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INSIDE

RELIAS MEDIA

Leveraging Hospital Incident Command to Battle COVID-19

To optimally respond to the unfolding COVID-19 pandemic, Stony Brook University Hospital on Long Island in New York opened its hospital incident command center (HICC) just as March turned to April. Things escalated quickly from there.

"We see things that we could never have imagined in healthcare at our prestigious institutions as we watch droves of patients coming through our doors with cough, fevers, and shortness of breath with what feels like no end in sight," explained **Carol Gomes**, the hospital's chief executive officer and chief operating officer of the hospital. Gomes spoke at a briefing sponsored by the Patient-Centered Outcomes Research Institute (PCORI) that was broadcast on March 31.

Under orders from Gov. Andrew Cuomo, New York hospitals were asked to create a surge capacity plan to increase patient beds by an additional 50%. Soon, the target doubled; hospitals were directed to prepare for a 100% increase in capacity.

"Our plans include expanding inpatient footprints into our ambulatory surgery center space, our endoscopy space, our holding area spaces, and several of our outpatient clinic spaces that are adjacent to the hospital," Gomes noted. In addition, Gomes said tents constructed in the Stony Brook University parking lot accommodate a COVID-19 testing site and a new patient care area.

As of April 28, Stony Brook University Hospital had handled 233 COVID-19-positive cases. There still were seven more persons under investigation (PUI), and the number of patients coming through the emergency department (ED) requiring intensive care unit (ICU) attention and intubation were continuing to escalate.

"The [HICC] is led by our chief medical officer, and it meets at least twice daily, following the usual HICC structure with updates that are provided regularly," Gomes explained. "We do increase the frequency [of updates] depending on the circumstances."

The updates concern everything from supply chain activities and staffing to progress developing the hospital's surge capacity plan, Gomes said. Further, she noted leaders are apprised of various situational activities in the hospital's external environment. This includes communications with local and state

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legislators, hospital associations, media updates, and other communications forums.

"There is a very strong communication arm [within the HICC structure] as it is extremely important to communicate as much information as possible to our staff and to our community. This includes statistics that we accumulate throughout the day," Gomes said. "We host daily information segments on our intranet. I have ... written CEO blogs based upon COVID-19 updates that we push out regularly. We also push out daily email communications to our staff and our faculty to provide an overview of the day and any new resources or changes in policy that may be applicable."

To increase capacity, hospital leaders have worked with staff to open a significant number of new ICU beds and med-surg spaces in nontraditional areas. Stony Brook University Hospital administrators worked with clinical leaders in the ED to create a forward-triage process to separate patients who were less ill into an alternate area. Initially, this forward-triage space was located in an ambulatory area. However, as the need for more inpatient space became apparent, it was later moved to a tent in the university parking lot.

"This has made a great difference in our capacity in the main ED. It allows us the ability to push over to another rotation some of that surge so that the main ED can handle patients who are sicker and more acutely ill," Gomes said. She noted that on one recent day, the forward-triage space managed roughly 200 patients, "saving the day" for staff in the main ED, giving them the time and space to manage their sicker patient load.

The hospital has created twice-daily huddles from the HICC to focus on incoming patient flow, not only with a focus on current ED throughput, but also to anticipate demand in the next 24 to 48 hours, based on the hospital's surge plan. Gomes noted these huddles include an interdisciplinary team of physicians, nurses, operational personnel, and administrative leaders who work closely with the hospital's centralized throughput office to anticipate near-term demand.

Shortly after opening its HICC, Stony Brook worked with state and federal authorities to create a drive-through testing site for COVID-19 in the university's parking lot adjacent to the forward-triage area.

"There is a New York State Department of Health phone number that the community can contact. Patients are triaged, and then they are scheduled, if appropriate, to have testing performed," Gomes explained. "Then, they are assigned a date and a time for testing at the drive-through site."

The pandemic has prompted considerable change in how labor resources are used, Gomes observed. "We have canceled elective surgeries, which has created a labor pool of individuals whose roles have shifted," she said. "This also includes [people] working in the ambulatory environment where clinic visits have significantly declined ... we are pooling those labor resources to take care of patients in the hospital."

To keep up with evolving guidance and other changes, hospital leaders have assembled several teams focused on specific areas. For instance, one team is charged with scouring all the literature for any new information regarding clinical guidelines or other best practices regarding COVID-19. This team includes representatives from pharmacy, the supply chain,

and respiratory therapy. "We have also formed a team that is focused specifically on ventilator use, anesthesia machine use, and bypass planning," Gomes explained. "This team is led by [the hospital's] ICU physician leadership, respiratory therapy team, and anesthesiology."

Yet another team is focused on ensuring the successful execution of the hospital's surge plan as it is aligned with labor resources. All teams report to the HICC, Gomes said.

Northwell Health, a 23-hospital system headquartered in Manhattan, has taken many of the same steps as Stony Brook to keep up with the surge in COVID-19 patients. Northwell's reach extends throughout the New York City metropolitan area, from Westchester to the end of Long Island, noted **Mark Jarrett**, MD, MBA, senior vice president, chief quality officer, and deputy chief medical officer at Northwell Health, who also spoke during the PCORI briefing.

As of April 23, Northwell had cared for 2,431 patients with COVID-19. Of these, 34% had been in ICUs, and 27% had been on respirators. "[These patients] can walk into the ED looking fine, and then their [oxygen level] drops. They may be intubated in two or three hours, though they are still very unstable," Jarrett reported.

As the pandemic unfolded, the demand for care from these seriously ill patients quickly outstripped the health system's typical supply of ICU coverage. Staffing ratios had to change because there are not enough ICU nurses or intensivists. "Even bringing on some of our anesthesiologists and our surgical critical care people online — we have not been able to cover all the extra ill patients. You need to think about developing staff ratios, which allow buddy systems where perhaps one critical care nurse is helped by two or three regular floor nurses," Jarrett shared.

The hospital's incident command structure, which Northwell refers to as its emergency operations center (EOC), opened around the beginning of March, although a small group had gathered to plan the health system's response even before the EOC formally opened.

"It really paid to have a command structure because it really works well. It is the perfect thing to do," Jarrett said. "You do not want people separated, especially in leadership, because these are the people who often have the knowledge base and the legacy base that can help ... when you are dealing with a large system."

However, Northwell leaders quickly concluded that bringing all their senior people together in one room was not a good approach during an infectious disease crisis. Thus, all EOC meetings have been held virtually since early March.

In fact, Jarrett noted that a surprising number of employees throughout the health system continued working through telework arrangements. Northwell was somewhat prepared to leverage telework because it has used this approach during snowstorms. "It is amazing how many people don't actually have to come into the office to work," Jarrett said.

Jarrett's advice to hospitals that are still waiting for the wave of COVID-19 patients to hit: Take steps to facilitate teleworking in advance. For instance, make sure there are enough laptops to go around, determine how to manage a large-scale telework arrangement for employees who can work from home, and establish the right security procedures.

EXECUTIVE SUMMARY

Hospitals in New York state are leveraging hospital incident command centers to expand capacity and quickly respond to new challenges as COVID-19 sickens thousands of patients and poses new risks for staff.

- At Stony Brook University Hospital in Stony Brook, NY, staff had treated 233 infected patients and monitored others under close investigation. This has put a strain on emergency department and intensive care unit (ICU) resources.
- To respond to the demand, Stony Brook opened field tents in the university parking lot to accommodate a forward-triage area for the ED and a COVID-19 testing area.
- Stony Brook also expanded its footprint beyond the hospital, with plans to take over ambulatory surgery and endoscopy spaces as well as several adjacent outpatient clinic areas.
- At Northwell Health, a 23-hospital system headquartered in Manhattan, staffing ratios have changed to accommodate a rapidly increasing demand for ICU care. The health system has cared for thousands of COVID-19 patients, more than one-quarter of whom had to be placed on ventilators.
- Northwell administrators advise that it is critical to maintain continuous communications with staff, particularly around scarce supplies such as personal protective equipment. They also encourage colleagues to look for ways to preserve key items in short supply. Frontline clinicians have been provided with breathable bags they can use to store their N95 respirators when not in use.

Hospitals should make sure there is a good database in place to track all clinical and operational metrics. Further, it is vital to recognize that even if the demand for care slows, some numbers still will surge past normal levels, Jarrett noted.

"The average length of stay for someone on a ventilator is four to five days, but [with COVID-19 patients], we are now talking two to four weeks," he said.

Start thinking early about labor force needs and demand for alternative sites for care, Jarrett suggested.

"At one of our institutions, we are now moving our postpartum patients over to an ambulatory surgery site on the same campus, but in a different building," he explained. "That will open up another unit we can use now for our COVID-19 patients."

It is critical to maintain continuous communications with staff, particularly around scarce supplies such as personal protective equipment.

Furthermore, Jarrett advises hospitals to consider methods for preserving N95 respirators in line with Centers for Disease Control and Prevention guidelines. *(Read more about those guidelines online at this link: https://bit.ly/3bJ9mK0.)*

"We actually gave our staff little bags that are breathable for when they are not wearing their N95 respirators," Jarrett said. "Obviously, we replace [the N95 respirators] whenever there is a problem, but you would be surprised how much you can reuse a thing that you never thought about before."

Also, think ahead about how to stretch ventilator supplies.

"We have so many patients in the ICU that [securing enough] ventilators is becoming difficult ... some places have repurposed their anesthesia machines as ventilators," Jarrett said. "Although it works ... you have to actually turn [the anesthesia machines] off for a period of time during the day, ideally. Otherwise, the machines won't last. They are not designed to run 24/7 like a routine ventilator."

Jarrett stressed an anesthesiologist often has to teach people how to properly use anesthesia machines or to help manage them. Considering this approach is not ideal, Jarrett advised hospitals to use the anesthesia machines only as a backup when ventilators are unavailable.

While many hospital systems, including Northwell, have canceled all elective surgeries to devote their resources to managing the pandemic, there is not always a clear line between what constitutes elective vs. an emergency or urgently needed procedure.

To make such decisions, Northwell has set up a central committee to determine which surgeries should and should not go forward, Jarrett reported.

Understandably, hospitals in hard-hit areas are trying to encourage people with mild symptoms to refrain from coming to the ED for care. That makes sense, given the need to protect people from exposure to COVID-19 while also effectively managing the surge of seriously ill patients. However, Jarrett noted it is important for hospitals to be careful in their messaging to the community.

"We have had instances where people [have gone] to urgent care centers with crushing chest pain and have acute MIs [myocardial infarctions] and really need to be in the hospital ... but they are afraid to go to the ED," he explained. "It is really important that in your advertisements or your communications out to the public that you alert them that if they have symptoms of a stroke or symptoms of a heart attack, [they should] come to the hospital, and that you will do the right thing and protect them." ■

Plan for a Range of Demand Scenarios

As part of the incident command structure at Northwell Health, surge plans are in place from level 1 through level 10 at each of the health system's 23 hospitals. As of March 31, most facilities were at level 6 or 7; by late April, those numbers were just starting to decline.

"That [would involve] the use of every alternate site possible," explained **Mark Jarrett**, MD, MBA, senior vice president, chief quality officer, and deputy chief medical officer at Northwell Health, headquartered in Manhattan. Jarrett spoke during a briefing sponsored by the Patient-Centered Outcomes Research Institute (PCORI) on March 31.

Northwell has turned to alternative locations such as ambulatory care sites as the demand for care has escalated and strained traditional facilities and departments. The health system also is working with predictive modeling to anticipate care needs each day and predict what will be happening by the end of each week.

"What you have to do is plan for the worst," Jarrett advised. That means determining where both beds and staff will come from under the direst circumstances. "You just have to map out scenarios and say if this happened, what would we do? If it

got worse, what would we do?" The same types of exercises are ongoing at Stony Brook University Hospital in Stony Brook, NY, explained **Carol Gomes**, chief executive officer and chief operating officer.

"It's really about flexibility and adaptability," said Gomes, who also spoke during the PCORI briefing. "We have emergency credentialing processes in place so physicians who are not typically ICU physicians will have privileges to take care of patient populations they haven't taken care of before or haven't taken care of in recent times." In addition to emergency credentialing, Stony Brook has identified recently retired individuals, including nurses, physicians, and allied healthcare personnel, in the region.

"We have sent notifications to them, and we are obtaining lists of volunteers who are willing to come back and participate in our workforce," Gomes reported. "These are some of the creative things we are doing, but most certainly we have a heightened sense [of concern]. Every day we think it is the worst that we have ever seen before, but then the next day seems to be even worse."

For hospitals still awaiting a crush of COVID-19 patients to arrive, the time to map out precisely how to manage such a surge is now, Jarrett advised.

"It is always hard. As they say in the Army, your strategy always works until the first bullet is fired ... but you really need to plan as much as possible." ■

Rule No. 1: Take Care of Staff

There is no denying the fear and anxiety that frontline staff are experiencing as they race to care for COVID-19 patients. It is a part of their job, but one that puts them at risk for contracting a serious disease that is not yet well-understood. Most are acutely aware of this risk.

Several staff members at Northwell Health, a 23-hospital system headquartered in Manhattan, have fallen ill. One died.

"You have to think about how you are going to support the staff through this," noted **Mark Jarrett**, MD, MBA, senior vice president, chief quality officer, and deputy chief medical officer at Northwell Health. "Get your employee assistance program and your behavioral health team in to provide support because people [may] be losing friends and colleagues. This is especially true of frontline staff."

These employees are living in their personal protective equipment (PPE), and they are witnessing people of all ages go through terrible courses of illness.

"They are going to burn out otherwise," observed Jarrett, who spoke during a briefing sponsored by the Patient-Centered Outcomes Research Institute (PCORI) on March 31.

Before the pandemic emerged, leaders at Stony Brook University Hospital in Stony Brook, NY, had formed what they call "code lavender" teams for instances in which staff members may have seen or been involved with some type of crisis.

"We have invoked a code lavender team, our crisis management team, to assist in caring for our team. We also created virtual meditation spaces and virtual telehealth spaces for staff members," shared **Carol Gomes**, chief executive officer and chief operating officer, during the PCORI briefing. "It is so important to support staff. They are, every day, coming to work, trying to take care of patients in an untenable situation."

Peter Viccellio, MD, FACEP, vice chair of the department of emergency medicine at Stony Brook Medicine, is particularly concerned about nurses, and he urged colleagues to make sure they are responding to their needs.

"[Nurses] have the most exposure to these patients, so you need to take care of them more than you ever have," he stressed during a different PCORI briefing held on April 7. "If you hear there is something they need, take care of it that day. Don't make one-off gestures. Think of things you can do every day and every shift to let them know what gratitude you have."

Viccellio's advice to physicians is to personally thank each nurse with whom they work each day.

"Tell them what a great job they did," he advised. "You have no idea how much it may mean to them." ■

COMING IN FUTURE MONTHS

- Streamlining care for behavioral health patients
- Improving the care response for critically ill patients
- Implementing crisis standards of care
- Handling the surging demand for palliative care consults

Prepare to Ramp Up Quickly, Treat All Patients as if They Have COVID-19

In the early stages of the COVID-19 outbreak, the emergency department (ED) at Stony Brook University Hospital in Stony Brook, NY, would screen presenting patients to see if they recently traveled to countries with known virus outbreaks. If yes, then staff members would place these patients in a negative pressure room and don personal protective equipment (PPE) to protect themselves.

However, such steps were not taken when people from the surrounding community came in with a cold. That was a mistake, according to **Peter Viccellio**, MD, FACEP, vice chair of the department of emergency medicine for Stony Brook University. Viccellio shared his experiences during an ED-focused briefing sponsored by the Patient-Centered Outcomes Research Institute (PCORI) on April 7.

Eventually, ED staff started protecting themselves from any patient who presented with symptoms of fever and cough, but that was a mistake, too. Viccellio urged other hospitals still awaiting an outbreak of COVID-19 in their communities to learn from the experiences of hospitals in New York state.

"With the very first case you see in your community, you really need to start treating everyone as a possible COVID-19 patient," he stressed. "We have had trauma patients, strokes, STEMIs [ST-elevation myocardial infarction] ... all sorts of patients who have turned out to have COVID-19."

Viccellio urged colleagues to imagine a trauma patient who also happened to be infected with COVID-19 was brought into their surgical intensive care unit (ICU). However, no one was treating that patient as if he or she was positive for the virus. That could lead to a unit-wide outbreak.

"You need to have [staff members at] your whole institution wearing masks at all times, washing their hands like crazy, eliminating visitors, and sending home any [employee] who can work from home rather than at the institution," Viccellio advised. "A lot of our personnel who contracted COVID-19 contracted it during this early period when we thought we could pick and choose who we needed to worry about. You just simply can't."

There is no safe place or person. "If you round as a group, you should do social distancing, and you should be wearing masks," Viccellio stressed.

All patients should wear a mask, even one who arrived with a sprained ankle. Furthermore, once the first case of COVID-19 happens, anticipate a forthcoming explosion of cases.

Eric Morley, MD, clinical director of the department of emergency medicine at Stony Brook University, concurred that EDs need to be prepared to ramp up quickly.

"On March 9, we had 15 persons under investigation [PUI]. On March 30, we had 250 PUIs [for the virus]," he explained during the April 7 PCORI briefing. "As the volume has gone up, we are learning that we

EXECUTIVE SUMMARY

New York hospital leaders warn colleagues to prepare for a rapid escalation of cases as soon as they see evidence of community spread of COVID-19. As of March 9, Stony Brook University Hospital had 15 persons under investigation (PUI) for COVID-19. By March 30, that number was 250. ED administrators note that of those PUI cases, they were discharging about 70% of patients, admitting about 27% to inpatient floors, and about 3% of ED patients went straight to the intensive care unit.

- Stony Brook administrators note many of their staff members became ill with COVID-19 before they shifted their protocols to treat every patient who presents to the emergency department (ED) as if he or she has the coronavirus.
- Many patients who presented to the ED with strokes, ST-elevation myocardial infarction, traumatic injuries, or even sprained ankles tested positive for COVID-19.
- Administrators advise hospital leaders elsewhere to ensure all staff wear masks at all times and to employ telework solutions for any employees who can perform their jobs at home. Even clinicians who round as a group should wear masks and practice social distancing.
- Managing the COVID-19 crisis is so complex that it can easily overwhelm one ED leader. Administrators advise colleagues to develop an infrastructure within the ED where different staff members can take charge of specific issues relating to personal protective equipment (PPE), staffing, testing, and the like.
- ED personnel are leaving on their eye protection and N95 masks for their entire shifts. This has conserved a lot of PPE, but administrators also believe the practice has resulted in lower infection rates among staff on the front lines.

are discharging about 70% of [PUI] patients home, admitting about 27% to the floors, and about 3% to the ICU."

Unfortunately, a significant number of hospitalized patients with COVID-19 are requiring intubation and transfer to the ICU about two to three days into their course, Morley reported.

"What we are left with is a very crowded hospital with a dramatically extended number of ICU requirements," he added.

At Stony Brook University Hospital, peak demand seemed to hit around March 30. By early April, admissions were going down. For all adult patients, the ED is currently admitting about one-third of patients (about 40 to 50 patients per day). The adult volume ranges between 120 and 150 patients (both coronavirus-related and non-coronavirus-related) as of late April. For perspective, before the pandemic, the ED was seeing between 200 and 230 adult patients per day. "The main issue is that a lot of these patients who are intubated remain intubated for quite a long time, so we are not out of the woods in terms of our demand upstairs," Morley shared.

While the hospital incident command center (HICC) worked well in helping the ED prepare for the pandemic-driven surge in patients, Morley noted that, in hindsight, he would have involved more people from the ED in that process sooner to help him stay on top of the many issues involved.

"There was quite a bit of information. I wish that earlier on I had organized several members of the team, different attendings who wanted to help, to be responsible for different parts," he lamented.

For example, Morley eventually named one person to keep track of all the evolving guidance and institutional instructions regarding PPE. Another member was charged with tracking COVID-19 testing. These individuals were responsible for communicating about their respective areas to the ED at large as new information needed to be conveyed.

"Developing an infrastructure and getting people [involved] within your department is incredibly important, and something I would recommend early on," Morley explained.

There is so much information arriving and complexity in managing the outbreak, all of which can easily overwhelm one person.

"I got several of these people to join the daily HICC calls that we have so that I was not the only person to share information," Morley said.

This added participation helps ensure the information shared is accurate and up to date. Also, should Morley contract the virus or otherwise become unavailable, he can be secure that someone is there to take charge. Within the ED, there is a daily meeting to discuss all aspects of the COVID-19 response, which Morley said has made managing the

crisis easier. Typically, this meeting includes the lead physician assistant, nursing leadership, and several attending physicians.

"People may feel like their staff [members] don't want to get involved, but it turns out that actually most of my colleagues want to be a part of it every day. I urge people to get that kind of infrastructure set up as early as possible," Morley suggested. "Building [your] own incident command structure within the department is a critical action."

Even before the HICC structure was put in place, Morley was working with hospital leadership to plan for an anticipated spike related to COVID-19. To a large degree, these early preparations have allowed the ED to function well, Morley added.

For instance, the 20-bed forward-triage area, which was assembled in the Stony Brook University parking lot about two days before clinicians started seeing a surge in COVID-19 patients, has worked as intended to ease congestion.

Staff members try to avoid conducting lab tests in this area, but there is portable chest X-ray capability. Generally, clinical personnel have seen 100 to 150 patients per day in that field tent, Morley reported.

Further, at this point, clinicians have largely dispensed with testing for influenza or respiratory syncytial virus, instead moving directly to testing for COVID-19.

"We have sent home about 95% of our patients from this area. About 3% to 4% have had rebound visits, but only a handful of these got admitted on their rebound visit. We think that it has been very successful," Morley observed. "The last thing we want is to have 20 or 30 people sitting in our waiting room shoulder-to-shoulder. I don't know how we would have [avoided] that without a forward-triage area."

Morley's advice to colleagues is to establish a plan for how and where to implement a forward-triage area. "If you don't end up using it, that's OK," he said. "It has been a real lifesaver for us."

One other way administrative leaders have facilitated patient flow in the ED is by acting early on to expand ICU capacity.

"The maintenance team has been working night and day to create probably an additional 70 or 80 ICU-capable rooms in our hospital," Morley noted. "We have very few ICU holds in the ED at this point."

Frontline providers accustomed to dealing with influenza outbreaks where there is a gradual increase in patients need to understand the tempo is different with COVID-19. One cannot allow admitted patients to start accumulating in the ED, Viccellio stressed.

"That means that by tomorrow or the day after tomorrow you may have to open up another ICU or another inpatient unit," he said. "You need to move very quickly in getting the walking wounded into another area so they don't clog up the ED. But also, you cannot be boarding patients because in another day or two, you will no longer have an ED." While clinicians still conduct bedside evaluations in the ED, every effort is made to minimize the number of times a clinician needs to enter a patient's room.

"We created in the ED a video conferencing solution where there is an iPad in the room. We can connect to that iPad from a computer, another iPad, or a phone," Viccellio explained. "We can talk directly with the patient from outside the room. Now, the nurse, the hospitalist, and a consultant can all converse with the patient remotely." The setup not only minimizes opportunities for exposure, it also saves a lot of PPE by making repeated visits to the patient's room unnecessary, Viccellio observed. "The other nice aspect of this is that a hospitalist or consultant doesn't even have to come to the ED; they can link into the patient's room from virtually anywhere," he added.

When it comes to PPE, with a few exceptions, ED personnel are leaving on their eye protection and N95 masks for their entire shifts, Morley noted.

"This has conserved a lot of PPE, but the more important component of that for the people who adhere to this [practice] is that we are seeing lower infection rates in our staff ... on the front lines," he explained. "They are not touching their faces or their PPE over and over again. I think that ... is a really important concept, not removing your PPE."

At the end of shifts, clinicians can place their N95 masks under an ultraviolet light to presumably kill any remnants of the virus.

However, the hospital has also just purchased a new piece of equipment that will be used to sterilize the masks using hydrogen peroxide gas, after which the masks will be returned to their original users. As with many other health systems, physicians from multiple specialties are caring for the crush of patients presenting with COVID-19.

Viccellio cautioned that such clinicians need to take steps to ensure they are equipped to provide appropriate care.

"It's not just retirees. If you have cardiologists or gastroenterologists who are called in to provide inpatient care for these patients, they need to get up to snuff," he shared. There are multiple resources that

can assist in this process. Viccellio noted that the Society of Critical Care Medicine offers a wealth of additional COVID-19 educational resources. *(https://bit.ly/2W5VaVd)* He also urged colleagues to check out the EMCrit Project resources *(https://bit.ly/350z8ar)* or EM:RAP *(https://bit.ly/353yl8G)*, which offer regular, updated guidance on how to take care of COVID-19 patients. "Anyone [for whom] this is not their domain needs to really dive in and understand this disease," Viccellio said. "The knowledge you may have as a physician about influenza does not necessarily crosswalk to the coronavirus. The patients are very different."

Far from being a hindrance to the ED, the staff upstairs have done such a good job of freeing both inpatient and ICU beds that Morley has asked his team to start helping the inpatient staff manage their patients in the ED. "The concept needs to be that everybody needs to do exactly what it is they are asked, and to do as much as they possibly can to help their teams," Morley explained. "I have never seen in any healthcare facility this level of teamwork and the ability to look past what [you] are normally expected to do and go above and beyond. I think that is what gets you through something like this." ■

Smaller EDs Should Treat Lower-Acuity Patients Outside the Hospital

Hospitals located in communities that are not considered hotspots for COVID-19 are nonetheless seeing patients concerned that they have contracted the virus.

"We put up a tent right away. What you will see almost immediately, if you haven't already, is that most of the volume involves people who want to rule out COVID-19. We developed segments just like we do in our ED [emergency department]: low acuity, medium acuity, and high acuity," stated **Karen Murrell**, MD, ED director at Adventist Health Lodi Memorial Hospital in Lodi, CA, a community about 90 miles east of San Francisco.

Murrell shared her experiences as part of an ED-focused briefing sponsored by the Patient-Centered Outcomes Research Institute (PCORI) on April 7.

"People are greeted right away in their car as they drive up. We do their vital signs in the car. If they are stable with no hypoxia, and they are doing well, they are just going to be treated in the car," Murrell explained.

She noted roughly 70% of patients presenting to the ED fall into this low-acuity group. Clinicians equipped with the appropriate personal protective equipment (PPE) interact with patients, but they do not provide complete medical exams if the patients show no signs of respiratory distress and their oxygenation is normal.

"We are going to do [COVID-19] tests if we have them available. We will give patients standard discharge instructions," Murrell added.

The tent is reserved for medium-acuity patients who may need a bit more care.

"We set up portable X-ray machines just like [some hospitals] are doing in New York. We can do labs there, but they are probably not that much use at this point," Murrell said. "Almost all of these patients get discharged. Then, we have preserved our ED for the higher-acuity patients who need more testing and more treatment."

California initiated social distancing measures early in the outbreak. Murrell credits this step with producing lower ED volumes than expected. Still, she noted clinicians are treating every patient who presents as a patient under investigation (PUI) for the virus.

Murrell also noted that effective lines of communication with higher-ups have been hugely beneficial in keeping the ED running smoothly.

"I function at a smaller place under a larger system," Murrell noted. "This is your time if you have a smaller ED ... to really get your relationships with administration ready right now."

For instance, Murrell said health system leaders have taken some of the load off the ED regarding logistics and staffing.

"They have helped us with backup plans because [many non-emergency] physicians are not as busy as they normally are in the outpatient clinics. We canceled outpatient surgeries right away, so those doctors have been engaged to be backups for us," she shared. "We also have a daily call with all physicians so everyone can be updated about what is going on at our site. We have this transparency of information that is really helpful to [easing] these huge fears among our clinicians. Everyone is on the same page and knows exactly what we are going to do every day." Murrell's advice is to carefully anticipate what the needs will be at peak

volume regarding both inpatient and intensive care unit (ICU) beds. "Right away, we converted one of our floors to something that could be upgraded to an additional ICU to prevent boarding [in the ED]," she said. Further, Murrell noted that if colleagues can set up in-house testing, that can help boost flow from the ED into the hospital. "Patients who we thought would be admitted for CHF [congestive heart failure] exacerbations, COPD [chronic obstructive pulmonary disease], or other respiratory problems have all turned out to have COVID-19," Murrell said. "Just assume people have [the virus] at this point." ■

Opinions Evolve Regarding When to Ventilate a COVID-19 Patient

It will take time for science to deliver the hard data, but in just a few weeks there has been an evolution in thinking regarding when patients with COVID-19 should be placed on a ventilator.

"When [the COVID-19 outbreak] first started, the conventional wisdom was that you had to intubate hypoxic patients early," noted **Peter Viccellio**, MD, FACEP, vice chair of the department of emergency medicine for Stony Brook University.

Viccellio shared his thoughts during an ED-focused briefing sponsored by the Patient-Centered Outcomes Research Institute that was broadcast on April 7.

"The patients did terribly on a ventilator, but the presumption was that it was because this is a terrible disease," he explained.

While there is no consensus on the issue, many physicians from the frontlines in New York now favor performing more noninvasive ventilation. Some are trying to avoid using a ventilator at all, Viccellio observed.

For one thing, this approach facilitates the process of moving the patient into different positions, a technique called proning. This is important because proning can make more lung capacity available, boosting oxygenation.

"This is very easy to do on an awake patient. We think it is possible that we might be able to get a lot more patients through without ever having to intubate them," Viccellio offered. "But even if that fails, if you intubate them five days from now instead of two days from now, you have saved some ventilator time in the face of potential ventilator shortages."

Less aggressive measures, such as giving patients oxygen, may be needed. However, physicians are finding that such measures, when combined with proning, are proving to be enough to sustain many patients through their course of illness, according to Viccellio. ■

Leverage In-House Resources, Work with Outside Labs to Streamline COVID-19 Testing Processes

One of the biggest challenges facing medical providers is the continuing shortage of testing capacity, noted **Robert Salata**, MD, chairman of the department of medicine at University Hospitals Cleveland Medical Center. Salata spoke as part of an expert panel assembled to answer reporters' questions about the pandemic response on April 9.

"We are still triaging in our institution, and many others, the types of individuals that we do [COVID-19] testing on," explained Salata, a professor of medicine, epidemiology, and international health at Case Western Reserve University in Cleveland. "We're focused here on our own standup platform, testing-wise, on those [patients] who are hospitalized coming from the EDs [emergency departments], and also our healthcare workers. We haven't been able to test everyone, and that has been one of the major issues here."

Expanded testing capacity is crucial to fully understanding how broad the COVID-19 problem is in the United States, according to Salata. "We could talk about the confirmed cases and the death rates related to that, which in the U.S. is about 2.5%. But we don't really know the denominator here because there are many people who are either asymptomatic ... or have what is called pre-symptomatic [indications], which are very mild in nature," he shared. "Still, 80% of people who develop this infection can stay out of the hospitals for the most part and recover from this without specific treatment."

Another problem with testing in the ED has been the time it takes to receive results, observed **Eric Morley**, MD, clinical director of the department of emergency medicine at Stony Brook University in Stony Brook, NY. Morley shared his thoughts during an April 7 media briefing hosted by the Patient-Centered Outcomes Research Institute. "That has been a major complication to getting patients upstairs," Morley acknowledged. "We are lucky in that we are now running COVID-19 testing in house." However, the Stony Brook lab does not have the capacity to run all the tests ordered from the ED, so testing for patients scheduled for admission is being prioritized, Morley reported.

Further, regarding the tests that are sent to private labs for processing, the Stony Brook ED staff are working closely with these facilities on processes that might be able to trim the turnaround time for the results. Morley suggested that colleagues similarly open the lines of communication with their testing partners. ■

Nurse Practitioners Pitch in to Meet Urgent COVID-19 Care Needs for Minorities

There have been widespread reports about how the pandemic is adversely affecting minority populations. The extent of this disparity is particularly clear in New Orleans, one of the hotspots for COVID-19.

"We are seeing that 70% of the deaths [from the novel coronavirus] are in African American individuals. Coincidentally, this population in Louisiana has the highest rates of kidney disease, diabetes, and hypertension," explained **Sophia Thomas**, DNP, APRN, FNP-BC, PPCNP-BC, FNAP, FAANP, president of the American Association of Nurse Practitioners. Thomas, who works as a family and nurse practitioner in New Orleans, spoke as part of an expert panel assembled to answer reporters' questions about the pandemic on April 9.

Even before the pandemic exploded, healthcare-related numbers from the New Orleans region revealed an area that was in a perpetual crisis, Thomas stressed. "[Louisiana] is one of the most unhealthy states. This crisis right now has really highlighted the true problem with the health disparities here ... and it is quite unfortunate," Thomas lamented. "Our numbers are still on the rise as far as deaths and new infections." However, the demand for care has not yet outstripped hospital capacity, Thomas reported.

"We still have room ... in the hospitals here. There are still some ICU [intensive care unit] beds [available]," she noted. This is despite some modeling that predicted hospitals in New Orleans would run out beds some time ago. "The social distancing is really working here," Thomas said.

Nonetheless, she shared that there are still some pockets of population that do not seem to realize how important it is to adhere to the social distancing recommendations. Thomas noted that nurse practitioners in Louisiana, as well as other states, have become a critical resource for surge staffing during this crisis. Restrictions on their scope of practice have been loosened to help hospitals and emergency departments fill critical needs. "Prior to this crisis, 22 states plus the District of Columbia and the VA [Veterans Administration] health system had what we call 'full practice authority' [for nurse practitioners], which means nurse practitioners can practice to the full extent of their education and training without regulatory restrictions," she explained.

Thomas noted that this in contrast to other states that required nurse practitioners to enter into collaborative practice agreements with physicians. However, since the pandemic began, the governors in several states have taken action to remove the requirement for collaborative practice agreements, thereby allowing nurse practitioners to pitch in and help to the full extent of their training and education."[New York] Gov. Andrew Cuomo was the first governor to do that. Since [early April], when he removed that requirement, we've had 4,000 nurse practitioners volunteer in the New York area to help with this crisis and on the front lines," Thomas shared. "We've got a workforce there that wants to work and wants to help. Once these regulatory red tape problems are removed, we really step up." ■

CME/CE OBJECTIVES

After completing this activity, participants will be able to:

1. Apply new information about various approaches to ED management;
2. Discuss how developments in the regulatory arena apply to the ED setting;
3. Implement managerial procedures suggested by your peers in the publication.

ED MANAGEMENT

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CME/CE QUESTIONS

1. **Early in the COVID-19 pandemic, hospital leaders at Stony Brook University Hospital in New York worked with clinical staff in the emergency department (ED) to create a forward-triage process to:**
   a. identify all non-COVID-19 patients.
   b. separate all patients with behavioral health needs.
   c. determine which patients should be referred to an off-site urgent care center.
   d. separate patients who were less ill to be seen in an alternate area.

2. **As part of the incident command structure at Northwell Health in New York, surge plans are in place from level 1 through level 10 at each of the health system's 23 hospitals. As of March 31, most facilities were at:**
   a. level 2 or level 3.
   b. level 4 or level 5.
   c. level 6 or level 7.
   d. level 8 or level 9.

3. **By the end of March, ED administrators at Stony Brook University Hospital reported they were admitting about 27% of their patients to the inpatient floors. What percentage of ED patients were going straight to the intensive care unit?**
   a. 16%
   b. 13%
   c. 8%
   d. 3%

4. **At Adventist Health Lodi Memorial Hospital in Lodi, CA, a tent was put up early in the COVID-19 outbreak. Which patients are treated in this area?**
   a. Low-acuity
   b. Medium-acuity
   c. High-acuity
   d. Non-COVID-19

ED ACCREDITATION UPDATE
COVERING COMPLIANCE WITH JOINT COMMISSION STANDARDS

What the Quality Improvement Community Brings to the Table During a Pandemic

The COVID-19 pandemic is challenging the healthcare system in unprecedented ways. Hospitals in outbreak hot spots like New York City and New Orleans have seen COVID-19 cases explode in a matter of days, leading to shortages of personal protective equipment (PPE), intensive care unit beds, ventilators, testing supplies, and other key resources. Leaders and policymakers are scrambling for new solutions.

How can the quality improvement (QI) community make meaningful contributions in these times of crisis? That was the topic of conversation in "Mobilizing to Respond to COVID-19," the first of several pandemic-related, interactive conversations sponsored by the Institute for Healthcare Improvement (IHI). This virtual exchange of information unearthed a range of options for health systems to consider as they face difficult decisions on how to most effectively negotiate through regulatory constraints and other barriers to effectively address the pandemic in their own communities.

Bring Heart, Progress

"We probably have never experienced circumstances quite as complex and challenging as the ones we are facing right now," noted **Derek Feeley**, DBA, president and CEO of IHI and the former chief executive of the National Health Service in Scotland.

Feeley acknowledged there is no magic bullet or no single right answer that could adequately address the multiple issues health systems around the globe are facing. However, he stressed that the QI community can play a strong role in helping healthcare decision-makers find a pathway through the crisis. While the command and control functions that are triggered in times of crisis serve a vital function, Feeley suggested some balance also is essential. "Of course we need some direction, and we need someone to take control of the situation, but not in a way that overpowers or stifles ... innovation," he offered. "The quality improvement community ... is much more likely to bring an outside-in kind of perspective, and much more likely to bring shared knowledge to solve these kinds of problems rather than a top-down kind of approach."

Furthermore, Feeley said people who work in QI tend to make decisions that are more connected and integrated rather than set up systems with separate accountabilities. "In the command and control world, people are much more likely to see their job as managing people and budgets. That is likely to still be very important, but unlikely to be sufficient," he said. "We need to see leaders who are much more willing to act on the system ... this is a great opportunity for the QI community to step up and provide leadership [in this respect]."

One other contribution the QI community can make in times of crisis is a sense of renewal. "What we often see [during crises] is a fear of failure because people's lives are at stake [and] a loss of heart because [people] get overwhelmed by the sheer deluge of work and the magnitude of what they are facing," Feeley observed. "We know that quality improvement brings energy, heart, and progress to people. Quite apart from the technical approach that we can bring from the QI community, there is also an emotional and a social duty on us right now."

Rely on Frameworks

During a pandemic, it can be helpful to use framing devices to help organizations think through decisions

and determine what solutions or improvements are needed.

"It is just getting your mind together," noted **Donald Berwick**, MD, MPP, FRCP, president emeritus and senior fellow at IHI. "When you are fearful and when there is uncertainty around, frameworks help."

For example, Berwick noted one of the core frameworks used in the QI community is the System of Profound Knowledge, developed by the noted engineer, W. Edwards Deming. Within this framework, there are four categories of knowledge:

- knowledge of systems;
- knowledge of variation;
- knowledge of psychology;
- knowledge of how to learn.

Regarding "knowledge of systems," Berwick explained that every organization is responding to the COVID-19 pandemic at a level of interdependency and interaction that no one has ever thought of before. "We have never had to push this hard, but it is about systems and systems design," observed Berwick, a former administrator at the Centers for Medicare & Medicaid Services.

For example, the issue of supply chain management has come into broad focus as health systems experience shortages of critical supplies and manpower.

"How do we move equipment, supplies, knowledge, and people around in a way that is most responsive to the local need?" Berwick asked. "It is a highly difficult and important way to think in systems terms. "Systems terms also force us into thinking about inter-relationships and interdependencies in ways we never have before."

The knowledge of variation primarily is about the use of data, Berwick shared. He noted the United States has fallen way behind in this area in its response to the pandemic because health systems were not equipped to perform the kind of diagnostic testing needed to get ahead of the curve. Thus, it has been unclear where the coronavirus is appearing, who is contracting the disease, and what the patterns of acquisition are.

"The use of data and information, and understanding variation, is absolutely crucial in this environment," Berwick stressed. "We need to get smarter about how we are using and consuming information and sorting wheat from the chaff so we know what bad data look like."

The knowledge of psychology may be the most important category in the system, Berwick offered. He explained this pertains how people work together, depend on each other, negotiate with one another, and provide support to each other. "That all matters now at a level beyond anything we have experienced before," he said.

This category covers cognitive psychology, social psychology, group psychology, and learning theory. It also includes the understanding of motivation, Berwick said.

"As I watch this outpouring of generosity and help beyond anything I have ever seen, it restores some sense of human spirit," he added. But Berwick stressed that respect for the workforce and understanding that people need to be nurtured is crucial.

The final category in the System of Profound Knowledge is all about the learning process. It encompasses plan, do, study, act (PDSA) cycles and other tests of change that can push innovation forward.

"We are going to have to be better at that than we have ever been before because we don't know what the future holds," Berwick acknowledged.

That means working as a community to try new things and report to each other on what

EXECUTIVE SUMMARY

Healthcare providers around the world are relying on innovation to help their organizations survive the COVID-19 pandemic, a crisis that has brought with it unprecedented challenges and complexity. Some structure is needed to curate the best ideas and ensure they are shared widely.

- Experts note that while command and control functions are vital, it must not overpower or stifle innovation.
- Frameworks like Deming's System of Profound Knowledge, which is used widely in the quality improvement community, can help leaders think through complex decisions.
- Health systems in many countries are concerned about shortages of personal protective equipment, extreme levels of stress and burnout among workers, and how to most effectively gear up for a surge in COVID-19 patients.
- The pace of innovation must speed up to meet current needs, but it is also important to focus on how to most effectively exchange ideas and new solutions.

everyone is learning. "[This is] not sloppy science, but disciplined, local tests," Berwick explained.

Accelerate Innovation

The IHI works with partners in other countries regularly. While the trajectory of the disease in each of these locations is somewhat different, there are at least three issues with which every health system is grappling, Feeley noted.

First, health systems are all reporting that they have "a dire and deeply concerning shortage of PPE," he explained. "That is international ... something needs to be done to mobilize people's energies to solve that problem quickly."

Second, every health system is reporting "extreme levels of stress and burnout," Feeley noted. "They are tired, they are stressed, they are bloodied, and they are heroic. We see that across the world. Healthcare workers are going the extra mile and doing remarkable things."

Third, healthcare administrators are preparing to manage a surge in COVID-19 patients. They are thinking deeply about how they are going to meet the needs of hospitals and patients, and what they will do if they cannot secure enough PPE.

The IHI is developing a platform where healthcare providers around the globe can share solutions they have developed with colleagues. "We have been testing the robustness and the utility of that over the last week with our fellows and some of our closest partners," Feeley said. "It is proving to be an incredible learning platform, a way of exchanging information on a real-time basis about how to solve a particular challenge."

Nonetheless, the pace of innovation needs to speed up to meet the current needs, Feeley stressed.

"We have a pre-existing set of innovation approaches, which largely run in 90-day cycles, [but] at the moment we need closer to 90 innovations than we need 90-day innovations," he said.

Feeley noted the IHI and its partners are trying to find ways to accelerate the innovation cycle without losing the rigor and the value of the resulting solutions.

Indeed, many healthcare systems are innovating in real time. For instance, Feeley noted Washington state-based Providence has started "The 100 Million Mask Challenge" to create and source protective masks. *(www.100millionmasks.org)* Other health systems are coming up with new ways to reprocess masks. Certain industries, like the Ford Motor Company, have retooled some of their factories to help manufacture PPE.

Others are innovating to find new ways to work and connect while observing physical distancing recommendations. For IHI, that has meant finding fresh ways to teach, Feeley observed. He added that it also is important to show appreciation for healthcare workers.

"I was really heartened to see the rounds of applause that went around the U.K. for healthcare workers, how many people participated to celebrate the contributions of the healthcare workforce," Feeley observed.

Such expressions also have been observed in the United States, particularly in large cities such as New York City and Atlanta, where people are going out on their apartment balconies at set times each day to cheer frontline providers. "We need to do more of that, and find new and innovative ways to celebrate the people who are keeping us safe right now," Feeley stressed.

Curate Ideas

With so much innovation going on, it is important to focus on how to most effectively exchange ideas and new solutions, Berwick stressed. For example, he noted the IHI Leadership Alliance maintains a listserv where hundreds of members post their ideas and experiences.

"How do we curate and harvest from it so it isn't this overwhelming flood," he asked. People will pick up on an idea, put it to work quickly, and then report back so others can learn from their experience. "That is the community we need," Berwick added.

The World Health Organization, the Centers for Disease Control and Prevention, and many other groups maintain these types of curated exchanges. There are many other forums where people are sharing ideas, too, but it is not always easy to sort through the options during a pandemic, Berwick acknowledged.

In fact, Berwick said crisis standards of care is a subject of frequent discussion. When so much demand is hitting healthcare providers, the old regulatory requirements may not work well. In fact, those dated requirements may be counterproductive. Berwick used U.S. state licensing requirements for physicians as an example.

"Telemedicine is cross-state. If we apply the state licensure requirements to telemedicine, we have tied our hands and can't offer expertise at the pace we want," Berwick explained.

At individual hospitals, healthcare leaders have to consider whether the rules under which they are operating are impeding effective

care. "What can you flex in the rule base you work from that allows your workforce to be much more agile in learning and meeting needs without irresponsibility?" Berwick asked. "There has to be this balance between 'anything goes' and some sense of responsibility and discipline in drawing inferences from what is going on. We have to do this at a pace and level we have never before experienced."

Invest for the Future

Why was the U.S. healthcare system not more prepared for a pandemic? "To be kind to ourselves, nobody knew something of this magnitude would hit this fast and so hard," Berwick offered. But he also acknowledged there was evidence that the country was not adequately prepared.

Berwick chaired a National Academy of Medicine workshop that, for one year, looked specifically at the issue of U.S. preparedness for 21st century threats. "This was a pretty serious inquiry by dozens, if not hundreds of experts in the U.S. looking at our level of preparedness. Frankly, the conclusion was that we [were] not prepared. We [had not] invested where we need to," he explained.

The government has established prototype regional structures under the newly renamed National Emerging Special Pathogen Training and Education Center (formerly the National Ebola Training and Education Center). This is a start, but Berwick noted those prototypes have not been spread, habits of cooperation have not been established, and supply chain management is not in place. "Unfortunately, what has happened is what we sort of imagined," Berwick lamented. ■

A Framework Designed to Generate Transparency, Teamwork, Trust, and Calm

Considering the demand for leaders' attention has been stretched thin during the COVID-19 pandemic, **Derek Feeley**, DBA, president and CEO of the Institute for Healthcare Improvement (IHI), suggested a simple framework administrators can leverage to help them stay attuned to the big picture.

Feeley spoke during the first of several pandemic-related, interactive conversations sponsored by the IHI. The framework consists of three key leadership must-haves that leaders can keep in mind as they negotiate through this or any crisis, he explained.

• **Be transparent.** "This is a time where folks need transparency from their leaders," Feeley said. "We shouldn't sugarcoat, and we shouldn't pretend."

• **Think and act as part of a team.** "I see leaders who retreat into a kind of solitary thinking at this time. I see them overwhelmed by the daily pressures and forgetting to connect with the fears in their colleagues," Feeley observed. "Every single leader who is dealing with this now needs a support system. We need to do this together at this difficult time."

• **Demonstrate trusted calm.** "People need their leaders to be assured and measured at this time. They need to be able to trust that it will be so," Feeley stressed. "I have seen so many leaders ... do a lot of work to provide transparency, to [operate] in a team-based way, and to generate calm. Then, one moment of panic, anger, or frustration undermines all of that." ■