TEAM

Providing care for any hospitalized patient requires engagement with many health system stakeholders. By involving key stakeholders early in the planning process for our adult care model, we were able to anticipate potential obstacles when caring for a unique subset of patients and gain support of multidisciplinary partners. For instance, inclusion of bedside and support staff highlighted specific needs, such as nurses with adult training and a revised formulary to include common adult medications (eg, clopidogrel for adults with a drug-eluting stent).

Responding to the surge of hospitalized adult patients will require increasing hospital capacity.³ In pediatric settings, this will require consideration of innovative care models. These care models may include pediatric systems flexing to care for adult patients. We recommend hospital leaders from both pediatric and adult facilities have formal discussions on the best ways for pediatric facilities to respond to serve their local population. Inclusion of other key stakeholders will ensure factors imperative to the safe care of adults will not be missed.

SYSTEM READINESS FOR ICU CARE OF ADULTS

There were three levels of consideration for the use of our local pediatric ICU for these patients. First, our institutional policies allow care for adults throughout the system, which we describe in more detail later, in the "Scope of Practice" section. Second, our free-standing pediatric hospital ICUs have accreditation for the care of adults. Third, we developed clear guidelines for subspecialists regarding when adults can safely be admitted or transferred to the pediatric ICU.

Responding to a crisis still necessitates establishing a clear care-escalation plan. An initial barrier may be that some systems do not have a pediatric ICU accredited for care of patients above a certain age. During a crisis, however, as hospital volumes and mortalities rise, states may pursue executive orders, as New York State did, that ease these age restrictions.⁴ Otherwise, we recommend a clear transfer plan to an adult ICU or emergency credentialing and privileging of adult intensivists. Both of these options may pose challenges during a pandemic because adult ICUs will likely be full.

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INSTITUTIONAL SITUATION AWARENESS

Institutional situation awareness for the identification and mitigation of risks inherent in adult care in a pediatric setting is essential for patient safety. Tracking of admitted adult patients via our electronic health record (EHR) occurs daily by an adult care–team member. Our adult care teams partner with physician safety officers and attend daily institutional multidisciplinary safety huddles to create a shared mental model for the care of adult patients. Daily huddle reports include discussion regarding the number of admitted adults, review of illness acuity, consultative advice on management, and contingency planning for potential decompensation.^{5,6} This integration into institutional huddles has been instrumental in proactively identifying hospitalized adults who are at risk for clinical decompensation and mitigating those risks.

Should a pediatric system admit adults to new sites or units, we recommend leveraging preexisting patient safety infrastructure similarly to identify and mitigate risks. If possible, any institutional communication about adult patients should involve adult-trained staff. Mechanisms for tracking patients will depend on local EHRs but are important to guide regular check-ins with providers caring for those patients.

SCOPE OF PRACTICE

Multiple levels of regulation affect a provider's scope of practice. The most general of these regulations are state guidelines, followed by local institutional policy. Our institutions require consults for older adults—age varies at our specific institutions—by our adult-care team for assessment of risk and comanagement of adult-specific comorbidities. Additionally, we have agreements with our affiliated adult health facilities that allow in-person adult subspecialty consultation.

While state and institutional policies lay the foundation for pediatric systems considering new adult-care models, provider-level considerations are also needed. Often the patient's age is a primary consideration, but comorbid conditions also affect the provider's comfort and ability to care for these patients. We urge practitioners to exercise the full range of their capacities, but also to think critically about the ethical scope of one's practice. As healthcare providers, it is our duty to hold each other accountable, voice concerns, and advocate to increase health system capacity equitably.⁷ It's paramount that channels of communication, in-person or virtual, be arranged for supportive adult subspecialist consultation.

STAFFING CONSIDERATIONS

Med-Peds physicians and advanced practice providers are the foundation of the clinical care provided to adults at our institutions. Our Med-Peds providers practice in both the free-standing pediatric hospital and an affiliated adult health system. They offer expertise in adult clinical care and navigate between pediatric and adult systems when the need arises (eg, adult requiring urgent intervention for an acute myocardial infarction). Adult competencies of other staff must be addressed. For example, our cardiac ICUs include nurses with adult clinical care experience because critically ill adults with congenital heart

disease are admitted. Advanced Care Life Support (ACLS) training is also required for staff caring for adults throughout the hospital.

There are many ways, even during a crisis, to develop an adult care model in a pediatric setting. Depending on workforce availability, internal medicine, Med-Peds, family medicine, critical care, and emergency medicine physicians could serve on either a primary service or as a consultant to support pediatrics-trained providers in caring for adults should the patient volume and acuity require staffing restructuring. Adult subspecialty access must be addressed. Telehealth may play a significant role in extending clinicians in all of these clinical roles both during the current crisis but also in underresourced settings.⁸ A clear process and indication for emergency or temporary credentialing and privileging necessitates understanding and addressing such challenges early. Training in adult care, or lack thereof, for other staff, such as nurses and respiratory therapists, is also crucial to consider.

PATIENT SAFETY

Adults are more likely than children to have comorbidities and clinical deterioration while hospitalized. At our institutions, when a rapid response team is called for an adult patient, an adult care–team provider responds to aid in clinical management and determines the appropriate care setting. Additionally, given that the incidence of coronary artery disease increases starting at age 35 years,⁹ our systems have developed procedures for managing time-sensitive conditions seen more commonly in adults, such as acute myocardial infarction, stroke, and pulmonary embolism. Despite simulation training for pediatric providers and staff, it is clear that implementing these procedures is highly dependent on involvement of the adult care team.

With the urgency of implementation, pediatric systems should consider increasing the number of providers and staff with ACLS training, especially for rapid response and code teams. Many pediatric systems may need to evaluate how their code carts are stocked and ensure they are equipped with appropriate medication dosages and sizes of supplies. Emergent and accessible adult care will be needed, especially for issues with time-to-intervention criteria like acute myocardial infarction and stroke. Hospitalized adults with COVID-19 may also have a higher incidence of arrhythmia, cardiac ischemia, and stroke.¹⁰ Consider proactively simulating common COVID-19–related scenarios to build interdisciplinary teamwork in emergency scenarios. Interhospital agreements and pathways exist for sharing medications. Outreach to pharmacies may be indicated to ensure accessibility for medications not commonly found in pediatric systems.

PATIENT POPULATIONS AND SPECIAL CONSIDERATIONS

Our children's hospitals care for certain adult populations with chronic conditions of childhood origin because of the availability of subspecialty clinical expertise. Our adult care team aids in contingency planning to help determine place of ad-

mission (adult vs pediatric hospital) depending on patient clinical needs and system expertise. For instance, an adult with congenital heart disease may have two cardiologists—one for congenital heart disease and one for coronary artery disease. Patients with an acute issue such as new-onset arrhythmia may be admitted to our pediatric hospital; however, for a stroke they would be admitted to the adult hospital.

While important and tempting to address this issue first, creating criteria to determine which patient population to admit should be a last consideration during a pandemic. Consider if the decision to admit should be determined based on COVID-19 infection status. From there, types of conditions thought to be within the purview of pediatric practice can be considered. These include basic infectious diseases pathology (eg, skin/soft-tissue infections and pyelonephritis) and chronic conditions of childhood origin (eg, cystic fibrosis, diabetes, and inflammatory bowel disease), which have specialty providers who could work across an extended age range. Conditions potentially more challenging to safely care for in pediatric facilities include acute cardiac conditions (eg, angina, acute coronary syndrome, and arrhythmias), alcohol withdrawal, end-stage liver or kidney disease, and gastrointestinal bleeds. Considerations need to be made for research protocols and novel therapies only available at adult institutions. Through this whole process, it is especially crucial to note care equity and ensure that all patients have access to the highest attainable care possible.

CONCLUSION

Policymakers at pediatric facilities should think critically about their institution's capacity to manage adults. In some circumstances, the decision might be to not admit adult patients based on the factors discussed in this paper or other contextual factors of the local healthcare systems. Our role in providing care for adults in pediatric hospitals involves not only ensuring age-appropriate care, but also in supporting patients and other healthcare providers to navigate a fragmented health system. Our adult-care models required building relationships between pediatric and adult health systems. Building these relationships in the setting of crisis can strengthen health systems and healthcare communities beyond the era of COVID-19. Because it's promoted enhanced collaboration between pediat-

ric and adult facilities, COVID-19 can be a platform to build a better system to support our already vulnerable young adults with chronic conditions of childhood origin for years to come.

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