



# Lessons Learned From COVID-19:

A Practical Guide for Pediatric Facility Preparedness and  
Repurposing

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**PEDIATRIC OVERFLOW PLANNING CONTINGENCY RESPONSE NETWORK  
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## TABLE OF CONTENTS

### GLOSSARY

### ABBREVIATIONS

### LIST OF FIGURES

### SECTION 1: EXECUTIVE SUMMARY

- A. Introduction and Background
- B. Approach
  - 1. Context
  - 2. Participants
  - 3. Methods
- C. Using This Guidebook

### SECTION 2: CLINICAL AND OPERATIONAL CONSIDERATIONS

- A. Assessing and Expanding Pediatric Facility Capacity
  - 1. Space
    - a. Clinical
    - b. Non-clinical
  - 2. Stuff (Equipment)
    - a. Equipment
    - b. Personal protective equipment (PPE)
    - c. Medications
    - d. Electronic medical record (EMR)
  - 3. Staff
    - a. Staffing
    - b. Team structure
    - c. Consultation
  - 4. Systems
    - a. Rapid response teams (RRTs) and code teams
    - b. Patient acceptance criteria
    - c. Patient flow
    - d. Communication
    - e. Staff safety
- B. Special Considerations
  - 1. Effect on Newborn Nursery and Other Facility Units
  - 2. Ensuring Access to Medical Expertise During Crisis Standard of Care
  - 3. Telemedicine
  - 4. Reallocation of Other Clinical and Patient Care Tasks

### SECTION 3: IMPACT OF COVID-19 ON LEARNING, TRAINING, AND EDUCATION

- A. Implications for All Healthcare Facility Providers and Staff

- B. [Implications for Non-Trainee Clinical Providers and Staff](#)
- C. [Implications for and Adaptations of Graduate Medical Education \(resident and fellow levels\)](#)
  - 1. [Accreditation Council for Graduate Medical Education \(ACGME\) Considerations](#)
  - 2. [Board Eligibility Requirements](#)
    - a. Requirement adjustments
    - b. Patient volume challenges
  - 3. [Educational Experience](#)
    - a. Clinical
    - b. Didactic
  - 4. [Trainee Safety](#)
  - 5. [Trainee Mental Health, Wellness, and Social Support](#)

#### **SECTION 4: FINANCIAL AND LEGAL CONSIDERATIONS**

- A. [Financial Considerations](#)
  - 1. [Transparency](#)
  - 2. [Staff Reallocation](#)
  - 3. [Telemedicine](#)
  - 4. [Insurance](#)
- B. [Legal Considerations](#)
  - 1. [Scope of Practice](#)
  - 2. [Credentialing](#)
  - 3. [Litigation Concerns and Public Health Emergencies](#)

#### **SECTION 5: WELLNESS AND MENTAL HEALTH**

- A. [Fostering Connectedness](#)
- B. [Psychological First Aid Check-ins and Debriefing](#)
- C. [Trauma Associated With Racial Injustice](#)

#### **SECTION 6: EQUITY**

- A. [Access to Pediatric Care](#)
- B. [Access to Telemedicine](#)
- C. [Criteria for Patient Population Acceptance](#)
- D. [Trainee Education](#)
- E. [Access to Clinical Trials](#)
- F. [Role of Advocacy](#)
  - 1. [Addressing Implicit Bias, Structural Racism, and Systemic Racism During a Public Health Emergency](#)
  - 2. [Access to COVID-19 Testing and Care](#)

## GLOSSARY

<b>Adult-trained provider</b>	A medical care provider with appropriate training and expertise to care for adults, usually trained in internal medicine or family medicine
<b>Community hospital</b>	A hospital where pediatric care is fully integrated into the adult hospital setting, usually as an inpatient pediatric floor and nursery, sometimes with a neonatal intensive care unit, within a predominantly adult hospital. May host pediatric resident rotators or medical students
<b>Contingency standards of care</b>	Existing resources and workflows are not consistent with daily practices but maintain or have minimal impact on usual patient care practices. These changes in practices should ideally be temporary but may be used on a more sustained basis during a longer-term disaster when community demands exceed usual capacity. See <i>Figure 1</i>
<b>Conventional standards of care</b>	Existing resources and workflows are consistent with daily practices within the institution. See <i>Figure 1</i>
<b>Crisis standards of care</b>	Existing resources and workflows cannot meet community demands. Further, expanded capacity is not consistent with usual standards of care, but provides sufficiency of care in the setting of a catastrophic disaster. See <i>Figure 1</i> for detailed descriptions
<b>Curbside</b>	A brief, usually informal consultation for specialty expertise used in specific situations, such as during crisis standards of care
<b>Freestanding children's hospital</b>	An administratively and physically independent children's hospital. Typically houses tertiary and quaternary care services and pediatric training programs
<b>Med-peds</b>	Combined training in internal medicine and pediatrics. Practitioners have had residency training in both specialties and may or may not be board-certified and/or actively practicing in both specialties
<b>Mixed system children's hospital</b>	A children's hospital administratively and usually physically located within a larger adult hospital system, usually using the same lab, radiology, and other resources as the adult hospital,

although it has a full cadre of tertiary pediatric resources, including pediatric intensive care unit and pediatric subspecialty services, and often has pediatric training programs

**Patient flow failure**

A situation in which a patient is physically located in a unit that does not match their medical needs or level of care

**Pediatric facility**

A healthcare facility, either freestanding or embedded in a larger hospital or hospital system, that treats exclusively or almost exclusively pediatric patients. For brevity in the text, this definition includes pediatric units in community hospitals.

**Pediatric provider**

A medical care provider with appropriate training and expertise to care for pediatric patients only or with few exceptions (e.g., adolescent medicine subspecialists are still considered pediatric providers outside the small subset of conditions that require transitional care)

**Reallocation**

The reassignment of a human, physical, or structural resource to a new function or role during contingency or crisis standard of care, such as a physician assuming care for a patient population outside his/her typical clinical purview

**Surge**

A spillover of adult healthcare into pediatric facilities, necessitated by overwhelming patient volume

**Transitional care**

The purposeful, planned movement of adolescents and young adults with chronic physical and medical conditions from child-centered to adult-oriented healthcare systems

## ABBREVIATIONS

<b>4S</b>	Michael Porter's Four S's
<b>ACGME</b>	Accreditation Council for Graduate Medical Education
<b>ACLS</b>	Advanced Cardiac Life Support
<b>BIPOC</b>	Black, Indigenous, and People of Color
<b>CDC</b>	Centers for Disease Control and Prevention
<b>ED</b>	Emergency department
<b>EMR</b>	Electronic medical record
<b>GME</b>	Graduate medical education
<b>ICU</b>	Intensive care unit
<b>MICU</b>	Medical intensive care unit
<b>PALS</b>	Pediatric advanced life support
<b>PICU</b>	Pediatric intensive care unit
<b>POPCoRN</b>	Pediatric Overflow Planning Contingency Response Network
<b>PPE</b>	Personal protective equipment
<b>RRT</b>	Rapid response team
<b>SES</b>	Socioeconomic status

## LIST OF FIGURES

Figure 1: Continuum of surge capacity and 4S model. Adapted from Hanfling.

Figure 2: Examples of staff assignment and location based on surge capacity.

Figure 3: Patient disposition by emergency response teams.



## SECTION 1: EXECUTIVE SUMMARY

### A. Introduction and Background

The COVID-19 pandemic was unprecedented in that adult health systems reached capacity, while pediatric health systems did not. As such, pediatric facilities had the theoretical capacity to accommodate acutely ill adult patients. Planning and implementing takeover of this available space and resources—“surging” into pediatric facilities—highlighted areas of fragmentation in the United States healthcare system. In particular, the incompatibility of medical records and financing systems, which is starker between pediatric and adult health systems, posed significant obstacles to resource sharing in a time of emergency.<sup>1</sup>

Caring for adults in pediatric settings is a growing—yet still uncommon—phenomenon, often managed by experts in transitional care who help patients navigate the management of childhood-onset but lifelong diseases as they age out of straightforward pediatric care. Healthcare workers and health systems researchers have already explored challenges inherent in this transition<sup>2,3</sup> and immediately saw the relevance of their knowledge to COVID-19 surge planning.<sup>4</sup>

Given the lack of standard practices to guide use of pediatric resources to care for adults, they realized quickly that inter-institutional teamwork and knowledge sharing was essential and needed to happen in real time. This collaboration for pandemic preparedness and response, specifically related to the interplay between pediatric and adult health systems, became the Pediatric Overflow Planning Contingency Response Network (POPCoRN).

POPCoRN used a collaborative policy network approach to: 1) structure the network, 2) conduct meetings, 3) share information between meetings, and 4) collectively write this guidebook.<sup>5,6</sup> The network’s underlying values (reciprocity, representation, equality, participatory decision-making, and collaborative leadership) are reflected in our approach and methods, described below.

Drawing on the diverse expertise in the network, this guidebook describes key lessons from the first six months of the COVID-19 pandemic regarding how pediatric systems can adapt to meet their communities’ needs. It does so with lenses on two critical elements of the pandemic response that emerged during our network meetings: entrenched social inequities that worsened morbidity and mortality in minority populations and healthcare worker wellness. Ultimately, it aims to provide guidance on how pediatric facilities can safely and equitably flex to operationalize care for adult patients.

### B. Approach

#### 1. Context

The core structure of POPCoRN was built on operational working groups organized by health system structure. Groups were established for freestanding children's hospitals, integrated and mixed systems (e.g., "free-leaning" children's hospitals and children's hospitals embedded in larger adult health systems), and community hospitals. Groups communicated through virtual meetings and listservs. Virtual meetings were initially held weekly April 2020 through May 2020, and then spaced to monthly as COVID-19 case incidence plateaued. During these virtual meetings, healthcare workers (e.g., attending physicians, fellows, residents, medical students, and nurses) shared challenges faced within their region or institution. Working group members suggested solutions, shared protocols, provided feedback, and learned from attempted approaches.

## 2. Participants

A subset of members from each operational working group volunteered to collaborate on this guidebook, working in sub-groups based on the aforementioned health system structure: freestanding children's hospitals, integrated and mixed health systems, and community hospitals. We facilitated representation from each sub-group throughout all stages of writing, recognizing that a predominance of initial volunteers came from university-based programs. We specifically addressed barriers to community hospital involvement to enable diverse representation (e.g., additional mentorship and adjustment of meeting times).

## 3. Methods

We combined qualitative and community-based participatory research approaches to conduct a multi-step participatory group thematic analysis.<sup>7 8</sup> Sub-groups jointly identified frequently discussed topics from their respective operational working group meetings. We triangulated these findings with other POPCoRN data sources, namely meeting minutes, listserv dialogue, and previously generated gap analyses.

To gain a higher understanding of each group's viewpoint as well as to elicit themes and areas of overlap and discrepancy, we held focus groups with each sub-group. Qualitative methodology is an excellent way to explore a participant's framework of understanding while ensuring that all voices are heard.<sup>9-11</sup> The facilitators (CC and SG), while members of POPCoRN, were specifically chosen because they were not members of an operational working group or sub-group and were, therefore, able to approach the groups with an unbiased perspective. Further, both facilitators had training in qualitative research or group facilitation.

The facilitators independently created their own thematic outline by using the sub-group outlines and focus group discussions. They then shared a synthesized cohesive outline with the sub-groups to validate their data, a method common in participatory research. An anonymous vote was held to determine which themes to include in the guidebook. If less than 60% of the group voted in support of including a theme, it was further discussed to come to a consensus. Ultimately, no theme was removed from the guidebook.

The facilitators divided the outline into four content sections with assigned sub-group members to ensure both necessary expertise and continued representation from each operational working group, ensuring diversity in representation of practice setting and hospital type. Each writing section met separately to discuss and write their portions of the outline. CC and SG facilitated weekly group meetings to check in with progress and address questions. The facilitators and POPCoRN leadership iteratively edited the final product.

### **C. Using This Guidebook**

The guidebook is divided into five major sections:

- Clinical and Operational Considerations
- Impact of COVID-19 on Learning, Training, and Education
- Financial and Legal Considerations
- Wellness and Mental Health
- Equity

At the start of each section is a table that lists relevant stakeholders who, depending on the type, context, and needs of any given healthcare facility, were involved in decision-making pertinent to that section. Key lessons are listed at the end of each section.

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## SECTION 2: CLINICAL AND OPERATIONAL CONSIDERATIONS

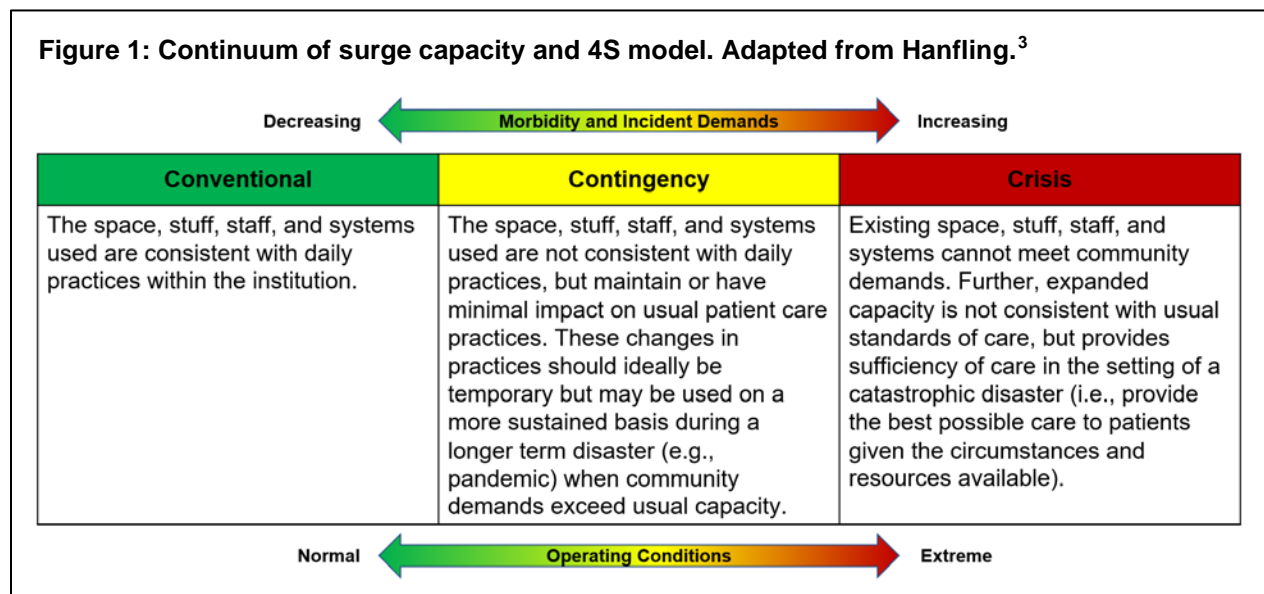
<b>Stakeholders</b>	
<b>General</b>	
<ul style="list-style-type: none"> <li>• Pediatric providers</li> <li>• Relevant pediatric division chiefs</li> <li>• Relevant departmental leadership (e.g., chair, associate chairs)</li> <li>• Nursing leadership</li> <li>• Respiratory therapy leadership</li> <li>• Hospital administrators</li> <li>• Community providers with admitting privileges</li> <li>• Facilities and maintenance leadership</li> <li>• Patient safety and quality leadership</li> </ul>	<ul style="list-style-type: none"> <li>• Adult-trained providers</li> <li>• Patients and families</li> <li>• Relevant community-based organizations</li> <li>• Training program (e.g., residency, fellowship) directors</li> <li>• Social work and care management leadership</li> <li>• Supply chain management</li> <li>• Infection prevention leadership</li> <li>• Home healthcare</li> </ul>
<b>Emergency department (ED)</b>	
<ul style="list-style-type: none"> <li>• Adult-trained ED providers</li> <li>• First responders</li> <li>• ED nurses</li> </ul>	<ul style="list-style-type: none"> <li>• Pediatric ED providers</li> <li>• Emergency medical technicians (EMTs) and paramedics</li> <li>• Emergency services dispatch</li> </ul>
<b>Inpatient units</b>	
<ul style="list-style-type: none"> <li>• Adult-trained hospital medicine providers</li> <li>• Adult-trained subspecialists</li> <li>• ED leadership</li> <li>• Transfer center leadership</li> <li>• Patient flow coordinators</li> <li>• Respiratory therapists</li> </ul>	<ul style="list-style-type: none"> <li>• Pediatric hospital medicine providers</li> <li>• Pediatric subspecialists</li> <li>• Pediatric intensive care unit (ICU) leadership</li> <li>• Clinical pharmacists</li> </ul>
<b>Newborn nursery</b>	
<ul style="list-style-type: none"> <li>• Newborn providers</li> <li>• Obstetrical providers</li> <li>• Community/primary care pediatricians</li> <li>• Lactation consultants</li> <li>• Pregnant parents and partners</li> </ul>	<ul style="list-style-type: none"> <li>• Neonatal ICU providers</li> <li>• Newborn nursery, neonatal ICU, and labor/delivery nurses</li> <li>• Home healthcare</li> </ul>

Pediatric facilities needed to quickly assess readiness to safely care for adult patients during a public health emergency. The first step in this process was evaluating available resources and ability to expand clinical capacity. (While less of a focus of this guidebook, this assessment also included consideration of resources that could be shared with other systems.) Stakeholder engagement necessitated crossing practice settings (e.g., outpatient, ED, inpatient, newborn nursery) and encompassing the entire continuum of care delivery.

Below, we discuss how pediatric facilities conducted the readiness assessment using Michael Porter’s Care Delivery Value Chain,<sup>1</sup> which outlines the “Four S’s” (4S) of healthcare delivery fundamentals: *space, stuff, staff, and systems*:

- *Space*: pediatric/adult ED/inpatient units, visitor areas and policies, outdoor spaces
- *Stuff*: appropriately sized equipment (e.g., beds, mobility, diagnostic imaging), personal protective equipment (PPE), medications, medical records
- *Staff*: providers (pediatric and adult-trained providers from ED, inpatient units, ICU, and other pertinent units), nurses, respiratory therapy, laboratory, clinical leadership, hospital administration, nursing leadership, patient flow, training program directors, trainees (residents/fellows), officers of diversity/equity/inclusion, pharmacy, patients and families, community-based organizations, principal investigators for research/clinical trials, facilities and maintenance leadership, supply chain leadership
- *Systems*: rapid response and code teams, patient populations, patient flow, communication, staff safety

Additionally, the National Academy of Medicine (formerly known as the Institute of Medicine) defined a continuum of surge capacity and capacity of care.<sup>2</sup> We adapted this continuum and combined it with the 4S model (*Figure 1*) for use throughout this document.



## A. Assessing and Expanding Pediatric Facility Capacity

### 1. Space

Space considerations relate to ensuring safe and appropriate spaces with capacity to serve patients. Caring for patients afflicted by a new, deadly infectious disease with poorly understood

transmission presented inherent risk to healthcare workers, both to their physical safety and mental health. High volume and acuity, assignment of staff outside their usual work environments, and non-traditional care settings (e.g., lobbies, cafeterias) also posed risks. We expect future pandemics or other public health emergencies to impose similar demands.

#### *a. Clinical*

Many facilities converted or created new spaces for clinical care delivery. EDs and inpatient spaces required considerable flexibility in how beds were allocated. For example, a pediatric ED could be repurposed as an adult ED or even ICU, and outdoor tents were deployed to increase capacity. Development of these spaces was not a focus of POPCoRN, but it was important that all other elements of capacity assessment (e.g., stuff, staff, systems) were completed *prior* to investment in clinical space creation. Multiple communities developed large-scale clinical spaces with the necessary stuff and staff but ultimately lacked systems infrastructure and social support to be effectively used to care for patients.<sup>4,5</sup> Each different reuse of clinical space required different 4S analyses.

#### *b. Non-clinical*

Non-clinical space issues that needed to be consistently and repeatedly addressed included the following:

- Visitation policies and restrictions
  - Variation depending on community COVID-19 incidence and prevalence to support social distancing as a public health measure
  - Exceptions to visitation policies as they affected both clinical and non-clinical spaces (e.g., end-of-life patients; pediatric patients; pregnant patients; patients with intellectual, cognitive, or developmental disabilities; patients with behavioral concerns)
- Screening process for people entering and/or working in the healthcare facility
- Standards as to number of people in common spaces (e.g., break rooms and dining areas)
- Criteria for in-person versus virtual meetings

## 2. Stuff

Stuff considerations centered on ensuring tools and resources (e.g., medications, medical records) were available for care delivery.

#### *a. Equipment*

Pediatric facilities commonly encountered issues regarding availability and volume of appropriately sized patient equipment. Patient beds, mobility equipment (e.g., Hoyer lifts), and radiology equipment, among other resources, could not always accommodate adult patients. In

terms of volume, items such as intravenous catheters, spinal needles, endotracheal tubes, crutches, and cam boots needed to be in different size distributions and quantities than normally stocked.

Health system context and structure were important in anticipating equipment needs and resources streams: freestanding children's hospitals would often have less access to appropriate equipment compared to pediatric facilities in mixed or community systems.

*b. Personal protective equipment (PPE)*

Issues surrounding PPE were a significant source of stress and conflict within healthcare facilities. PPE was necessary not only to provide safe and quality patient care but also to protect healthcare workers. Particularly early in the pandemic, PPE recommendations and regulations varied.

Creation of an infection control PPE team was a useful intervention among POPCoRN members. The team would:

- Facilitate proactive, clear, and consistent messaging on any new or modified PPE requirements (including new definitions of aerosol-generating procedures that would require use of different PPE)
- Serve as a designated and consistent resource for staff when questions arose
- Train staff on PPE donning and doffing procedures and perform refreshers at regular intervals

*c. Medications*

Pharmacies needed to review their stocks for presence and quantities of drugs more commonly used in adults (e.g., clopidogrel, intravenous electrolyte riders, prophylactic anticoagulation).

*d. Electronic medical record (EMR)*

Sharing EMR elements tailored to adults was desirable. Aside from aiding appropriate documentation, templated notes or smart phrases offered just-in-time education; for instance, a template for documenting determination of decision-making capacity could help a provider recall necessary criteria and include references for refreshing knowledge.

Additional examples of useful EMR elements were:

- COVID-19 order sets that could be used for adult patients regardless of location or specialty of the ordering provider
- Other adult order sets that facilitated implementation of best practices in the care of adults (e.g., venous thromboembolism prophylaxis)
- Note templates and smart phrases more commonly used for adults



- Advanced care planning
- Code status
- Assessment of medical decision-making capacity
- Discharge against medical advice
- Adult-focused rounding checklists to ensure that standard adult care needs are met (e.g., healthcare power of attorney/next of kin, prompt removal of Foley catheters, etc.)

### 3. Staff

#### a. *Staffing*

When operating at contingency and crisis standards of care during the COVID-19 pandemic, pediatric facilities needed to balance continuing essential facility business with the requirements of the public health emergency. They therefore considered staffing from several perspectives, including:

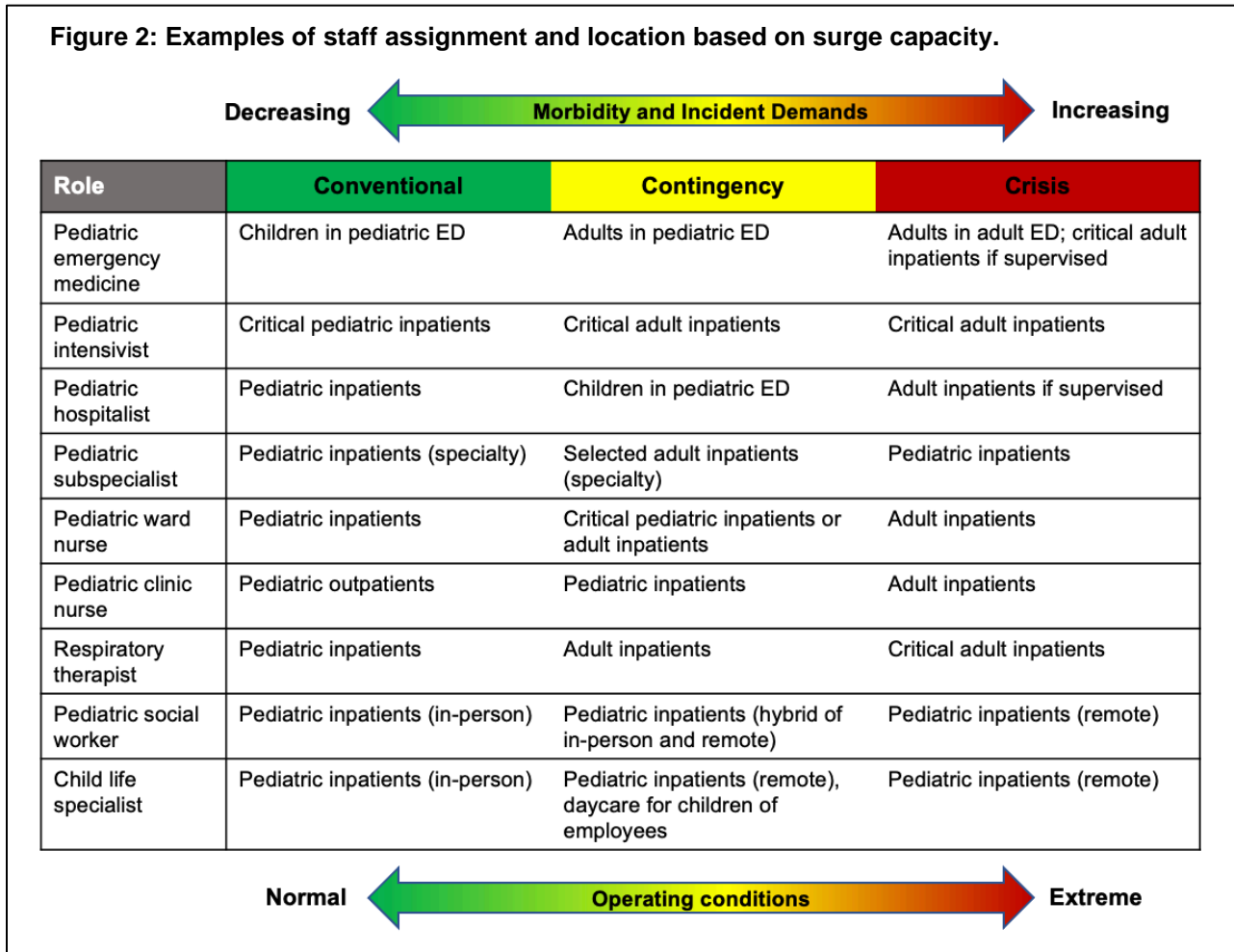
- i. The risks inherent in asking staff to come to work in the presence of a highly transmissible disease

Part of the pandemic response was minimizing COVID-19 risk to healthcare workers by reducing staff to essential personnel and identifying workers who should not take care of certain patients (e.g., providers with high risk of severe COVID-19). Additionally, having large numbers of staff unable to work owing to mandated quarantines could threaten overall system capacity, further necessitating staffing plans that minimized exposure. It was therefore also critical to develop post-exposure quarantine and testing policies that balanced the need for staffing against the risk of staff-to-staff transmission.

- ii. The need to retain pediatric capacity to continue to serve children's health needs

Pediatric facilities had the added challenge of ensuring continued access to specialized pediatric care (e.g., access to newborn care, subspecialty care for children with medical complexities, pediatric trauma services). Health system administrators invested significant time in predicting pediatric patient volumes to determine ability to redistribute staff while protecting capacity to fulfill the facility's primary mission. During the COVID-19 pandemic, pediatric hospitalization volumes were very low for a variety of reasons that are out of the scope of this document to explore; the notable importance of the unexpectedly low patient volumes, though, was that early modeling of capacity was difficult or impossible. It was therefore important to constantly reassess needs and maintain flexibility under crisis standards of care.

**Figure 2: Examples of staff assignment and location based on surge capacity.**



iii. Variable qualifications of staff to care for adult patients

The level of experience that pediatric staff had in caring for adults was important to assess prior to designing care delivery models for a surge of adult patients. For instance, it was crucial to identify providers with critical care and Advanced Cardiovascular Life Support (ACLS) training. Many pediatric nurses had experience with patients of all ages; some providers similarly had training or experience providing care to certain adult populations. These skills varied greatly from person to person and were essential to assess early in the pandemic response to plan for staffing capacity under contingency and crisis standards of care.

iv. The feasibility and safety of reassigning pediatric staff to care for adults

Two general models were widely employed, often simultaneously, to use pediatric-trained providers in the inpatient setting during the COVID-19 pandemic: pediatric providers and staff redeployed to adult facilities and pediatric providers and staff caring

for adults in their home institution and/or unit. Effective planning was early and proactive, with built-in flexibility to give as much time as possible for preparation before staff transitioned to new roles. These models will be further considered below in *Section 2.A.3.b: Team structure*.

*Figure 2* illustrates examples of staff assignments on the standards of care continuum,<sup>3,6</sup> one method of planning specific uses of human resources at different phases in a crisis.

#### *b. Team structure*

Where pediatric providers added capacity to care for adult patients, how teams were structured depended on staffing availability as well as where the facility was on the standard of care continuum (*Figures 1 and 2*). It was important to consider multiple team structures during surge planning because the demands on the health system changed rapidly and frequently.

A key component of determining team structure was evaluating access to providers with general adult medicine expertise beyond the subspecialty consults discussed in *Section 2.A.3.c: Consultation*. Many hospitalized adults have multiple comorbidities managed routinely by general internal medicine providers, making the general internist a crucial support for pediatric providers caring for adults. Establishing an adult medicine clinical resource network created a range of options for assigning pediatric staff that would not be possible without those supports. Assessing staff availability and experience (*Section 2.A.3.a: Staffing*) often aided in finding these resources or identified limits to their availability. For example, many adult-trained providers associated with a facility (e.g., anesthesiologists and radiology technicians shared between a pediatric and adult facility) were already reassigned by the time contingency standard of care was implemented in the pediatric facility.

In most pediatric facilities, general adult medicine expertise was provided either by med-peds–trained providers or adult-trained providers. The latter group consisted of attendings and trainees (e.g., med-peds and family medicine residents, subspecialty fellows) who came from the same hospital (for mixed systems or community hospitals) or affiliated hospital systems (for freestanding children’s hospitals). Med-peds–trained providers working in the pediatric facility may have been practicing exclusively in pediatrics or in both adult and pediatric medicine.

The exact structure of teams caring for adults in pediatric facilities varied greatly. In some pediatric facilities, especially if care was expanded only to young adults with specific diseases and comorbidities, pediatric providers worked without assistance from adult-trained providers. Others arranged for adult-trained providers to serve as consultants or co-attendings to pediatric providers (usually hospitalists) who, in turn, either provided direct care to adult patients or supervised pediatric residents caring for adult patients. Adult-trained providers also supervised pediatric residents in combined teams with residents from other specialties (psychiatry, radiology, etc.), and pediatric attendings supervised residents with adult medicine training.

We emphasize again that having a range of usable team structures was critical to a pediatric facility's ability to rapidly adjust and meet patient care needs. Some facilities and training programs found that maintaining or adapting existing team structures (e.g., keeping pediatric residents in teams together) mitigated some of the stress associated with caring for a new, unfamiliar patient population.

#### *c. Consultation*

Subspecialty care for adult patients was medically necessary (e.g., gastroenterology for a gastrointestinal bleed) and factored into planning both pediatric facility staffing and team structures. Access to specialized expertise necessarily affected which patients could be safely managed in a facility. Pediatric facilities implemented a range of subspecialty consultation models for adult patients, which aligned across care settings (ED, inpatient, and ICU) where possible:

- Pediatric subspecialists were consulted and facilitated, if necessary, consultation with an adult subspecialist.
- Adult subspecialists were consulted directly.
- Either pediatric and adult subspecialists were consulted, depending on facility and staffing availability.

Regardless of whether the subspecialists were primarily pediatric- or adult-trained, they could provide consultation using telemedicine (addressed in more detail in *Section 2.B.3: Telemedicine, Section 4.A.3: Telemedicine*, and *Section 6.B.2*), as a traditional in-person consultation, or as a provider-to-provider curbside (generally only in crisis standards of care).

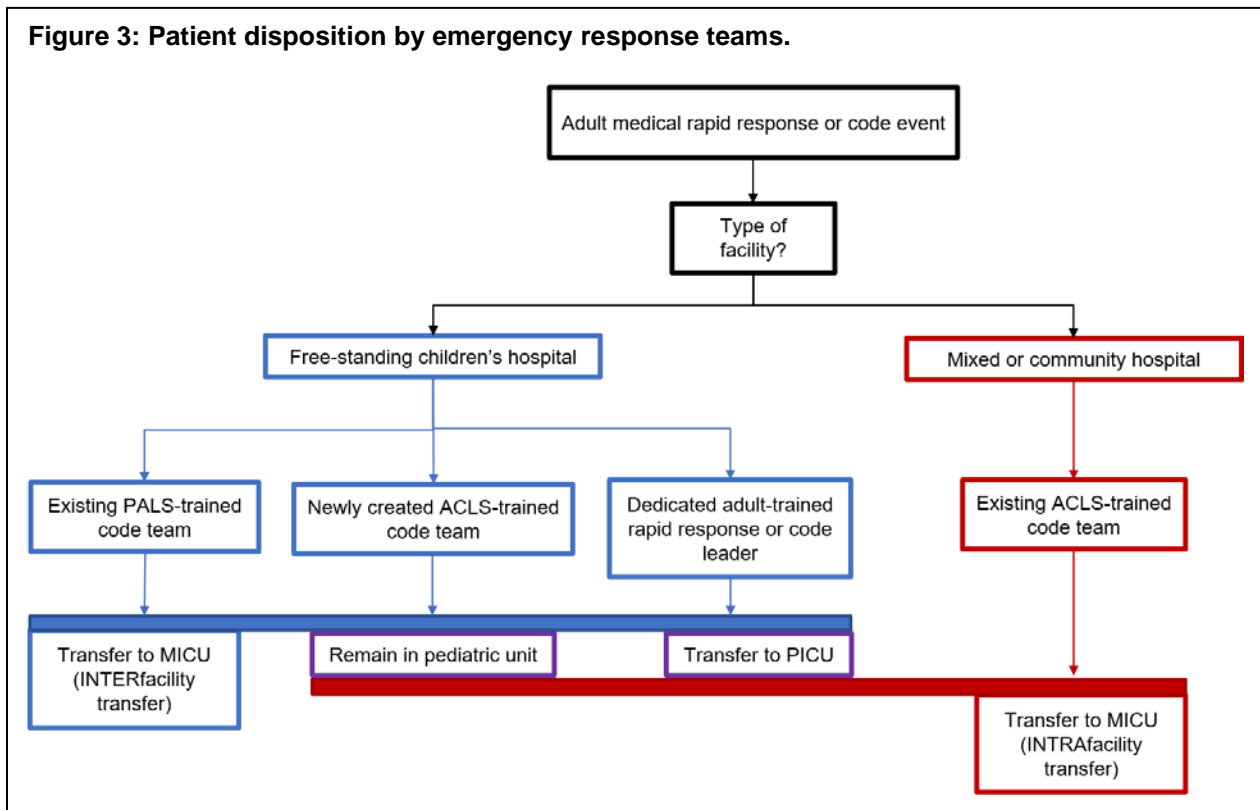
### 4. Systems

#### *a. Rapid response teams (RRTs) and code teams*

To address their ability to manage decompensating adult patients, pediatric facilities identified ACLS-trained personnel (also noted in *Section 2.A.3: Staff*), reviewed code cart supplies to ensure access to equipment of appropriate sizes (e.g., endotracheal tubes, central venous or intraosseous catheters) and medications of appropriate doses, designed systems for alerting rapid response/code teams when an adult (versus pediatric) response was needed (with or without enhanced COVID-19 precautions), and created protocols for patient flow and disposition after the critical event.

The type of pediatric facility (i.e., community, mixed, or freestanding) often dictated rapid response/code team structure and patient disposition. *Figure 3* shows examples of flow differences by facility type. Medical emergencies that pediatric facilities were less facile at managing also required specific protocols (e.g., acute coronary syndrome requiring emergent

**Figure 3: Patient disposition by emergency response teams.**



cardiac catheterization, acute stroke requiring a stroke team and/or neuro-interventional radiology consultation, acute massive pulmonary embolism requiring thrombolytics or other interventional services). Emergent transfer processes needed to be pre-planned, clear, and well-publicized.

*b. Patient acceptance criteria*

A clear set of predetermined acceptance criteria that was consistent across facility access points (e.g., ED, direct admits, transfers) was imperative. Having clear criteria was particularly helpful to avoid decisions being made at the provider level, thus mitigating effects of personal bias—implicit or explicit—on patient selection.

It was also critical to develop acceptance criteria with an equity and anti-racist lens (*Section 6: Equity*). For example, some pediatric facilities identified substance use disorder or other mental health disorders as exclusion criteria for acceptance of adult patients, despite the prevalence of these disorders among adolescents with chronic illness who would ordinarily be accepted to any pediatric facility. While prevalence of these disorders among patients who are Black, Indigenous, and People of Color (BIPOC) is comparable or slightly lower than rates in the White population, BIPOC often experience more comorbid disabilities and chronic conditions.<sup>7</sup> Exclusion criteria such as these therefore may have needlessly disadvantaged individuals from high-risk communities seeking care during the pandemic.

Once criteria were in place, it was also crucial to collect and review data to ensure marginalized populations, such as those with chronic conditions and disabilities and BIPOC, were not disproportionately and inappropriately being turned away from pediatric facilities.

Acceptance criteria helped safeguard against limitations found in the facility's capacity assessment. Again, using the 4S model:

i. Space and stuff

The size of available equipment (such as bariatric beds) could necessitate limits on patients above a certain height or weight. Interventional capabilities such as cardiac catheterization labs or dialysis equipment affected acceptance criteria in terms of presenting or underlying medical diagnoses and cardiac or renal risk assessment. Facilities without single-patient rooms deliberated the appropriateness and safety of rooming adults with children or infants.

ii. Staff

Limitations on access to adult-trained providers (generalists and subspecialists) affected feasibility of accepting adult patients with certain medical needs.

iii. System

Applying a complex acceptance algorithm could be very challenging; to simplify, facilities sometimes opted to use age as a general acceptance criterion.

For those facilities that included factors besides age, acceptance criteria varied widely based on the specific attributes of the system. Specific diseases seen less frequently in children (e.g., complex heart failure, acute coronary syndrome, stroke) were often considered inappropriate for pediatric facilities, as the entire care system, including nursing and pharmacy protocols, was ill-equipped to manage them. Many facilities elected to admit adults only if they had a diagnosis of COVID-19 with minimal comorbidities. Some facilities, however, opted only to take patients *without* COVID-19, to maintain compliance with local/facility infection control protocols, often with the same restrictions on medical comorbidities.

c. Patient flow

A patient flow failure is defined as a patient physically located in a unit that does not match his or her medical needs (e.g., a patient visiting an ED because she could not access her primary care provider or a patient boarding in a medical/surgical unit because there are no beds in skilled nursing facilities). Patient flow failures were already common in facilities prior to the COVID-19 pandemic, particularly at tertiary and quaternary centers.<sup>8</sup> The problem worsened

across facility types when COVID-19 rates in the community were high,<sup>9</sup> attributable to some of the following factors:

- Issues related to infection control:
  - Prevalence of asymptomatic COVID-19 in patients hospitalized for other reasons
  - Uncertainty as to duration of the infectious period in COVID-19, especially if a patient had persistently positive testing
  - Uncertain mode of transmission (i.e., droplet versus aerosol)
- Decreased availability of non-emergent procedures and surgeries
- Challenges with placement of adults requiring post-hospitalization skilled nursing or rehabilitation

These failures, as expected, had ramifications throughout the continuum of hospital care. If inpatient or critical care beds were not available, patients boarded in the ED, subsequently decreasing ED capacity both for staffing and physical bed space. As delineated further in *Section 2.B.1: Effect on Newborn Nursery and Other Facility Units*, flow failures and facility bed reallocation had implications for other patient populations as well (e.g., postpartum caregivers and their newborns). Real-time coordination across communities and regions was therefore important to understand each facility's current and expected capacity.

This coordination required pediatric facilities to consider all aspects of patient flow from admission to discharge; most began with defining which patients could be accepted to the ED, inpatient units, or ICU. Next, they considered mode of patient referral. For example, some pediatric facilities accepted adults only if they presented through the pediatric facility's ED. In this scenario, ambulances were redirected or ED-to-ED transfers occurred. Other facilities would accept hospitalized adults as inpatient or ICU transfers. Direct admits had to be reconsidered to appropriately triage resources based on need.

Bidirectional flow among levels of care for adult patients was also considered in patient flow planning. For instance, in the same freestanding children's hospital, the pediatric ICU may have been comfortable caring for adults, but the inpatient floor (which would potentially receive patients as their illness improved) may not have been, creating a barrier to caring for adult patients. In mixed systems and community hospitals, pediatric ICUs transferred adult patients to both pediatric and adult teams, depending on system capabilities and patient comorbidities. Conversely, if an institution had limited to no ICU capacity to care for adults, limitations were placed on acuity of accepted patients.

Finally, discharging adult patients often required skills, resources, and documents not typically found in pediatric facilities. While pediatric providers are skilled in complex discharge flow, many needed assistance with discharge issues seen less commonly in children. As noted in *Section 2.A.2: Staff*, partnering adult facilities often shared an EMR and other existing resources with the pediatric facility. Discharge-related needs of particular importance were:

- Post-discharge placement and home healthcare

- Long-term care planning (adult patients who need higher level of long-term care)
- Discharge against medical advice
- Referral resources for adult substance use disorder treatment
- Adult subspecialist care
- Adult psychiatric resources
- Guidance on return to work and driving
- Social support referrals
- Medication reconciliation of unfamiliar medications

#### *d. Communication*

POPCoRN contributors consistently identified the importance of communication between staff and leadership that was frequent, timely, transparent, clear, and bidirectional. Policy and procedure updates in response to COVID-19 often led to complex, additive operational and clinical changes; facilities therefore benefited from a clearly delineated communication structure that allowed healthcare workers to share concerns and contribute ideas. While each facility set different standards and expectations for frequency and mode of communication, common effective approaches included:

- Holding conferencing sessions (“town hall meetings”) between facility leadership and frontline staff at anticipated and scheduled times
- Creating centralized repositories of the most up-to-date facility protocols and policies
- Disseminating information via multiple modes (e.g., meeting, email, website, webinar recordings)
- Explicitly considering how to disseminate information to staff at home with limited access to technology (e.g., through phone calls from supervisors)
- Conducting frequent informal check-ins by leadership with frontline staff

#### *e. Staff safety*

Staff safety practices during the pandemic gained significant attention across facility types and patient populations. The items addressed in this section were particularly pertinent to pediatric facilities as they expanded care to adults. Healthcare workers endured numerous stressors (highlighted further in *Section 5: Wellness and Mental Health*), which were then exacerbated by caring for patients outside the staff’s typical scope of practice.

Many elements of staff safety have been addressed earlier in this section (e.g., creating safe spaces for clinical care, having necessary equipment and PPE, transparent communication). Healthcare facilities also needed to promote psychological safety and mitigate unnecessary healthcare worker stress. Some effective resources included:

- Clear and anonymous pathways for reporting patient and staff safety concerns



- Embedded diversity, equity, and inclusion committees that had clear and non-retaliatory pathways for reporting discriminatory behaviors, harassment, and mental and physical safety concerns. It was imperative that these committees were also empowered to proactively address structural and systemic issues related to ableism, ageism, heterosexism, racism, sexism, etc.
- Transportation options to/from work, especially for those usually dependent on public transportation, to enable social distancing
- Low- or no-cost alternative lodging, particularly in areas with high disease prevalence or for workers with frequent interaction with COVID-19 patients to protect both healthcare workers and their families
- Child and dependent family member care services
- Access to technology to support working from home, such as encrypted laptops with EMR access
- Mental health resources and support groups

Trainee safety and social support are addressed in this guide more specifically in *Section 3.C.4: Trainee Safety* and *Section 3.C.5: Trainee Mental Health, Wellness, and Social Support*. Issues related to wellness, resiliency, and trauma debriefing are further addressed in *Section 5.A: Fostering Connectedness*.

## **B. Special Considerations**

### **1. Effect on Newborn Nursery and Other Facility Units**

The COVID-19 pandemic created many challenges for newborn nurseries.<sup>10</sup> In several facilities, there was pressure, due to family preference and/or facility needs (e.g., postpartum bed reallocation for adult medical beds and flow implications, as described in *Section 2.A.4.c: Patient flow*), to discharge postpartum caregivers and their newborns early. Many outpatient providers with newborn nursery privileges either chose or were asked by facility leadership to consolidate coverage, which further impacted discharge flow: newborns were discharged earlier and often to a different provider group than prior to the pandemic. Providing direct patient care for both well newborns and those born to caregivers with COVID-19 presented additional logistical difficulties due to some of the following:

- Increased need for PPE
- Rapidly changing and/or unclear guidance regarding newborn resuscitation, skin-to-skin, COVID-19 testing, and breastmilk feeding practices
- Need for protocols on breast pump use and cleaning as well as breastmilk storage
- Need for protocols for newborns born out of asepsis
- Need for new educational resources for families and primary care providers
- Increased challenges in getting timely post-discharge follow-up for weight and bilirubin checks

Many facilities adjusted their approach to the care of preterm and late-preterm infants, especially those at higher risk for early-onset sepsis, which often requires close inpatient observation. Neonatal units also adopted new guidelines for neonatal weight loss and bilirubin monitoring prior to early discharge to minimize the risk of readmission.

## 2. Ensuring Access to Medical Expertise During Crisis Standard of Care

In some communities with rapidly surging COVID-19 hospitalizations, pediatric facilities that expanded capacity to care for adults struggled to find available adult-trained providers to provide adult medicine expertise. If the necessary credentialed and privileged providers were not immediately accessible, systems and individual providers adopted a variety of solutions. We emphasize that these practices were short-term and implemented only during crisis standards of care. Within POPCoRN, providers using and giving these services were asked to gain permission from their institution's legal team.

Some pediatric providers utilized virtual or phone support “curbsides” to provide guidance on medical management and discuss contingency plans. The adult-trained providers did not access the patient's medical records or communicate with the patient directly; there was only a verbal report by the “curbsiding” provider with the opportunity for clarifying questions from the “curbsided” provider. Ideally, curbsides were conducted between providers in the local community, which had the added benefit of facilitating more formal future consultations (e.g., with credentialing and privileging that would allow for access to patient records).

POPCoRN also organized a “virtual curbside” platform that was staffed by med-peds and internal medicine physicians nationwide for use when local expertise could not be found. As noted above, all participating physicians were required to discuss their participation with the legal team from their home facility or institution. In this scenario, those participating as the “curbsided” provider were deemed covered under Good Samaritan laws.

## 3. Telemedicine

Telemedicine services were an efficient use of resources during the COVID-19 pandemic and rapidly expanded in both acute care (e.g., ED, inpatient, ICU) and ambulatory settings.<sup>11</sup> As noted in *Section 2.A.3.c: Consultation*, telemedicine was particularly impactful for pediatric facilities in increasing access to adult-trained consultants through both intra- and inter-facility telemedicine encounters. There were quite a few logistical challenges that included, but were not limited to, the following:

- Need for credentialing and privileging (addressed further in *Section 4.B.1: Scope of Practice* and *Section 4.B.2: Credentialing*)
- Variation in facility EMR vendor use
- Billing and reimbursement (see *Section 4.A.3: Telemedicine*)
- Availability of a functional HIPAA-compliant communication platform
- Video-conferencing capabilities with the patient

- On-call infrastructure to facilitate consultation

Telemedicine was also useful during the initial stages of the pandemic when primary care clinics were not able to see patients suspected or confirmed to have COVID-19 or in many cases were closed entirely. Providers continued to offer clinical services and access to care for patients. Telemedicine success depended on the quality of the platform used, cost, patient access to technology, and reliable internet access for both the patient and provider. Challenges in promoting health equity through use of telemedicine are addressed in more detail in *Section 6.B: Access to Telemedicine*. Finally, while out of scope for this guidebook, healthcare facilities needed to understand specific clinical and medical legal challenges relevant to implementation of telemedicine.

#### 4. Reallocation of Other Clinical and Patient Care Tasks

Providers, clinical staff, and other ancillary and support staff were often assigned to roles outside the typical purview of their jobs. For instance, if staff were reassigned to non-pediatric roles, other pediatric providers were often asked to assume their patient care responsibilities: physicians may have been tasked with placing peripheral intravenous lines or administering nebulized medications, tasks typically done by nurses. Experienced practitioners needed to train the individuals taking on these new responsibilities, typically using educational tools such as online educational modules or in-person simulations.

#### **Key Points: Clinical and Operational Considerations**

- Institutions planning for overflow care should utilize a systematic approach to assess capacity and anticipate needs. Needs can be productively organized as *space, stuff, staff, and systems*.
- Key areas for protocol development included patient selection and referral, patient flow, adult specialty consultation, rapid response and code teams, and disposition/discharge planning.
- Keeping pre-existing pediatric team structures intact to the extent possible while adapting for adult care was preferred.
- As part of overflow and emergency preparedness, staffing models were developed to ensure access to appropriate expertise in adult care.
- Collaborative relationships between pediatric and adult subspecialists can maintain the primary role of pediatric subspecialist while ensuring appropriate expert input where needed.

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## SECTION 3: IMPACT OF COVID-19 ON LEARNING, TRAINING, AND EDUCATION

Stakeholders	
General	
<ul style="list-style-type: none"> <li>• Relevant departmental leadership (e.g., chair, associate chairs)</li> <li>• Nursing leadership</li> <li>• Respiratory therapy leadership</li> <li>• Hospital administrators</li> </ul>	<ul style="list-style-type: none"> <li>• Social work and care management leadership</li> <li>• Infection prevention leadership</li> <li>• Patient safety and quality leadership</li> </ul>
Graduate medical education (GME)	
<ul style="list-style-type: none"> <li>• GME leadership (e.g., designated institutional official)</li> <li>• Trainees (e.g., residents, fellows)</li> <li>• Chief residents</li> </ul>	<ul style="list-style-type: none"> <li>• Training program (e.g., residency, fellowship) directors</li> <li>• Core trainee faculty</li> </ul>

Many facilities and health systems are privileged to train a wide variety of health professionals. There were clear challenges and barriers to implementing this training during the COVID-19 pandemic in a way that prioritized the safety of learners who were also essential front-line personnel. Simultaneously, there were many opportunities for educational benefit and growth. We have focused this section on education for essential workers during the COVID-19 pandemic, which includes providers (e.g., residents and fellows), nurses, and other ancillary staff, but does not include students (medical, nursing, or other).

### **A. Implications for All Healthcare Facility Providers and Staff**

Most facilities created and regularly updated resources specific to the COVID-19 pandemic to share among all providers and staff related to topics such as:

- PPE donning/doffing and procurement guidelines
- Infection prevention and control
- Overall facility surge plans
- Community- and hospital-level data on COVID-19 caseload
- Mental health

Creating these foundational pandemic-related educational resources was a necessary first step.

### **B. Implications for Non-Trainee Clinical Providers and Staff**

To provide a high clinical standard of care to adult patients, providers not specifically trained in adult medicine needed to bolster their knowledge of adult care. During the COVID-19 pandemic, many facilities implemented surge plans that included formal education for pediatric physicians,

advanced practice providers, nurses, respiratory therapists, pharmacists, and other pediatric staff who were asked to care for adult patients.

Additionally, institutional clinical leadership developed order sets and clinical protocols for diagnosis and management of COVID-19 to ensure consistency of care. These guidelines were particularly important because recommendations from the Centers for Disease Control and Prevention (CDC) changed frequently as knowledge evolved.

Just-in-time education with concise, high-yield topics was paramount during the pandemic. POPCoRN members who were not trained in adult medicine—trainees and more experienced providers alike—consistently asked for high-yield reviews of topics key to managing adult patients. To meet this need, POPCoRN both filtered existing resources for reference and developed new materials. These materials included one-page reviews of high-yield internal medicine topics,<sup>1</sup> admission and discharge tips, an ACLS primer, critical care resources for non-intensivists, and resources for nurses. At the time of publication of this guidebook, all materials could be found at <https://www.popcornnetwork.org/educational-materials-main-menu>.

### **C. Implications for and Adaptations of Graduate Medical Education (Residents and Fellows levels)**

Pediatric overflow care during the pandemic involved substantial challenges to resident and fellow education, whether they were reassigned to adult care units; remained in their usual specialty area; or were pulled from elective, research, or vacation blocks to help manage overwhelming patient volume.

#### **1. Accreditation Council for Graduate Medical Education (ACGME) Considerations**

Existing ACGME guidelines define different levels of emergency. ACGME-accredited training programs needed to self-declare Pandemic Emergency Status for 30 days to allow residents and fellows to care for patients outside their area of training.<sup>2</sup> Additionally, this emergency status suspended all ACGME requirements *except* in the following priority areas: work hour limits, adequate supervision, adequate safety resources and training, and fellows functioning in their core specialty (e.g., cardiology fellows practicing as internists). Pandemic Emergency Status could be renewed by the Designated Institutional Official as needed for either the whole institution or specific programs for a defined period.

Pandemic Emergency Status—a crisis standard of care—was most often used by programs in locations with major COVID-19 surges to reallocate residents while maintaining training requirements. Other accommodations pursued by programs that were automatically included with Pandemic Emergency Status were removal of the annual ACGME survey completion requirement as well as more explicit flexibility in activities such as educational committee attendance.

#### **2. Board Eligibility Requirements**

#### *a. Requirement adjustments*

For trainees who were reallocated to COVID-19 response teams outside their specialty, concerns arose related to their ability to meet graduation and board-eligibility requirements. For pediatric trainees, real flexibility came when the American Board of Pediatrics acknowledged that reallocation to non-specialty clinical services was happening and published flexibility in graduation and board-certification requirements. Ultimately, residency and/or fellowship program leadership collectively petitioned specific specialty or subspecialty boards to create flexibility (e.g., waive one month of elective in lieu of time in an ICU, decrease continuity clinic attendance requirements). Intense tracking on the part of the programs was required. Residents and fellows in combined programs (e.g., med-peds, pediatric neurology) varied in their ability to be flexible with training obligations given multiple board requirements.

#### *b. Patient volume challenges*

Pediatric trainees' clinical exposure to typical pediatric inpatient cases was significantly impacted throughout the COVID-19 pandemic. This impact was not only attributable to reassignment to adult units, but also to decreased pediatric patient volumes for common diagnoses such as bronchiolitis, croup, and influenza. This diminished volume may have been attributable to decreased transmission due to public health measures such as masking, quarantine, and social distancing; regardless of the reason, trainees across the country had little clinical exposure to such "bread-and-butter" pediatric cases.

Additionally, non-emergent procedures commonly co-managed by pediatric residents, (e.g., orthopedic surgeries, endoscopies, tonsillectomies, scheduled neurologic or rheumatologic evaluations or procedures) were cancelled. When pediatric patients were hospitalized for any reason, the hands-on clinical experience was impacted by the need to minimize infection risk and preserve PPE (see *Section 3.C.3: Educational Experience*). Therefore, training program leadership have had to evaluate trainee progress and educational needs and to design alternative experiences to maximize clinical exposure to ensure that trainees are meeting graduation requirements for competency in skills necessary for independent practice.

### 3. Educational Experience

#### *a. Clinical*

The COVID-19 pandemic disrupted normal clinical training by minimizing direct patient contact (to prevent exposure to SARS-CoV-2) and through clinical reallocation. Especially for pediatric facilities where decreased trainee and attending physician staffing in pediatric units was coupled with lower overall pediatric census, there was often less clinical learning.

To facilitate trainee education through family-centered rounds while promoting social distancing, some programs developed processes to conduct virtual telerounds, holding secure virtual



meetings with families and interprofessional teams.<sup>3</sup> One team member presented in the room with the family while the remainder of the team connected via tablet or computer. This strategy allowed all team members and learners to be present during rounds and participate in some form of bedside teaching. Programs also used other technology, such as telemedicine stethoscopes, to allow for physical diagnosis education during the pandemic.

However, it is important to note that these options were only available in highly resourced programs. In overwhelmed health systems and lower-resourced hospitals, bedside education was more severely crippled by the pandemic. Some teams conducted interdisciplinary table rounds with all pediatric residents, sending individual team members back to the patient's bedside to discuss the day's plan.

Some pediatric programs formalized curricula that aligned specialty-specific competencies with the clinical work and education that was occurring as part of the pandemic response. Examples included:

- Use of existing global and community health rotation curricula as a foundation to appreciate and formalize lessons learned while pediatrics trainees were working on adult COVID-19 units (e.g., resource use and allocation, ventilator and fluid management, end-of-life care, communication in challenging scenarios)
- Identifying ACGME competencies that crossed specialties such as systems-based practice, practice-based learning, and improvement, and teaching to those competencies
- Identifying opportunities to strengthen clinical skills relevant to pediatrics, such as learning to deal with a poorly understood multisystem disease, providing complex care, triage skills, practicing diagnostic flexibility, lab and diagnostic interpretation in complex medical situations, physical exam skills, and procedural skills

#### *b. Didactics*

Maintaining didactic conferences was a challenge due to clinical load of attendings and trainees; mental health burden of the pandemic, especially for BIPOC, high-risk residents, and those with ill family members; reassignment of residents out of their core departments; and other factors. As noted previously, ACGME requirements regarding didactic sessions were adjusted for programs and institutions with Pandemic Emergency Status. Many training programs initially placed their scheduled didactics on hold as they adapted to using virtual platforms for educational conferences. These virtual conferences encouraged trainee participation across different locations, increasing flexibility for trainees and faculty. Keeping residents engaged with this format and fostering interaction were challenges for less resourced programs and facilities (e.g., due to lack of webcams, access to computers).

#### 4. Trainee Safety

Though trainees were being called upon to help clinically with the surge response, it was critical that considerations of their safety remained paramount. Hands-on clinical learning was limited to spare PPE and minimize time at the bedside, and training programs were required to adhere to CDC social distancing recommendations to minimize viral transmission among healthcare workers.<sup>4</sup>

A frequent source of discussion regarding trainee safety—both physical and mental—was whether residents would be reallocated to adult services on a voluntary or mandatory basis and whether there were exclusion criteria for such a reallocation. Institutions approached this issue very differently, but most at least established some process for excluding high-risk residents from clinical service while there was a high volume of COVID-19 patients in the hospital.

## 5. Trainee Mental Health, Wellness, and Social Support

Residents and fellows, because of their status as trainees, are automatically a vulnerable population subject to ethical scrutiny and regulatory limits designed to protect their autonomy, wellness, and service-to-learning ratio. Training programs needed to recognize the high emotional risk to trainees and the unique challenges faced by reallocated trainees, as well as those not selected for reallocation. However, many hard-hit facilities require a large number of residents to function even at normal capacity; they therefore absolutely needed to employ residents in high-volume situations in order for the system to function at its maximum capacity. This tension was extremely hard to balance, and the net effect was that the residents—the least experienced but in some ways the most essential members of the team—took on a very high burden of direct patient care, including critical care. This tension needed to be anticipated and acknowledged through such considerations such as:

- Whether staffing levels could be maintained with volunteer-only models, allowing trainees to self-select to work outside their scope of training for elective credit
- What wellness and debriefing resources must be provided to trainees working in high-intensity, resource-challenged situations
- How crisis staffing could be designed to mitigate stress and accommodate education in pediatrics (e.g., creating reallocation teams rather than individuals, rounding with reassigned pediatric hospitalists)

While all essential and frontline staff needed resources and services pertaining to wellness and mental health (see *Section 5: Wellness and Mental Health*), training programs needed to address these issues frequently, directly, and specifically with trainees.

Prior to the COVID-19 pandemic, resident burnout and mental health concerns were on the rise.<sup>5,6</sup> Non–adult-trained residents and fellows reassigned to work clinically in areas outside of their specialty had some differing wellness and mental health needs than their adult-trained counterparts who continued working in their areas of expertise. Emotional and mental health support for returning providers after reallocation was new for many programs, as was the need to monitor for prolonged or delayed signs of emotional or psychological trauma. Worries for

another surge and repetitive redeployment also complicated the situation. Training programs used a variety of mechanisms to support trainee needs, such as:

- Employee assistance programs
- Partnerships with psychiatry residency programs to offer counseling, group debriefing, and other services
- Ramping up existing wellness programs, in particular transitioning to virtual rather than face-to-face gatherings

Ultimately, this continues to be an area of struggle, as also highlighted in *Section 5: Wellness and Mental Health*.

#### **Key Points: Impact of COVID-19 on Learning, Training, and Education**

- Interprofessional and interdisciplinary education was highly valuable as health workers stepped into new roles in overflow situations.
- Brief, accessible educational resources (e.g., POPCoRN “one-pagers” on high-yield adult medicine topics) and up-to-date clinical protocols summarizing the most recent local and CDC data were highly valuable as hospital capacity surged.
- Special considerations for trainees included mitigating disruptions to education, fulfillment of training requirements, maintenance of transparent communications, and prioritization of safety.
- In cases where core specialty training was disrupted by overflow planning, institutions employed a variety of methods to develop educationally valuable experiences that addressed many ACGME competencies.
- Collaboration across institutions was essential. The use of virtual platforms facilitated cross-institutional education and sharing of educational materials relevant to adult overflow care.

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## SECTION 4: FINANCIAL AND LEGAL CONSIDERATIONS

### Stakeholders

#### Operations

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Human resources</li><li>• Credentialing services</li><li>• Business administration</li></ul> | <ul style="list-style-type: none"><li>• Clinical research leadership</li><li>• Clinical research principal investigators</li><li>• Departmental leadership</li></ul> |
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### A. Financial Considerations

As COVID-19 cases surged in various parts of the United States, local and state governments mandated “shelter in place” orders along with the cessation of many elective surgeries and procedures. On March 13, 2020, the federal government declared the COVID-19 pandemic a national emergency that effectively shut down the economy, greatly affecting the healthcare industry.<sup>1</sup> As a result, pediatric facilities—especially freestanding children’s hospitals—suffered significant financial losses, not only from the loss of revenue from elective surgeries but also from lower non-surgical pediatric patient volumes, due to a decrease in pediatric clinic and ED visits.

#### 1. Transparency

Healthcare facility leaders needed to be transparent about financial challenges and potential solutions. In order to fully understand the financial issues facing an institution, staff often needed to understand their facility’s operational revenue *before* the pandemic, in addition to how operational revenue and budgeting were evolving over time. Although the specific direction and effects of any designated plan to address budgetary deficits or loss of revenue often changed, it was key that all members of the facility or larger institution felt well-informed. Similar to the strategies described in *Section 2.A.4.d: Communication*, some examples cited by POPCoRN members of useful facility leadership behaviors to facilitate fiscal transparency were:

- Frequent and planned opportunities for open communication with all staff
- Regularly scheduled email communication
- Development of staff forums to express concerns and put forth potential solutions to current fiscal challenges

#### 2. Staff Reallocation

Reorganization and reassessment of clinical operation practices were necessary during this pandemic, as well as during past public health emergencies.<sup>2,3</sup> Pediatric facility leadership often cited the goal of minimizing adverse economic impacts on frontline providers and staff. Iterative review of clinical staffing and related patient care operations helped ascertain which practices could be streamlined or consolidated.

Decisions on staff reallocation needed to be financially informed. For example, when clinical staff were reallocated (e.g., pediatric nurses to adult units or facilities) pediatric clinical staff from other areas that experienced decreased productivity (e.g., elective surgical services) could be reassigned to cover. As discussed in *Section 2.A.3: Staff*, determining available staffing and subsequent care team structure required flexibility and overall system awareness (including finances) to make implementation decisions.

Whenever leadership were considering reallocating staff to another a facility or even within the same facility, the financial ramifications of such arrangements needed explicit discussion and multi-stakeholder decision-making. At the systems level, these considerations included determining who was responsible for the following components:

- Billing responsibility (e.g., if pediatric hospitalists were reallocated to an adult unit, would the adult medicine department have billing responsibility?)
- Distribution of payments (e.g., if pediatric hospitalists were reallocated to an adult unit, would the adult medicine department distribute payments for services from these pediatric hospitalists to pediatrics?)
- Provider and staff compensation and benefits

Considerations at the individual level included determining impact on any of the following:<sup>2-4</sup>

- Total salary
- Revenue value unit–based salary components
- Annual bonuses
- Retirement benefits
- Vacation and paid leave
- Professional development leave
- Educational stipends
- Research grants
- Changes to a provider’s role, especially regarding clinical effort

If furloughs were required, creation of clear criteria among all stakeholders that included aggressive plans for return to work was imperative for staff morale and efforts to promote equity.

Many pediatric facilities, particularly community hospitals, dealt with the financial ramifications for community pediatricians who could no longer cover patients because: (1) the facility restricted access (e.g., due to risk of COVID-19 exposure, resource conservation), (2) they chose to limit their own risk of exposure, or (3) they were required to reallocate their own ambulatory services. Changes to these community pediatrician care models benefited from proactive and recurrent conversations about anticipated changes in revenue and compensation.

### 3. Telemedicine

Telemedicine was an area of growth leveraged by many pediatric facilities to not only facilitate patient care but also maintain financial viability. Some hospital-based groups used telemedicine to increase revenue by creating virtual follow-up clinics for their hospital discharges; others aligned with subspecialty clinical providers to assist in virtual care of patients at other care sites (e.g., critical care consults to determine whether transfer to a more specialized facility was necessary).

#### 4. Insurance

Many pediatric facilities raised concerns about insurance reimbursement for adult patients admitted to pediatric facilities. Several insurance providers initially responded to the pandemic by waiving costs for COVID-19 testing and treatment for patients, providing reimbursement for telemedicine visits and expediting credentialing to increase their number of in-network providers. However, the impacts of these measures on hospital reimbursement for the care of patients with COVID-19 is unclear. Although adult social workers may be less familiar with pediatric resources, they are generally well-positioned to address issues of insurance coverage for adult patients admitted to pediatric facilities.

### **B. Legal Considerations**

As clinical providers stepped out of their normal scope of practice, there were two key legal considerations: malpractice coverage and credentialing. While a significant source of stress and anxiety for providers, the potential legal ramifications of extending beyond their usual scope of practice could almost always be clearly addressed when pediatric facilities collaborated appropriately with local risk management, departmental and facility leadership, state medical board, and local government when necessary. Many of these points are discussed in more detail in the American Academy of Pediatrics Committee on Medical Liability and Risk Management (COMLRM) technical report published in March 2019, “Understanding Liability Risk and Protections for Pediatric Providers During Disasters.”<sup>5</sup>

#### 1. Scope of Practice

While most providers working in the acute care setting (e.g., ED, inpatient units, ICU) receive malpractice insurance through their facility, it was prudent for providers to maintain awareness of whether their malpractice insurance would cover the care of patients outside their usual scope of practice. This was particularly important for those providers who decided to volunteer or otherwise provide pandemic-related services for institutions with which they did not have an employment contract. General Counsel could clarify the potential “blanket immunity” (limiting an individual’s legal liability) during a time of crisis provided by some state governors under a state of emergency executive order.<sup>6</sup>

Pediatric providers and others who considered working outside of their usual scope of practice needed to define what care it was most suitable or reasonable for them to assume by considering clinical skill, experience, and context. For example, most would have thought it

reasonable for pediatric hospitalists to manage adult patients with pneumonia and no other comorbid conditions on an inpatient ward. However, many facilities and providers would not have considered it reasonable for a pediatric hospitalist to manage an older adult patient with congestive heart failure and multiple other comorbidities within the adult ICU without the supervision of an adult intensivist.

## 2. Credentialing

Most facilities, in the setting of the pandemic, did not need to seek additional credentialing to cover extended scope of practice for providers already credentialed in their own system. This included pediatric providers caring for adult patients. To avoid confusion and mitigate anxiety, pediatric facilities often clearly stated that no further credentialing or privileges were needed for providers. If facility legal authorities determined that credentialing was necessary for pediatricians to undertake an expanded scope of work, credentialing processes would usually mirror those discussed below.

Credentialing considerations were of largest concern when needed clinical expertise was to come from outside the facility or health system (e.g., adult subspecialty consultation). Both in-person and telemedicine consultation required appropriate credentialing. For most facilities, this included one of the following:

- Emergency credentialing through the facility's credentialing office that allowed specific provisions of care or addenda to local bylaws
- Reliance on state-level emergency orders that either expanded scope of care or broadened provider protections against malpractice claims (e.g., New York State executive order that temporarily suspended specific education and licensing regulations)<sup>6</sup>

## 3. Litigation Concerns and Public Health Emergencies

Traditional legal standards of care are inadequate in acute emergency situations.<sup>7</sup> Most states enacted legislation protecting healthcare facilities, providers, and staff against damages except in the case of willful, wanton, grossly negligent, reckless, or criminal conduct or an intentional tort. While out of scope for this guidebook, other concerns related to the ethical and liability implications of care rationing in times of human and physical resource shortage (e.g., pandemic surge of hospitalized patients) continue to be evaluated and described.



### **Key Points: Financial and Legal Considerations**

- Frequent, transparent communication from facility leadership was beneficial for keeping staff updated regarding the financial health of institutions affected by the COVID-19 pandemic, especially how it would affect staff compensation and other benefits.
- Telemedicine was an important revenue opportunity for many hospitals to counterbalance other losses.
- Malpractice insurance and credentialing of providers should follow the laws or temporary orders of the state/city.
- The pandemic demonstrated a need for policy solutions to address insurance coverage for patients and reimbursement to hospitals when institutions need to care for patients outside of their traditional population.

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## SECTION 5: WELLNESS AND MENTAL HEALTH

### Stakeholders

#### Wellness

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| <ul style="list-style-type: none"><li>• Wellness officers</li><li>• Departmental leadership</li><li>• Business administration</li><li>• Trainees (e.g., residents, fellows)</li><li>• Nursing leadership</li><li>• BIPOC providers</li><li>• Diversity, equity, and inclusion officers</li><li>• Social work and care management leadership</li></ul> | <ul style="list-style-type: none"><li>• GME leadership</li><li>• Executive leadership (e.g., chief medical officer, chief nursing officer, chief executive officer)</li><li>• Providers</li><li>• Facilities and maintenance leadership</li><li>• Relevant community-based organizations</li><li>• Hospital administrators</li></ul> |
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The COVID-19 pandemic brought wellness and mental health challenges for the entire population due to anxiety, economic stress, diminished social connection, and other factors.<sup>1</sup> Healthcare workers had additive stressors:<sup>2-4</sup>

- Trauma of involvement in high-mortality care
- Bearing witness as patients often died alone
- Fear of viral exposure
- Inadequate PPE and other supplies
- Moral distress from inability to provide the usual standard of care
- Seeing the disproportionate impact of the pandemic on communities of color
- Financial stress as health systems lost revenue and required furloughs

Stressors and stress responses faced by healthcare workers were nuanced and depended on their precise role, whether they were reallocated to new units or teams, cared for patients primarily with COVID-19, or cared for patients or conditions outside of their usual scope of practice. For example, nurses and other staff who spent extended time at the bedside faced unique emotional trauma because of the closeness and intensity of their patient relationships as well as their risk of infection. Pediatric and other non—adult-trained staff assigned to care for adult patients faced the stress of practicing outside their typical scope, managing unfamiliar health problems on a background of high mortality from a new and poorly understood disease. Poor outcomes, such as death, in these patients may have triggered feelings of moral distress for staff if there was concern that they were unable to provide optimal care due to their lack of training in caring for adults, even when they had appropriate supervision and adult medicine support.

The following subsections describe some of the key elements that facilities needed to address during the pandemic to best support their staff. Some facilities had pre-existing infrastructure for wellness and mental health that could be modified to meet the needs of staff during a public health emergency. However, many facilities did not; the pandemic frequently highlighted gaps in

existing systems that limited their ability to promote a healthy and resilient workforce. It also provided an opportunity to advocate for creation of adequate wellness infrastructure. Proactive identification and prioritization of healthcare worker needs was imperative.

### **A. Fostering Connectedness**

Creation of a safe environment that facilitated connection and acknowledgement of moral distress, fear, and grief felt by staff was key. Equally important was recognition that the individual experience of each healthcare worker was highly variable; for example, those with children or other dependents often had multi-level demands outside of the hospital (e.g., due to fluctuating childcare needs, family safety concerns) during the pandemic. Many staff could not quarantine or isolate from other people living in their household despite known infectious exposures.

Facility leadership played an important role in creating these supportive spaces. Some interventions identified by POPCoRN members included:

- Scheduled rounding by a multidisciplinary team that included mental health workers on patient units at predictable intervals to check on healthcare workers
- Increased accessibility of local resources to promote connectedness and mental health through a variety of mechanisms (e.g., online, email, announcements)
- Goal-oriented sessions facilitated by trained personnel covering a variety of mental health and wellness topics such as community-building, debriefing, grief management, and identifying acute stress disorder

### **B. Psychological First Aid Check-ins and Debriefing**

Many institutional leaders found that it was vital during the pandemic to have mechanisms in place to identify staff with depression, anxiety, suicidality, substance misuse, and sleep disturbances in order to maintain a functioning and resilient workforce. Models chosen by facilities or divisions depended in part on the pre-pandemic dynamic between leadership and frontline staff. They included:

- Informal or semi-formal check-ins by leaders or colleagues with a goal of enhancing connectedness and identifying those in need of further resources
- Opt-out check-ins that utilized a peer-to-peer network
- Opt-in check-ins with leaders, colleagues, or a peer-to-peer network
- Opt-in formal mental health services

Multiple training programs existed prior to the pandemic for psychological or “stress” first aid for mitigating the impact of traumatic experiences in the workplace.<sup>5,6</sup> Resources like these were used by many POPCoRN members to gain skills useful in the pandemic.

While many healthcare institution leaders and frontline staff recognized that formal debriefing was also an important element of helping people process traumatic events, many also came to recognize that it could be re-traumatizing rather than helpful if conducted too early or without adequate formal mental health support. Consultation with a trained mental health professional ideally occurred before and while planning for formal debriefing after traumatic events.

### **C. Trauma Associated With Racial Injustice**

Healthcare workers from groups facing embedded systemic and structural barriers had, by definition, less power within their facilities to advocate for their wellness and safety. Those workers that faced these barriers included women, BIPOC, transgender or nonbinary people, people living with disabilities, elderly people, and those with lower socioeconomic status (SES). Groups with worse health outcomes both historically and in the COVID-19 pandemic, such as BIPOC, also dealt with additional stress regarding the well-being of friends and family or with the trauma of seeing the disproportionate impact of the pandemic on their communities. It was important to acknowledge the impact of this collective racial trauma and address it intentionally as institutions designed their wellness initiatives.

Also during the COVID-19 pandemic, the murder of George Floyd sparked a reawakening across the country to the continued influence of racial injustice. Healthcare outcomes were of particular focus due to the stark disparities in mortality from COVID-19 between BIPOC and White populations. POPCoRN called attention to the importance of actively addressing implicit bias before, during, and after crisis planning (addressed further in *Section 6: Equity*), as well as intentionally and proactively safeguarding the wellness of BIPOC in emergencies.

#### **Key Points: Wellness and Mental Health**

- Public health emergencies such as the pandemic may cause moral distress and cause or exacerbate mental health problems. Workers are likely to require added psychiatric, psychological, and counseling support.
- Healthcare systems that regularly assessed workforce well-being and developed resources for ongoing support under normal operations were able to adapt these structures to provide mental health and wellness support under contingency and crisis standards of care.
- Healthcare providers called to work outside their area of expertise or in unfamiliar settings required appropriate orientation and additional support.
- Intersecting crises—including the chronic health crisis of racism and structural inequity, which was exacerbated by the pandemic—caused additive stress for healthcare workers, and successful institutions took a broad approach to wellness.

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## SECTION 6: EQUITY

### Stakeholders

#### Equity

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| <ul style="list-style-type: none"><li>• BIPOC providers</li><li>• Diversity, equity, and inclusion officers</li><li>• Social work and care management leadership</li></ul> | <ul style="list-style-type: none"><li>• Relevant community-based organizations</li><li>• Hospital administrators</li><li>• Departmental leadership</li></ul> |
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The COVID-19 pandemic unveiled and highlighted deep systemic inequities in the United States health system.<sup>1,2</sup> POPCoRN quickly realized the importance of intentionally centering equity in all its activities. Specifically, the network sought to integrate equity as an explicit consideration in all operational discussions and encouraged members to view all planning and intervention they did within their institutions through an equity lens. It is a core value of POPCoRN that all people are equally deserving of good health outcomes in a public health emergency. Therefore, pandemic responsiveness includes, among other things: effective mitigation of implicit social and racial bias; dismantling barriers to care, especially for vulnerable populations; and ensuring equal access to educational opportunities for trainees across disparately affected health systems.

#### A. Access to Pediatric Care

While many facilities found it necessary to close or repurpose pediatric units, facilities also needed to ensure that care of pediatric patients in their communities was not compromised in the process. In this situation, multi-stakeholder facility leadership needed to intentionally plan where pediatric patients would receive care. Examples of changes in patient flow or care models from POPCoRN members included:

- Utilizing bedspace in the pediatric ICU for general medical/surgical pediatric patients
- Repurposing post-anesthesia care units for additional space (whether ICU level of care for adults or ward level of care for children)
- Determining whether adult-trained team members would be comfortable caring for both children and adults, which allowed for creation of “flexed” beds
- Transferring pediatric patients to a regional pediatric facility care hub, often a freestanding children’s hospital
- Carefully monitoring community pediatric hospital volumes to advocate for increased allocation of pediatric beds

Prior to the COVID-19 pandemic, consolidation and regionalization of pediatric care had already been an increasing problem in ensuring community-level access to pediatric care. Within POPCoRN, pediatric facilities experienced further challenges in reopening closed pediatric units or beds within their facilities, exacerbating access equity issues for rural communities and communities far from tertiary pediatric centers.

## **B. Access to Telemedicine**

To provide effective care while minimizing staff and patient exposure through social distancing, telemedicine became a paramount part of the pandemic response. Though telemedicine increased care access for many vulnerable populations (e.g., those with physical disabilities and/or technology dependence), it also created new issues.

Access to computers or smartphones and high-speed internet was necessary for telemedicine, as was the ability to navigate new computer applications. People who needed assistive communication devices or interpretation services were also more challenged by telemedicine systems, both to access them and to communicate with providers using them. Some patients, especially people living in homeless shelters or in overcrowded conditions, did not have confidential space to conduct doctors' visits. People in these and other situations that limited ability to access telemedicine visits required further resources, such as remote, user-friendly tech support; dedicated clinic space and telemedicine tablets; and interpreters comfortable assisting patients with the telemedicine platforms in addition to interpreting for the visit.

## **C. Criteria for Patient Population Acceptance**

Most pediatric facilities carefully considered local characteristics (*space, stuff, staff, systems*) that could influence the delivery of effective care to patients across the age spectrum (see *Section 2.A.4.b: Patient acceptance criteria* for additional details).<sup>3</sup> However, it was less common for pediatric facilities to consider and explicitly discuss how inclusion or exclusion criteria could influence equitable delivery of healthcare to populations that differed in other characteristics, such as race, gender, or disability. It was paramount to craft policies intentionally so as not to exacerbate underlying health disparities.

For instance, some pediatric facilities used factors related to social circumstances, such as homelessness, as exclusion criteria. However, social workers support pediatric and adult healthcare facilities alike. Issues such as homelessness were (and are) pervasive not only for individual adult patients but also for families with hospitalized children. Most facilities that cited homelessness as a reason for patient exclusion recognized with prompting that their facility did have the capacity to address this issue.

More challenging were issues such as substance use disorders or certain mental health conditions that were intimidating to pediatric providers and also disproportionately affect resource-poor communities, communities of color, and people with underlying health issues that would be more likely to put them at risk for severe COVID-19. Officials determining capacity to accept these patients in pediatric facilities found it essential to employ the same "4 S" framework that was applied to any other complex condition to mitigate bias and ensure equitable health access for all people regardless of social circumstance. "Do we have the capacity and expertise to manage a person *having an acute myocardial infarction?*" becomes a



very similar question to “Do we have the capacity and expertise to manage a person *withdrawing from alcohol?*” Health equity concerns necessitate that they are treated as such.

#### **D. Trainee Education**

Innovative educational strategies used by medical training programs (*Section 3: Impact of COVID-19 on Learning, Training, and Education*) relied on existing access to resources and facility or training program financial health. Many facilities and programs did not have access to tablets, extra computers, or multiple options for virtual learning. Some facilities found it useful to partner with other community training sites to share resources.

Additional considerations at local and regional levels included awareness and intervention (if needed) if individual healthcare facilities were disproportionately experiencing hospitalization surges. As with past public health emergencies, those patients with pre-existing risk for health disparities (e.g., uninsured or underinsured, BIPOC, low SES) were more likely to be affected by COVID-19 and be hospitalized. Many safety net facilities, most of which have resident and fellow training programs, saw high patient volumes relative to other community healthcare facilities. Without a coordinated regional response, offloading of over-burdened systems and equitable distribution of patient care could not occur, significantly affecting trainee education, wellness, and mental health, not to mention the effects on patients themselves.

#### **E. Access to Clinical Trials**

When considering patient diversion or transfer to a pediatric facility, it was critical to consider if the adult would still have access to interventions for clinical trials in which they were *already* enrolled (e.g., patients with chronic conditions such as cystic fibrosis or malignancy) or be precluded from enrollment in a new trial (e.g., for COVID-19 treatments). Furthermore, access to innovative therapies was and remains more readily available at some healthcare facilities than others, an inequity that is to some extent unavoidable but can be mitigated by actively considering current and future eligibility for clinical trials in transfer decisions.

#### **F. Role of Advocacy**

##### **1. Addressing Implicit Bias, Structural Racism, and Systemic Racism During a Public Health Emergency**

As stated before, the COVID-19 pandemic exacerbated long-standing healthcare disparities.<sup>1,2</sup> Over-representation of BIPOC in frontline jobs, increased burden of chronic disease resulting from generations of toxic trauma,<sup>4</sup> unequal access to care due to structural racism, and systemic bias all contributed to the disproportionate impact of the virus on people of color.<sup>5</sup> Pre-dating the COVID-19 pandemic, many BIPOC endorsed that seeking healthcare was inherently uncomfortable due to implicit bias from providers.<sup>6</sup>

POPCoRN members shared the following strategies for actively addressing implicit bias and dismantling structural racism, critical to efforts to address healthcare disparities laid bare and worsened by the pandemic:

- Reminding stakeholders to ask, “Who else should be at the table?” as rapid decision-making was occurring
- Incorporating equity metrics into evaluation of overflow processes (e.g., tracking insurance type, self-identified race, and gender for overflow census to ensure White, private insurance patients were not being prioritized for resource allocation)
- Realizing that including equity considerations in operational discussions takes practice
- Within POPCoRN discussions, regularly and explicitly revisiting equity to hold members accountable to POPCoRN’s values
- Encouraging POPCoRN members to promote continuous learning and use their increasing skills in discussing and addressing equity to continue these discussions within their local institutions
- Publicly participating in demonstrations and advocacy events about equity concerns to put pressure on institutions and political bodies to pay attention to equity in policy decisions

## 2. Access to COVID-19 Testing and Care

Unequal access to diagnostic testing for COVID-19 hindered effective monitoring and early intervention for symptomatic patients.<sup>7</sup> For healthcare facilities that did successfully meet community needs, specific strategies included:

- Explicit, repeated, multimodal, and multilingual publicizing of what testing the facility was offering and how it expanded or adjusted with time
- Mobile testing sites sent into neighborhoods with high COVID-19 prevalence
- Effective interface between non-institutional and institutional testing to minimize the need for repeat testing

### Key Points: Equity

- Pediatric facilities flexing to treat adults needed to ensure that they did not exacerbate existing disparities in pediatric healthcare access in places that were already under-resourced (e.g., rural communities).
- Use of telemedicine both increased healthcare access and exacerbated disparities for those who had less access to or less skill with technology.
- Implicit bias can affect clinical outcomes in vulnerable populations by affecting patient acceptance criteria in overflow situations; a systematic approach to designing acceptance criteria can help mitigate this effect.
- Hospitals serving more vulnerable patients (BIPOC, low SES, etc.) were disproportionately overburdened; a regional approach to addressing a public health crisis ensures more equitable distribution of care, including trial therapies, and reduces impact on trainee education and wellness.
- Institutions must address structural racism and individual implicit bias in order to minimize morbidity and mortality among underrepresented populations during and after the pandemic. Methods could include actively monitoring clinical outcomes in relation to demographics and insurance type, incorporating equity metrics in planning for contingency and crisis standards of care, and frequently asking what other stakeholders should be at the table.

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