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INSIDE

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Frontline Caregivers Work Through Fear and Anxiety to Respond to COVID-19 Outbreak

Frontline caregivers feel the brunt of COVID-19 as cases continue to mount. Epidemiologists forecast the worst is to yet to come.

Hospitals in New York state are particularly under siege. By early April, cases there surged past 80,000, including close to 2,000 patients who died from the illness. Public officials there continue to warn they are running desperately short of supplies, especially masks, gloves, N95 respirators, and ventilators.

Meanwhile, New York Gov. Andrew Cuomo has ordered hospitals in New York City to ramp up capacity. Further, the word has gone out to recently retired healthcare workers to help with the crisis, and thousands have reportedly signed up for duty.

Activities in Washington state, which identified the first case of COVID-19 in the United States in late January, are much the same, although the case counts are considerably lower. By early April, roughly 5,000 cases had been identified and about 250 patients had died. The state is adding new hospital capacity, and it has dramatically increased its testing capabilities, processing roughly 16,000 specimens a day.

While New York and Washington are among the hardest hit states thus far, hospitals across the country are scrambling to respond to cases in their own communities, and there is no denying that frontline providers are at risk. Dozens of clinicians have been sickened by the virus, including one emergency physician who died from the illness in Washington state.

"We are clearly unprepared, and we don't even need to talk about a pandemic," observed **Ali Khan**, MD, MPH, dean of the College of Public Health at the University of Nebraska Medical Center. Khan spoke to reporters as part of an expert panel assembled to discuss the COVID-19 crisis on March 12.

"We know that we see ED and hospital diversions because we can't handle a really bad flu year in the U.S. ... so our main focus is on helping healthcare prepare for a potential flood of patients," added Khan, former director of the Office of Public Health Preparedness and Response at the

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AUTHOR: Dorothy Brooks
EDITOR: Jonathan Springston
EDITOR: Jill Drachenberg
EDITORIAL GROUP MANAGER: Leslie Coplin
ACCREDITATIONS MANAGER:
Amy M. Johnson, MSN, RN, CPN

Centers for Disease Control and Prevention (CDC).

Khan noted hospital and ED leaders in every region are looking at two potential scenarios. "How do [we] take care of patients coming in the door, [and] make sure we do it safely [while] not infecting our healthcare workers [or] other patients in our hospitals," he asked. "Also, how do we make sure that in addition to one or two [patients] coming in — if dozens of patients are coming in — how do we take care of them?"

As far as solutions are concerned, Khan noted some EDs have started screening people outside the ED so they can quickly triage patients to where they need to go — and to places where they are less likely to infect other people. Furthermore, drive-through testing facilities are popping up all over the country so people can be screened and tested for the virus without potentially exposing other people in the healthcare setting.

"These are the conversations going on across America to get ready for a potential flood of patients coming in," Khan observed.

"All the emerging evidence is that this is a dangerous virus," observed **Scott Gottlieb**, MD, former commissioner of the Food and Drug Administration (FDA) who has been following the outbreak closely. He spoke about COVID-19 preparedness during a web-based question-and-answer session sponsored by WIRB-Copernicus Group (WCG) and Accumen on March 13. "It is maybe a once-in-a-generation pathogen that straddles that terrifying area between being contagious enough that it can spread pretty efficiently, but still virulent enough that it can cause a lot of death and disease."

Recommendations from the CDC have been constantly in flux as investigators continue to learn more about the virus, and as circumstances on the ground evolve, particularly with respect to evidence of community transmission, explained **Amber Vasquez**, MD, MPH, an epidemic intelligence service officer and a member of the COVID-19 response infection prevention and control team at the CDC. Vasquez briefed providers on how to optimally protect themselves from the virus as part of a clinician outreach call conducted in early March.

One of her key messages was to lean in on established infection control techniques that facilities should be practicing already to prevent the spread of any respiratory or viral illness. "If a patient has signs or symptoms consistent with an undiagnosed viral illness, he should be immediately placed in standard contact and droplet precautions with the use of eye protection, and [the patient] should remain in place while the etiology is unknown," she said. "As we have been supporting healthcare facilities over the course of this response ... one of the biggest challenges we have faced is that healthcare providers have been exposed to cases at higher risk levels when these precautions were not put into place."

Of course, it is tough to adhere to such standards when frontline providers lack access to the appropriate personal protective equipment (PPE). Health systems report there have been significant supply chain challenges in obtaining such equipment. "The N95 respirators were running in short supply almost immediately around the country in January, long before there was any clinical need, and

still we haven't quite figured out how that happened," explained **Paul Biddinger**, MD, chief of the division of emergency preparedness and director of the Center for Disaster Medicine at Massachusetts General Hospital (MGH). "Manufacturers and distributors are trying to do a good job of allocating to hospitals and not letting anyone buy up the market, as happened in 2009 with the H1N1 [epidemic], but they are still running in short supply."

Biddinger, who also spoke during WCG/Accumen session on March 13, added that healthcare systems are dealing with shortages of every type of PPE, including gowns, gloves, and eye protection. "There is a lot of healthcare worker fear just like there is a lot of public anxiety. There is, frankly, a lot of fatigue," he explained. "Even in my own hospital and healthcare system, we have had our incident command system activated since late January."

Biddinger and his colleagues have been putting in 15- to 16-hour days on a continuing basis. "Everybody is really flat out [tired], and that obviously takes a toll at every single level, including our frontline staff," he acknowledged.

Compounding the problem for EDs is the fact many departments are crowded already, a reality that only makes infection control more difficult. "As soon as the crowding worsens, then the opportunity for disease transmission increases," Biddinger said. He noted that ready access to the right PPE is critical for frontline emergency staff.

Finding spaces to isolate patients under suspicion for COVID-19 also is becoming difficult for EDs. Such spaces are particularly important for patients undergoing aerosolizing procedures. For example, patients who are intubated, receiving nebulizers, or undergoing suctioning procedures should be in negative pressure rooms, and they are in incredibly short supply, Biddinger noted.

"Any ED in any hospital is trying to provide rapid turnover to meet the demand of patients who are coming in, and that is starting to be a challenge for some hospitals," he said.

In recognition of the shortages of both PPE and isolation rooms, the CDC has updated its interim guidance regarding infection prevention and control with respect to patients with suspected or confirmed COVID 19. The agency notes that when N95 respirators are unavailable, facemasks are an acceptable alternative. Further, the CDC states that available N95 respirators should be prioritized for procedures likely to generate respiratory aerosols. Also, the guidance states that patients with suspected COVID-19 can be placed in a single-patient room with the door closed. Airborne infection isolation rooms should be prioritized for patients who are undergoing aerosol-generating procedures. *(Read more about this guidance online at this link: https://bit.ly/2QKqJlr.)*

The CDC also is offering healthcare systems guidance on how to optimize their supply of N95 respirators and other types of PPE, including gowns, masks, and eye protection. *(Read more about this at: https://bit.ly/2WKENz4.)*

Until the shortages of PPE ease, the American College of Emergency Physicians indicates ED and EMS personnel should consider wearing the same face mask or surgical mask for their entire shifts unless the masks become soiled and require replacement.

As the outbreak has unfolded, the CDC has revised its guidance regarding healthcare workers who have experienced low-risk exposure to COVID-19.

"We have removed a requirement for healthcare facilities to actively verify the absence of fever or respiratory symptoms when those healthcare providers report to work," Vasquez reported. "Healthcare providers can continue to take this cautious approach to risk assessment monitoring and work restriction. However, with community transmission of COVID-19 in the U.S. being reported in multiple areas, contact tracing and risk assessment

EXECUTIVE SUMMARY

While New York City and Washington state are among the hardest hit by the COVID-19 outbreak so far, providers across the country are racing to expand capacity and stretch their supplies of personal protective equipment (PPE) and life-saving ventilators.

- In New York state, cases of COVID-19 surged past 80,000 by early April. Under orders from the governor, hospitals in New York City are scrambling to ramp up capacity.
- Hospitals all over the country are putting surge plans in place and intensifying infection control practices to minimize exposures.
- Healthcare workers struggle with continuing shortages of PPE and airborne isolation rooms where patients with suspected COVID-19 can be stationed away safely from other patients and staff.

of all potentially exposed healthcare personnel has become impractical for healthcare facilities."

Vasquez noted research has shown that all healthcare personnel are at some risk of exposure to the virus, whether that takes place in the community or the workplace.

"Devoting resources to contract tracing and retrospective risk assessment could divert resources from other important [infection control] activities. We are recommending that facilities shift their emphasis to more routine practices," she said. "These include asking all healthcare personnel to self-report recognized exposures, regularly monitor themselves for fever and symptoms of respiratory infection, and to not report to work when ill."

Furthermore, facilities should develop plans for how they will screen for symptoms and evaluate healthcare workers who are ill. These plans could include directing healthcare workers to verify an absence of fever and symptoms before these employees report to work each day, Vasquez advised. *(Learn more online at this link: https://bit.ly/2QJDwEM.)*

To minimize the risk of transmission in the healthcare setting, hospitals and EDs also may need to consider additional steps such as placing physical barriers (e.g., glass or plastic) at reception areas, placing curtains between patients, and checking to make sure ventilation systems are moving air appropriately in a clean-to-contaminated flow direction, explained Capt. **Lisa Delaney**, MS, CIH, (USPHS), the associate director for emergency preparedness and response at the National Institute for Occupational Safety and Health and a member of the COVID-19 Response Worker Health and Safety Team at the CDC. She also spoke during the outreach call to clinicians.

"Considerations can also include limiting the number of patients going to the hospital or outpatient setting, excluding all healthcare personnel not directly involved with patient care, excluding visitors to patients with known or suspected COVID-19, and implementing source controls," she advised, referring to key supplies such as masks and N95 respirators.

"Implementing contingency capacity actions may change daily practices but not have significant impact on the care delivered to patients or the safety of healthcare personnel," Delaney continued. "These actions include decreasing the length of hospital stay for medically stable patients and using N95 respirators after the manufacturer-designated shelf life."

Delaney also advised healthcare personnel to consider wearing the same N95 respirator without taking it off between encounters. "Crisis capacity strategies, which are not commensurate with current U.S. standards of care, can be considered when N95 supplies are running low," Delaney said.

This may include prioritizing the use of N95 respirators by healthcare workers with the highest potential risk of exposure, such as those present during aerosol-generating procedures involving symptomatic patients.

The need to preserve PPE is forcing some academic health systems to alter or curb their practices regarding clinical research.

"We cannot use a single piece of PPE that could be otherwise used to protect a healthcare worker and a patient in the course of clinical care," Biddinger offered. "We have made massive changes to how we are using students to how many people enter a room for a clinical encounter."

At the same time, Biddinger noted the health system has to balance such curbs with the obvious need to acquire knowledge related to the outbreak.

"We don't want to just put the entire scientific enterprise on hold for a year and stop the advancement of medical knowledge. We are having some very hard discussions about how to continue selected research studies and when we need to stop other research studies," he said. "It is that balance of safety, resource utilization, and [weighing] the importance of [each] project." ■

Emergency Clinicians Prepare for Battle, Advocate for Needed Resources

Recognizing that EDs around the country will be hard-pressed to manage the kind of surge in patients that epidemiologists are predicting, the American College of Emergency Physicians (ACEP) quickly put together a *National Strategic Plan for Emergency Department Management of Outbreaks of COVID-19*.

The plan is comprehensive, including a range of checklists around everything from supplies of personal protective equipment and critical infrastructure to enhanced security, staff screening procedures, and lab testing protocols. *(Read the plan at: https://bit.ly/2UjgruT.)* ACEP reports the plan was adapted from

the federal template for biological threat management, and covers five key areas:

- situational awareness;
- protection of ED infrastructure and personnel;
- prevention of disruptions in service delivery;
- organized and timely surge medical response;
- recovery to previous steady state.

Howard Mell, MD, MPH, CPE, FACEP, an emergency physician in Illinois and spokesman for ACEP, tells *ED Management* that establishing effective communication both internally and with local and regional agencies is particularly important.

"Coordination between the ED and the rest of the hospital, state and local public health officials, and others is essential. Hospitals should have a protocol already in place, but there is no one-size-fits-all approach to preparedness," Mell stresses. "Leadership should consider existing resources and evaluate needs for optimal care delivery, information-sharing, and resource allocation. For many hospitals, that conversation starts with ED readiness."

In a statement, **William Jaquis**, MD, FACEP, president of ACEP, acknowledged the health system is likely to be strained as the country seeks to mitigate the impact of the virus, and that careful planning and preparation are vital. ACEP is urging EDs to consider how COVID-19 will affect business practices and critical infrastructure.

Worker absences, shortages of resources, and slowdowns in transportation of supplies and support services are likely to become particularly pronounced. Indeed, there have been critical shortages of PPE, and healthcare workers have become ill in several states.

ACEP has established a COVID-19 page for the latest updates regarding assessment, testing clinical management, and other news on the outbreak. *(Read more at: https://bit.ly/2xlr6Mq.)*

The Emergency Nurses Association (ENA) established its own COVID-19 page to convey the latest information about the pandemic and to provide links to available resources. *(Read more online at this link: https://bit.ly/39kocF5.)*

Mike Hastings, MSN, RN, CEN, president of ENA, tells *ED Management* he is urging nurses to stay informed.

"ED nurses must know what the local policies/procedures are for the organization they are working with. The information changes so rapidly that people must take the time to seek out the most current updates," he explains.

Hastings also urges nurses to stay involved in planning and preparations in their own units, and to relay important information about the outbreak to others.

"Nurses need to communicate with the public ... about the realities of this outbreak and the most common-sense ways to potentially limit COVID-19's spread," he says. "Nurses are the most trusted profession for a reason, and it is time that nurses use this trust to educate the general public."

ENA is working with ACEP and other healthcare organizations to advocate for the funding and resources needed to tackle the virus.

"We are also sharing some lessons learned from those in the hot zone to give important perspectives to our members who might not be facing this right now," Hastings says. "ENA prides itself on the network it has and the knowledge our members share with each other."

The Centers for Medicare & Medicaid Services (CMS) issued a blanket waiver regarding COVID-19 as it relates to the Emergency Medical Treatment & Labor Act (EMTALA) on March 30. *(Read more about this blanket waiver online at this link: https://go.cms.gov/2wTFueY.)*

For questions on Section 1135 waivers for EMTALA, send an email to 1135waiver@cms.hhs.gov. Include the city and state of your location so CMS can route the inquiry appropriately. ■

Learn How to Don and Doff PPE Correctly

While the COVID-19 outbreak is a shock to the healthcare system, investigators have been working to prepare for just such an emerging pathogen since the Ebola crisis in 2014.

The work of the National Ebola Training and Education Center, which was set up by the government in the wake of that crisis, has been supplemented by the Special Pathogens Research Network, a group of 10 hospitals or treatment centers that have been focused on developing the policies and protocols needed to respond to an outbreak like COVID-19. As one of the medical centers in this network, Massachusetts General Hospital (MGH) has been deeply involved in this work. **Paul Biddinger**, MD, chief of the division of emergency preparedness and director of the Center for Disaster Medicine at MGH, leads the

hospital's efforts in this regard. "We have been planning and developing protocols for how you hospitalize someone who needs this kind of isolation," he noted during a March 13 webinar. "In late January, as [the outbreak] was advancing, we were able to leverage a lot of that work from our program into a toolkit ... that has been sent out nationally and internationally."

Biddinger stressed one of the most important lessons learned during the Ebola crisis was just how important it is to put on and remove PPE correctly. "How you take off your PPE is maybe one of the most important things that any healthcare organization can focus on," he said. "We have a very tight sequence [we learned from the Ebola crisis] for how you take off your PPE."

When this process is not performed correctly, a healthcare worker can become exposed and potentially infected. For example, if a worker has removed respiratory protection already, and then takes off the gown or suit, small droplets can inadvertently enter the air, and a worker could breathe them in, Biddinger explained. "We are trying to get the word out to anyone who is actually donning and doffing PPE how important being methodical and being careful [when] doffing is going to be for personal protection," he reported.

The "2019 Novel Coronavirus Toolkit" can be accessed through the website operated by the Center for Disaster Medicine, which is a division that lives within the department of emergency medicine at MGH: https://bit.ly/2UkXO9U. ■

Experts: Flattening the Curve of the Epidemic Must Be the Focus Right Now

What is making COVID-19 so difficult to contain? The fact that it is clearly spread by asymptomatic individuals, according to **Paul Biddinger**, MD, chief of the division of emergency preparedness and director of the Center for Disaster Medicine at Massachusetts General Hospital (MGH).

"It is spread by individuals before they begin to feel ill, which is a characteristic of influenza. That makes it much more difficult, and I would argue, impossible to control with public health measures directly," he said during a March 13 webinar. "Once the disease is in the community, it really takes root."

Consequently, Biddinger noted the United States has to focus on how to mitigate the impact of the outbreak, and make sure healthcare providers are in a position to deliver the best care possible for everyone who is infected.

"I don't think it is possible to put the genie back in the bottle," he lamented. "I think we are going to continue to see rising numbers of cases, but ... almost all of our efforts are focused [now] on blunting the epidemic curve, keeping the peak as low as possible because that peak is where the medical demand, the need for care, potentially exceeds capacity."

That is where closing schools and businesses and implementing social distancing tactics come into play, according to **Scott Gottlieb**, MD, the former commissioner of the Food and Drug Administration, who also spoke during the March 13 webinar.

"You are not necessarily going to reduce the number of people who get infected over a period of time, although you may. What you are trying to do is keep the peak of the epidemic below the point at which the healthcare system gets exhausted," he explained. "That is what happened in Hubei Province, China, and ... in Italy. The surge of patients came so fast that the healthcare system became exhausted and above the point at which it was able to adequately care for patients. You had a dramatic rise in deaths."

In contrast, Gottlieb observed that South Korea put mitigation steps in place quickly, closing schools, transitioning people to telework, and canceling larger events. "That slowed transmission to the point where the healthcare system was able to adequately deal with the people who were presenting who were infected," he observed.

Putting such mitigation steps in place can extend the length of the epidemic, but these measures also can reduce the chance there will be a sharp rise in cases. "The goal of mitigation is to take that peak and push down on it, flatten it out a little bit, and extend it out," Gottlieb said. "The total time of the epidemic can actually get longer, but the number of cases at the peak is a smaller number."

Gottlieb urged policymakers to adopt a more consistent approach to social distancing and mitigation steps.

"You see an ad hoc approach among states and localities. Even among businesses, some states are being very aggressive ... and then some states haven't been as aggressive," he said. "We really need a more systematic approach, and we need to lean forward and be far more aggressive right now."

To ease burdens on the healthcare system, Gottlieb is counseling hospitals to cancel all elective procedures and find ways to reduce volumes.

"There are also probably administrative things that both the states and federal government could do to try to reduce some of the burdens on hospitals and put things off that aren't going to adversely impact patient care in the near term while hospitals are focused on a much more difficult challenge right now," he added. ■

COVID-19 Affects Many, But Severe Outcomes More Apparent in Older Patients

While researchers are collecting data on patients in the United States, most information regarding the presentation and management of COVID-19 is from China and is largely limited to patients who were hospitalized with the virus.

Still, more information is coming out regarding patients with milder symptoms and those who are asymptomatic, according to **Angela Campbell**, MD, MPH, FPIDS, FIDA, a medical officer at the National Center for Immunization and Respiratory Diseases, part of the Centers for Disease Control and Prevention (CDC). Campbell spoke to clinicians as part of an outreach call from the CDC in early March.

"Like most respiratory viruses, the symptoms of COVID-19 are relatively non-specific. We are learning that SARS CoV-2, the virus that causes COVID-19, can really cause a spectrum of disease presentations, ranging from no symptoms to severe pneumonia and death," reported Campbell, who also is a member of the COVID-19 Response Clinical Team. "In a recent review of all the patients confirmed in China, and that was about 44,000 [patients] ... about 80% were noted to have disease classified as mild, which did include those with and without pneumonia. About 20% were severely or critically ill."

Among the same group of 44,000 patients with COVID-19 in China, the case mortality rate for patients who reported no underlying medical conditions was 0.9%.

However, the rate was higher for patients with comorbidities and those who were older, Campbell said. In fact, beginning with patients with the virus age 60 years and older, the mortality rate nearly doubled for every 10-year increment.

For example, the mortality rate was about 4% for patients age 60 to 69 years, 8% for patients age 70 to 79 years, and 15% for patients older than age 80 years, Campbell reported. Patients with specific chronic medical conditions were at elevated risk of mortality, too. Campbell noted the mortality rate was about 10% for patients with cardiovascular disease and in the 6% to 7% range for patients with diabetes, chronic respiratory disease, hypertension, and cancer.

But the reports from China did not further break down the age of patients with these chronic diseases. Campbell stressed the case fatality rates from China do not necessarily reflect what clinicians will see in other

EXECUTIVE SUMMARY

There is much more to learn about COVID-19, but from early data, investigators report the illness can cause a spectrum of disease presentations, ranging from no symptoms to severe pneumonia and death.

- In a review of 44,000 patients with the disease in China, about 80% were noted to have mild disease, including patients with and without pneumonia. About 20% were classified as severely or critically ill.
- The data from China show older patients with COVID-19 are particularly vulnerable to severe outcomes. The mortality rate was about 4% for patients age 60 to 69 years, 8% for patients age 70 to 79 years, and 15% for patients older than age 80 years.
- Newer data from a group in the United States show 38% of patients who were sick enough to be hospitalized were younger than age 55 years, although the most severe outcomes occurred in older patients.
- While no therapeutics have yet been approved for the treatment of COVID-19 in the United States (as of press time), there are some promising agents under study. These include remdesivir, an antiviral agent originally developed for Ebola, and both hydroxychloroquine and chloroquine, two drugs already approved for use in the treatment of malaria, rheumatoid arthritis, lupus, and some other inflammatory conditions.

countries such as the United States. Nevertheless, these statistics are useful in giving providers, epidemiologists, and policymakers an idea of which people are most at risk.

Newer data regarding cases in the United States show the virus is affecting patients across the age spectrum. A CDC analysis of 4,226 cases from Feb. 12 to March 16 showed 38% of patients who were sick enough to be hospitalized were younger than age 55 years, although the most severe outcomes occurred in older patients. The statistics show about 80% of patients who died from the illness were older than age 65 years.

Still, it is clear from the data that the percentage of patients with moderate or severe disease was fairly evenly distributed between younger and older adults: 53% of patients requiring care in an ICU and 45% of patients requiring hospitalization were older than age 65 years.

Notably, the data show that among patients younger than age 19 years, most testing positive for the virus, reported milder symptoms with few hospitalizations. The CDC analysis used early numbers, and experts stress that clinicians should understand that all age groups are at risk.

"We are now starting to see a spectrum of COVID-19 illness in the United States and other countries as well ... among people whom you might predict to be at high risk, but also among some younger and previously healthy adults," Campbell noted. "At the other end of the spectrum, we are seeing people of all ages with mild upper respiratory symptoms who test positive."

Clinical manifestations of the virus frequently include fever, but Campbell noted not all patients register a fever when they first present for care. In fact, in published reports, only about half of children with the virus record a fever when they present, she explained.

"Other common symptoms for both children and adults include cough, myalgia or fatigue, and shortness of breath at illness onset," Campbell said.

However, she stressed that most of these reports involve patients who are admitted to the hospital with pneumonia.

"Now that we are seeing more mild cases, they are not all going to have shortness of breath," Campbell shared. "In fact, that varies between 3% and 30%, depending on which population you are looking at. It is not always present at the beginning."

Campbell said other less commonly reported respiratory symptoms include sore throat, headache, cough, nasal congestion, and rhinorrhea. Reports in the literature and in the United States also show some patients with the virus have experienced gastrointestinal symptoms such as diarrhea and nausea before developing fever or respiratory symptoms.

"Some reports in the literature and [in cases] experienced in the U.S. thus far suggest the potential for clinical deterioration is during the second week of illness," Campbell observed.

She noted several reports indicate that it was during the second week of illness when dyspnea or labored breathing developed, pneumonia was diagnosed, and hypoxia, or low levels of oxygen in the blood, was observed. "I think this is very important to be aware of," Campbell added.

The most common complication of COVID-19 is pneumonia, and reports from China indicate that acute respiratory distress syndrome (ARDS) occurred in 20% to 30% of hospitalized patients with pneumonia, Campbell said.

For critically ill COVID-19 patients who are admitted to the ICU, a broad spectrum of support is required, potentially including both non-invasive and invasive mechanical ventilation.

"In China, 3% to 12% of these patients were supported by ECMO [extracorporeal membrane oxygenation]," Campbell noted. "Other reported complications in the literature include cardiac injury, arrhythmia, septic shock, liver dysfunction, acute kidney injury, and multi-organ failure."

Campbell added that the CDC has heard reports of each of these complications from clinicians caring for COVID-19 patients in the United States, too.

While patients with mild symptoms at presentation may not require hospitalization, follow-up is important as symptoms may worsen in the second week of illness. Consequently, patients at higher risk of complications, such as older patients and those with underlying medical conditions, should be monitored closely.

"For hospitalized patients, clinical management includes prompt implementation of the recommended infection prevention and control measures and supportive management of complications," Campbell advised. "Both CDC and WHO [the World Health Organization] recommend against the use of corticosteroids unless they are recommended for other reasons [such as] a COPD [chronic obstructive pulmonary disease] exacerbation."

The reason to refrain from corticosteroids is because experts suggest these drugs could prolong viral replication in patients with COVID-19, Campbell noted.

While research is proceeding on several fronts to find effective therapeutic agents to treat SARS-CoV-2, there is particularly keen interest in the investigational antiviral agent remdesivir, a drug that was

first developed as a treatment for Ebola. Since then, this drug has demonstrated antiviral activity against other viruses such as respiratory syncytial virus and Lassa fever. Moreover, researchers have confirmed that the agent inhibits SARS-CoV-2 replication in non-human cells.

"Its clinical impact remains unknown, but it has been given to a small number of patients with COVID-19 both inside and outside the United States," Campbell explained.

Gilead Sciences, the developer of remdesivir, reportedly provided the drug "for compassionate use" to physicians who were treating the first American patient diagnosed with CoV-2 in Washington state in late January. The drug, which is administered intravenously, was provided to the patient after he developed pneumonia. The patient's condition improved significantly, according to reports.

On March 23, the Food and Drug Administration (FDA) granted orphan status to remdesivir. This designation is intended to encourage the development of drugs to treat rare diseases, and comes with various tax breaks and a guaranteed seven-year pause on competition.

This designation led to pushback from consumer advocates. In a surprising twist, Gilead asked the FDA on March 25 to rescind that orphan status. In a statement, the company said it was confident remdesivir would receive expedited regulatory review without any other special designations.

Meanwhile, several clinical trials are underway, both in the United States and in China, to test the safety and efficacy of several drugs against COVID-19. For instance, Campbell explained that the National Institutes of Health is running one adaptive randomized, double-blind, placebo-controlled trial that is designed to test several therapeutics as they come into the pipeline. The first drug tested in a randomized clinical trial is intravenous remdesivir vs. intravenous placebo. Clinicians with patients interested in pursuing participation in that trial can obtain more information about that research at this link: https://bit.ly/2JepruH.

Gilead Sciences also is operating two additional Phase III clinical trials of remdesivir for the treatment of hospitalized patients. "One [trial] is for moderate COVID-19 disease, and one is for severe COVID-19 disease. Both trials are comparing regimens of five days [of treatment] to 10 days [of treatment]," Campbell explained. "There are several criteria that define moderate and severe [disease]. One of the main [indications] is that if a patient's oxygen saturation is equal to or less than 94%, it is considered severe."

More information about both Gilead trials as well as the company's process for obtaining remdesivir for "compassionate use" can be accessed here: https://bit.ly/2WJQzcY. Clinicians also can call the Gilead Medical Resource Center at 1 (866) 633-4474.

There also has been considerable attention paid to hydroxychloroquine and chloroquine, two drugs already used to treat malaria, rheumatoid arthritis, lupus, and some other inflammatory conditions. Both drugs are in use in some other countries to treat COVID-19. However, these agents have not been approved for use against the virus in the United States.

In a statement, FDA Commissioner **Stephen Hahn**, MD, noted the drugs must be assessed in clinical trials before they can be declared safe and effective against COVID-19. He pledged the agency is moving quickly.

"We understand and recognize the urgency with which we are all seeking prevention and treatment options for COVID-19," Hahn said. "We must also ensure these products are effective; otherwise, we risk treating patients with a product that might not work when they could have pursued other, more appropriate treatments."

Notably, while both hydroxychloroquine and chloroquine include safety profiles that are well known, these drugs are not risk-free. Experts have noted these drugs are associated with cardiotoxicity when used

for extended periods in patients with hepatic or renal dysfunction, or patients with immunosuppression. Clinical trials are underway to test the efficacy of hydroxychloroquine for pre- and post-exposure prophylaxis of the SARS CoV-2 virus. For example, researchers at the University of Minnesota are testing hydroxychloroquine on 1,500 participants who have been exposed to SARS-CoV-2 to see if the drug can prevent the development of COVID-19, or at least curb the severity of illness. The school notes early results could be available soon. For those interested in learning more information about this trial, send an email to: covid19@umn.edu.

Investigators are testing hydroxychloroquine as a prophylactic at the University of Oxford in the United Kingdom. They plan to enroll healthcare workers and others at high risk of contracting SARS-CoV-2.

Much more information about this trial is available online at this link: https://bit.ly/2Ukattm. ■

Hospitals Use Telemedicine to Limit Exposures, Preserve PPE, Guide Patients to Right Setting

In October 2019, Bergen New Bridge Medical Center in Paramus, NJ, began using telemedicine to check in with patients who are discharged from the ED and ensure appropriate follow-up appointments are in place.

As it turns out, the timing of its implementation was fortuitous, because the hospital has been able to quickly expand its telehealth platform to help with patients who might have contracted COVID-19.

"It is really for anyone who feels they have been exposed or has symptoms that suggest they could be a COVID-19 patient," explains **Deborah Visconi**, MHA, president and CEO at Bergen New Bridge Medical Center. She adds the service is available to anyone in the community who wants to speak to a clinician without going to a hospital.

The Health Insurance Portability and Accountability Act (HIPAA)-compliant service is designed to help identify patients with the virus, expedite care to them while limiting community exposure, and easing potential burdens on the ED or urgent care centers. Visconi is hopeful the telemedicine service also will encourage people to seek early care and evaluation, and ease fears about the pandemic.

To access the service, patients call a hotline that will connect them with a nurse via two-way video hookup. The nurse will screen patients based on the latest guidelines from the Centers for Disease Control and Prevention (CDC) for evaluating persons under investigation for COVID-19. *(For more information about these CDC guidelines, visit: http://bit.ly/2uxf6q1.)*

A primary care or emergency medicine physician will conduct an assessment. If that provider determines the patient should be seen by an infectious disease physician, he or she can receive that assessment right away via the telemedicine hookup or at a later time, depending on availability, Visconi explains.

"If the infectious disease provider is available, and the patient is available, we will do that [assessment] right away," she says. "Sometimes, we have to make that arrangement after the initial telemedicine call."

The infectious disease providers involved with the telemedicine service can arrange for COVID-19 testing in cases where they believe it is appropriate. Visconi acknowledges the health system has struggled to access testing services just like other hospitals around the country. She expects that problem to ease as commercial labs are allowed to conduct testing for the virus. "We are hoping soon that hospital labs will have access to those test kits, and we can test right here in our medical center," she adds.

Primary care offices, urgent care centers, and EDs in the community are referring patients to the service as a first point of contact for patients with concerns or symptoms.

"Initially, we didn't get a lot of calls, but as things are evolving ... and there is a lot of movement with the viral spread, we are getting at least 10 calls a day, if not more, into the telehealth platform," Visconi observes.

The health system continues its efforts to spread the word about the virtual visits through media and other efforts. It also has posted information about the telemedicine option for patients concerned about COVID-19 on the front page of the medical center's website. Further, while some insurance companies are paying for the virtual visits, the option is available to anyone in the community regardless of their ability to pay.

"We are absorbing the cost," Visconi says. "We are a safety net hospital, and we don't worry about people's ability to pay for services."

Many other hospitals and EDs are in the process of rolling out similar services to respond to the virus. Visconi's advice is to start simple.

"Get a team in place that can serve as your frontline providers," she says. "We [also] needed to get infectious disease physicians lined up. That was different than the initial rollout [of the telemedicine service in October]. We had to make sure we had providers on board who were willing to be part of this process."

A virtual service like the one unveiled at Bergen New Bridge is just one way telemedicine is leveraged to address the virus. Other hospitals, such as Providence Regional Medical Center in Everett, WA, and Massachusetts General Hospital in Boston, are placing iPads or telemedicine carts in patient rooms so at least some staff-patient interactions can take place without in-person contact. In addition to limiting the potential for exposure, such approaches also can help preserve supplies of N95 respirators and other personal protective equipment.

Health systems are leveraging virtual triage techniques, too, and some are developing automated chat boxes in which patients can report their symptoms and receive general advice on how to proceed. The idea behind the chat option is to help ease the concerns of the "worried well" so they do not present unnecessarily to EDs or other settings that are dealing with large caseloads.

Some health systems with robust telemedicine infrastructures are trying to convert scheduled in-person visits into video visits, when possible. This approach has received added impetus of late as the Centers for Medicare & Medicaid Services (CMS) has significantly eased restrictions on the use of telemedicine services in the care of senior patients. The move enables seniors to visit their physicians via phone or videoconference, even using platforms such as FaceTime or Skype to do so.

Further, CMS pledges penalties will not be imposed on providers who use telehealth in ways that are not compliant with HIPAA requirements. Clinicians can bill for telemedicine visits with reimbursement rates on par with in-person visits.

Such moves should be beneficial for patients who are immunosuppressed or live with other underlying conditions that put them at higher risk of complications from the virus. In a statement, the American Medical Association (AMA) applauded CMS for its actions.

"The use of telemedicine and remote care services are critical to the management of COVID-19, while also ensuring uninterrupted care for 100 million Americans with chronic conditions," the group said. "The AMA encourages any private payers that are not already covering telehealth services to remove those limitations now."

Additionally, the American College of Emergency Physicians reports that in response to its advocacy, CMS will be revising its Emergency Medical Treatment & Labor Act guidance to allow medical screening exams to be delivered via telehealth, too. *(Read more about this at: https://bit.ly/3bqkbQH.)*

The AMA has been vocal on this issue. It unveiled a "quick guide to telemedicine practice," a resource that includes implementation advice and other tips to help providers start in this area. The guide provides links to other resources that can assist providers who are ramping up their telemedicine capabilities to respond to the virus and minimize exposures. *(Read more at: https://bit.ly/3bCglV1.)*

Other public health agencies are encouraging the use of telemedicine wherever possible. For instance, the CDC is directing health systems to consider virtual techniques to guide patients to the right setting for care. Further, lawmakers have signaled strong support for efforts to fully leverage telemedicine during the outbreak. In March, Congress passed legislation that includes $500 million in emergency funds for telemedicine services. ■

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.

COMING IN FUTURE MONTHS

- How emergency medicine is innovating in the face of COVID-19
- Optimizing the response to critical care emergencies
- Assessing the mental health effects of a global pandemic
- New ED-based testing tactics for hepatitis C

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CME/CE QUESTIONS

1. **The Centers for Disease Control and Prevention (CDC) has revised its guidance regarding healthcare workers who have experienced low-risk exposure to COVID-19. The agency is no longer requiring healthcare facilities to:**
   a. actively verify the absence of fever or respiratory symptoms when those healthcare providers report to work.
   b. put those healthcare workers in quarantine for 14 days.
   c. prevent those healthcare workers from engaging in direct patient care.
   d. prevent those healthcare workers from reporting to work until they have received negative COVID-19 tests.

2. **The American College of Emergency Physicians has unveiled a *National Strategic Plan for Emergency Department Management of Outbreaks of COVID-19*, which the organization adapted from:**
   a. its response plan for Ebola back in 2014.
   b. a plan that was used to combat SARS and then MERS.
   c. the COVID-19 response plan that was developed by the New York Department of Public Health.
   d. the federal template for biological threat management.

3. **One of the most important lessons learned during the Ebola crisis was just how important it is to:**
   a. keep your distance from colleagues.
   b. put on and remove personal protective equipment correctly.
   c. check the CDC website for updates every day.
   d. put a clinician in triage.

4. **In a review of 44,000 patients with COVID-19 in China, investigators found that beginning in patients with the virus age 60 years and older, for every 10-year increment, the mortality rate:**
   a. increased by 10%.
   b. nearly tripled.
   c. increased by 30%.
   d. nearly doubled.