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## MEETING SUMMARY

# Confronting COVID-19: Finding Hospital Capacity and Improving Patient Flow

A Webinar Series Hosted by PCORI for Hospitals and Health Systems

*Part 4 – Nurse Staffing amid COVID-19*

April 21, 2020

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## Overview

Faced with an actual or potential surge of COVID-19 patients, hospitals across the country are encountering enormous challenges with capacity and patient flow. Learning from clinicians, health system leaders, and operations management experts about how to manage capacity in real time can help health systems adapt to evolving circumstances surrounding the current pandemic.

On April 21, 2020, PCORI (the Patient-Centered Outcomes Research Institute) hosted “[Part 4–Nurse Staffing amid COVID-19](#)” of its [webinar series](#). Nurses, who are on the frontlines of health care every day, are now confronting the ever-evolving challenges imposed by COVID-19. Health systems, nursing leaders, and nurses have had to address issues ranging from the availability and appropriate use of personal protective equipment (PPE), staffing capacity for intensive care unit (ICU) beds, staff anxiety and overload, and much more. During this webinar, critical care nurse leaders from different parts of the country described how their health systems have responded to nurse staffing needs amid surge and crisis response during the past few weeks.

The expert panel included the following individuals:

### Speakers

- **Elizabeth Bridges, PhD, RN**, Professor, University of Washington School of Nursing, Seattle, Washington; Clinical Nurse Researcher, University of Washington Medical Center-Montlake; President-Elect, American Association of Critical-Care Nurses (AACN); Retired Colonel, United States Air Force Nurse Corps
- **Kiersten Henry, DNP**, Chief Advanced Practice Clinician, MedStar Montgomery Medical Center, Olney, Maryland; Member, State of Maryland’s Disaster Medical Assistance Team; Board of Directors, AACN
- **Sharon H. Pappas, PhD, RN**, Chief Nurse Executive, Emory Healthcare, Atlanta, Georgia; Member, National Academies of Sciences, Engineering, and Medicine Committee on Systems Approaches to Improve Patient Care by Supporting Clinician Well-Being

### Moderator

**Susan Dentzer**, Senior Policy Fellow, Duke-Margolis Center for Health Policy

### Discussants

- **Robyn Begley, DNP, RN**, Chief Executive Officer, American Organization for Nursing Leadership (a membership organization of more than 10,000 nurse leaders whose strategic focus is excellence in nursing leadership); Senior Vice President and Chief Nursing Officer, American Hospital Association

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- **Pat Rutherford, RN, MS**, Vice President, Institute for Healthcare Improvement (a nonprofit organization that seeks to improve health care worldwide)

Webinar recordings are available at [www.pcori.org/confronting-COVID-19](http://www.pcori.org/confronting-COVID-19).

## Nurse Staffing amid COVID-19

Critical care nurse leaders from the University of Washington Medical Center in Seattle, Washington; MedStar Montgomery Medical Center in Olney, Maryland; and Emory Healthcare in Atlanta, Georgia, reported that their health systems have focused on containing virus spread, protecting and supporting staff, and providing excellent patient care amid the COVID-19 crisis. Along with most health systems across the country, these systems eliminated elective surgeries early on to preserve PPE and free up staff to treat patients with COVID and take on other mission-critical activities.

The following sections summarize the key strategies that these health systems used to assure appropriate staffing and use of PPE; optimize the performance of care teams; and address fears and anxiety among staff, patients, and families.

### Context: COVID-19 Cases Treated to Date

**University of Washington Medical Center.** The University of Washington Medical Center, a large academic medical center located in central Seattle, saw its first COVID-19 case on February 20, 2020, and reached a peak volume of hospitalized COVID-19 patients in early April. As of mid-April, the volume of patients with COVID-19 or patients under investigation (PUI) for the virus had stabilized, in part because of effective social distancing practices implemented in Washington State. To level or balance patient load, the university has admitted, from other facilities, patients who may require a higher level of care. The University of Washington's hospital lab was one of the first in the United States to set up rapid testing for patients and healthcare providers, and the system hopes to make this capability available more broadly in the community in the next few weeks. Testing capacity and staff availability have enabled teams to conduct community outreach to help train long-term care facility staff in proper use of PPE and ensure that patients discharged from the hospital to such facilities are tested before discharge. The system will support communitywide testing efforts in the coming weeks.

**Emory Healthcare.** Emory Healthcare, a large academic health system with more than 2,500 beds across 10 hospitals—300 of which are critical care beds—admitted its first COVID-positive patient on March 6, 2020. In response, Emory quickly created dedicated critical care units to treat patients with COVID-19 in 4 of its 10 hospitals to preserve an adequate supply of PPE and also to place patients with COVID-19 in hospitals where staff could benefit from the containment experience from the system's response to Ebola in 2014. Georgia reached its peak number of COVID-19 cases on April 15, 2020, and, as of

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mid-April, 60% of patients admitted to Emory were admitted to medical or surgical units, and 40% of patients were admitted to critical care. Although Georgia was one of the later states to implement social distancing, Emory has nonetheless seen the volume of patients stabilize since putting those measures in place; notably, the number of critical care patients began to slowly decline in mid-April. Emory also worked to balance patient load across the system so that hospitals could best match resources to patient need. For example, Emory moved some patients requiring extracorporeal membrane oxygenation (ECMO) to the main academic medical center that has ECMO expertise.

**MedStar Montgomery Medical Center.** MedStar Montgomery is a 115-bed, small, community hospital located in Olney, Maryland, a community about 20 miles north of Washington, D.C. MedStar Montgomery is part of a 10-hospital health system. The hospital serves patients in two communities identified as hot spots within the state for COVID-19. During the first two weeks of the COVID-19 outbreak, 10% of MedStar Montgomery's patients were PUIs, compared with only 1% of patients at other tertiary care hospitals in the system. By mid-April, the hospital had a total census of 75–90 inpatients; the hospital was treating about 30 of those patients for COVID-19. The average census in the hospital's 12-bed ICU was at 10, or double the normal average, and the longest stay for any patient treated thus far was 37 days. As of April 21, the volume in the ICU had surged to 13, with new ICU capacity added. MedStar Montgomery had discharged two patients who had received ventilator support for two weeks. Patient volume overall appeared to be leveling off, perhaps due to social distancing practices in the state, and hospital leadership was hopeful that the peak may have passed.

## **Approaches: How Health Systems Planned for Nurse Staffing Needs and Are Operating amid the Pandemic**

### **Institutions redeployed staff to maintain critical care staffing ratios.**

Whether they are large academic medical centers or smaller community hospitals, institutions tried as much as possible to staff ICU beds at a ratio of one critical care unit nurse for every patient (1:1), or at most 1:2 (these levels of staffing had proven nearly impossible to achieve in hard-hit areas of metropolitan New York City, especially as many frontline staff fell ill themselves). Nurse staffing is critical to achieve adequate surveillance that affects patient mortality.

For example, Emory University has had a longstanding Serious Communicable Diseases Prevention Program and was a designated U.S. treatment center for Ebola-infected patients in 2014. Based on that expertise and experience, the university health system's hospitals recognized that their ability to prevent as much mortality as possible among COVID-19 patients rested, to a large degree, on the provision of optimal emergency and critical care, including appropriate levels of nursing care.

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## Hospitals took varying approaches to assure an ample supply of critical care nursing.

**Emory** chose to concentrate its critical COVID-19 care in 4 of its 10 hospitals, which became focused areas of growing knowledge and expertise by all clinicians, including critical care nurses. Emory took advantage of its existing e-ICU technology in most of its COVID-19 units, relying on critical care nurses operating remotely to support clinicians and patients.

Because elective surgeries had been halted across the system, surgical nurses were prepared to supplement the corps of critical care nurses. The system's education department provided a minicourse, which was grounded in the curriculum created by AACN, on transitioning these surgical nurses into critical care roles.

In normal times, the **University of Washington's** post-acute care unit and surgical pavilion sees at least two intraweek ebbs and flows of ICU and acute care occupancy based on surgical scheduling and a corresponding flux in nursing care needs during the week. The hospital recognized that it could tap into the expanded pool of critical care nurses who staff these ICU occupancy peaks, particularly because many other surgeries were canceled amid the pandemic. All of these critical care nurses were available to be mobilized to step in and assist with the care of acutely and critically ill patients with COVID-19.

In addition, to determine who among the staff could provide support in critical care or elsewhere, the safety officer at the University of Washington developed a web-based survey to gather experience and skill set information from nurses, including advanced practice nurses, such as nurse practitioners and certified registered nurse anesthetists, across the entire University of Washington system. Staff were asked whether they would feel more comfortable working on an acute care floor or in the ICU. Those staff members opting to work in intensive care were provided with immediate education and skills training using readily available evidence-based resources from AACN and other organizations.

As a small community hospital, with no deep bench of critical care staff to rely upon, **MedStar Montgomery** took a tiered approach to supplementing its existing critical care nursing staff by rolling out staff in teams.

First, nurses from the hospital's interventional radiology and PACU (post-anesthesia care unit) who had prior experience with critical care were paired to work as buddies for critical care unit nurses who staffed the existing 10 ICU beds and to enable a surge to even more patients and beds. These nurses underwent two weeks of orientation, particularly on use of the electronic health record and critical care workflow. Next, nurse anesthetists within the hospital were brought in to apply their expertise in line insertion, managing patient sedation levels, and putting hypoxic patients into the prone position to improve oxygen supply. Personnel from the operating rooms and other areas were also brought in to assist in both the hospital's critical care and the step-down units.

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Finally, MedStar Montgomery also added to each critical care unit nurse's team a registered nurse and a nurse technician who could assist the critical care nurse with various activities, such as patient bathing and getting supplies. Those team members also underwent an orientation. The MedStar Montgomery system uses a mobile simulation lab and just-in-time training on ventilator use for staff at each of its hospitals to increase comfort levels and technical skills to ensure patient safety.

### **Filling Other Nursing Roles**

These three hospitals made limited use of volunteers, retired nurses, and nursing students, often in functions not directly related to patient care.

In Seattle, the University of Washington School of Nursing identified opportunities to support senior nursing school students in obtaining clinical hours. For example, students were brought in to help staff the COVID-19 call centers that provided information about the disease to community members; that action, in turn, freed up public health nurses to conduct work directly in communities. The University of Washington Medical Center–Northwest Campus also provided opportunities for retired, license-holding registered nurses to serve as volunteers to assist with drive-through testing.

Emory adapted its nurse residency requirements to allow nurses who had graduated from nursing school but had not yet taken Board exams to practice under mentorship and supervision. These graduates typically were only hired after successful completion of the NCLEX (National Council Licensure Examination) and bringing them on allowed for workforce expansion as they learned how to independently practice in critical care and medical surgical areas.

### **Optimizing Team Performance and Safety**

As with hospitals nationwide, a central issue for these institutions was having adequate supplies of PPE of all kinds, including N95 and surgical masks, face shields, gowns, and other supplies. Using these supplies as safely as possible and preserving, disinfecting, and reusing them as much as possible posed a challenge, both operationally and in terms of the stress and strain on staff. Throughout the pandemic, leaders consulted guidance from the Centers for Disease Control and Prevention, World Health Organization, and local public health authorities for evidence-based recommendations on PPE use. The continual changes in guidance created a separate and important need for regular communication with staff, as discussed in the next section.

**Establishing zones of care for patients with COVID-19 to preserve PPE supply and to provide support to the care team.** Donning and doffing PPE consumes time and supplies, so hospitals developed mechanisms to allow staff to stay in PPE as they moved from one patient room to another. The University of Washington Medical Center created two types of care zones—red zones and green zones. Red zones were characterized by negative-flow

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rooms with patients who were confirmed to be COVID-positive. The area outside the rooms in the main hallway were also marked off to allow staff to move between rooms and chart without having to remove their PPE. The same units included areas designated as green zones, where the staff were not in PPE. Staff in these areas provided support (e.g., accessing medications and supplies) to the direct care team. Having multiple staff in the same PPE, without requiring repeated donning and doffing, allowed teams to work together or respond to urgent needs in patient rooms without undue delays. A designated nurse, dubbed a *dofficer*, ensured that the staff safely removed their PPE. Strategies were also put in place to ensure that the staff had adequate breaks out of PPE.

Similarly, Emory's lead academic medical center worked with nurse and physician epidemiologists to develop a concept called warm zones. The team defined and established a 40-inch perimeter just outside the door of patients in isolation for COVID-19. In the warm zone, a nurse could exit the patient room and safely exchange resources, such as phlebotomy and patient care supplies, with a buddy nurse without removing PPE.

**Adapting care tasks.** To balance the need to maintain infection control protocols and conserve PPE, leaders encouraged nurses to batch tasks or conduct multiple care tasks during the same encounter to reduce time burden and create efficiencies. For example, nurses might not empty urine bags every hour if it was not deemed necessary, and teams positioned equipment and monitoring devices so that they were directly visible from outside the room.

## Addressing Fears and Anxiety among Staff, Patients, and Families

### For Staff

**Communicating transparently amid evolving guidance.** Promoting evidence-based strategies, particularly for use of PPE, has challenged institutions because official guidance from the CDC and other entities changed rapidly. One way that leaders at the University of Washington and elsewhere attempted to reduce staff concerns was by openly discussing changes in guidance. Infection control specialists, chief nurses, and medical directors offered daily updates, typically by email or on internal websites, on recommendations and rationales and provided an open forum for staff to discuss concerns and ask questions.

**Offering a COVID-19 hotline.** Emory redeployed nurse practitioners from clinic settings to the occupational injury management team, where they handled system employees' questions about becoming ill and being absent from or returning to work in critical care. The team has received as many as 1,000 calls per day at Emory Healthcare.

**Developing support resources for staff.** Emory established a website to support staff through providing coaching on mindfulness, spiritual health, and behavioral health.

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**Supporting staff who became ill.** All systems have had staff who have fallen ill due to COVID-19. Applying learnings from the Ebola crisis in 2014, Emory's occupational injury management team assigned staff to a case manager who provided support throughout their illness; more than half of staff who became ill have returned to work. The University of Washington provided clarifying information on health insurance benefits to reassure staff about coverage. The University of Washington also conducted rapid screening and testing of staff who might have become infected or who were symptomatic for COVID-19. Hotel chains across the United States have partnered with professional organizations, including AACN, to provide free rooms to nurses, first responders, and other medical personnel. Staff greatly valued this offering because it helped them reduce the risk of exposing their family members to the virus.

## For Families

**Using technology to communicate among patients, families, and staff.** Eliminating visitors to patients in hospitals was deemed critical for safety reasons but was also stressful for patients, families, and staff. Smartphones and tablets with video capabilities have been used widely across hospitals to help patients communicate with family members. Staff also used the technology to help families see and talk to patients who were sedated and in the ICU or who were nearing the end of life. In addition, patients who received multiple sedatives and paralytic agents during ventilator support often experienced delirium. To help patients recover, nursing staff at MedStar Montgomery asked families to email photos, and the team made posters with the photos for patients' rooms. Nursing staff also appreciated seeing pictures of what their patients looked like before they became ill.

**Providing non-English-speaking patients with access to interpreters.** To help meet the needs of non-English-speaking patients, MedStar Montgomery offered video- and phone-based interpretation and translation services. If a member of a patient's care team was a certified medical interpreter, in-person interpretation was provided. Video interpreter services were useful in preventing staff from being exposed to the virus and may have been more useful than phone-based interpretation when working to reorient patients recovering from delirium.

## Lessons Learned

**Learn from others.** Because Seattle was one of the first metropolitan areas in the United States to be hard hit by COVID-19, the University of Washington team drew upon research and lessons learned from patients treated in China and Italy. The team worked to identify the care that patients with COVID-19 required and also who among hospital staff and how many staff needed to be in the room to provide care. For example, the team identified which types of care providers (nurses, respiratory therapists, physicians, and advanced practice nurses) were needed to successfully and safely move critically ill patients on mechanical ventilators to the prone position to optimize pulmonary function. These efforts



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to identify crisis standards of care identified a need to collaboratively develop these standards so that individual institutions would not develop and adopt unique standards that could yield potential inequities or differences in care across communities.

**Communicate evidence from peers.** As health systems ramped up for COVID-19, nurse leaders connected with colleagues across the United States to identify concrete examples of the kind of care patients need. As such, they were able to convey to staff the national standards for crisis care and how care was being provided in other hospitals.

**Allow clinical practices to evolve as needed.** Initially, teams thought that many patients with COVID-19 only needed modest supplemental oxygen or could be managed similarly to patients with pneumonia or acute respiratory distress syndrome. However, teams quickly found that patients with COVID-19, many of whom came from skilled nursing facilities, had multiple comorbidities and needed extensive care. Evidence has also accrued that patients can deteriorate rapidly from being mildly to severely hypoxic, suddenly requiring far more oxygen support and even rapid intubation. Clinical care should continue to evolve until the full scope of COVID-19's pathophysiology is understood.

**Collect data to inform staffing strategy.** Hospitals are encouraged to begin early to collect information about nursing skills and availability. Creating a profile for each nurse, such as the University of Washington's online survey, will help leaders quickly know staff credentials and training, as well as staff schedules, enabling the leaders to understand where staff are currently assigned and which staff can be redeployed to other areas of the hospital. Having all hospitals and clinics within a system using the same enterprise system on a regular basis, not just during a crisis, would help match staff capabilities to patient needs. Emory found that having a far more robust enterprise-wide staff scheduling system than it currently has would have been helpful in this crisis to assist in staff redeployment.

**Use a common supply chain platform across the health system.** When the pandemic arose, Emory had just acquired three new hospitals and had not yet established a common supply platform. As a result, the team was forced to manually determine levels of PPE. Again, a more robust system of tracking supplies systemwide would have been helpful.

**Make effective use of PPE but engage staff when deciding on practices.** Messaging, transparency, and communication regarding PPE helped to address staff concerns. The University of Washington responded to staff feedback as it evolved its methods for sterilizing and reusing N95 masks. Initially, staff were instructed to place used masks in paper bags and send them out for disinfection. However, staff were concerned about whether they would get their same masks back for reuse. In response to staff concerns, the process was changed so that staff could write their names on their own masks, receive the same masks back after sterilization, and track the number of times they had used each mask.

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**Celebrate wins.** Given the stress that patients, families, and staff were experiencing, it was important to celebrate successes. At MedStar Montgomery, for the first COVID-19 patient who was discharged from the ICU, the team had a dance party with appropriate social distancing when the patient was being discharged from the hospital. The communications group within Emory's Incident Command Center sent daily communications with a special section called "Wins," where it highlighted events worthy of celebration, such as patient discharges, extubations, and the arrival of new supplies of PPE. The communications group also planned specific efforts to recognize staff during National Nurses Week and National Hospital Week in early May 2020.

**Be aware of stigma in the community.** Experience in Seattle suggests that, although the community and state have been incredibly supportive of frontline workers, staff may experience stigma in the community about COVID-19 spread. For example, individuals may question whether they should send their children to daycare if another child's parent is a healthcare worker. This stigma can add stress to care teams, so health systems should be aware of it and work to counter it through educational efforts.

**Maintain a state of preparedness.** Emory's past response to Ebola and its Serious Communicable Disease Prevention Program informed the health system's response to COVID-19. Hospitals are encouraged to prepare so that they are ready to move quickly into a state of emergency preparedness to keep patients and staff safe.