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The Work of Vaccinating Frontline Healthcare Workers Against COVID-19 Begins

With two COVID-19 vaccines approved for emergency use, healthcare leaders across the country are scrambling to optimize the limited number of doses available in early shipments. This includes negotiating the myriad logistical challenges involved with putting the shots safely and effectively into the arms of workers.

Healthcare organizations maintain long-standing processes for delivering vaccinations to personnel, but there are added complexities, and the COVID-19 pandemic has caused problems. For example, Vanderbilt University Medical Center had to alter its highly successful approach for delivering flu vaccines to healthcare personnel.

"[In 2019], we vaccinated nearly 60,000 people in 12 hours," explains **Lori Rolando**, MD, MPH, FACOEM, the director of Vanderbilt's Occupational Health Clinic. "We couldn't do that [in 2020] because of the pandemic and the need to socially distance. We couldn't have a large event where we have lots of folks in one location at one time."

Likewise, delivering COVID-19 vaccines will require a special approach. "It may need to be more targeted with smaller events and scheduling at a time and in locations where there is adequate space to social distance," Rolando observes.

There are other challenges specific to the COVID-19 vaccine. For instance, the Pfizer-BioNTech vaccine requires ultra-cold refrigeration, a commodity not already widely in place.

"Many of our members are choosing to purchase [the necessary] freezers, but some don't have the space for those freezers," explains **Anna Dopp**, PharmD, senior director of clinical guidelines and quality for the American Society of Health-System Pharmacists (ASHP) and the organization's lead on COVID-19 vaccines. "We are hearing that some of these freezers are being placed in conference rooms, for example. They are locked down with security cameras to keep them safe and secure."

With the limited initial vaccine supply, large, integrated health systems with multiple hospitals in their networks are grappling with how to prioritize which of their facilities receive the first doses.

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However, one silver lining of the modest initial rollout is that it will allow for some pilot testing. "[Facilities] can test out some of the plans that they have been putting into place, and then make adjustments as they go along," Dopp shares. "I suspect that the plans [health systems] make right now will be quite different than their plans ... six months from now."

Still, with anticipation exceedingly high in states hit hardest by the virus, authorities are doing their best to perfect their distribution plans. For instance, Minnesota Gov. Tim Walz reported authorities have been running drills to ensure there are no kinks in the process.[1]

Use Consistent Messaging

The Pfizer-BioNTech and Moderna vaccines (and some other candidates under investigation) require two doses, with the time between shots varying in length. It is another layer of complexity leaders must consider in vaccinating their personnel. "Healthcare organizations should be making sure their electronic [medical] record systems are connected to their jurisdiction's immunization information system, often called an immunization registry," explains **Angela Shen**, ScD, MPH, a visiting research scientist at Children's Hospital of Philadelphia's Vaccine Education Center and lead author of recommendations on the equitable distribution of the COVID-19 vaccine.[2]

Shen says these registries are designed to track people and the vaccine doses they receive.

"If you get your first shot at one location and wish to get your second shot somewhere else, you will need to know which vaccine you are due for, and when," she explains. "COVID-19 vaccines are not interchangeable. Registries help keep track of which vaccine someone received and when they are supposed to come in for the second dose." For healthcare workers to

EXECUTIVE SUMMARY

Hospitals are scrambling to ensure a smooth and effective process for vaccinating frontline healthcare workers against COVID-19. Leaders need to quickly equip their personnel with enough information to persuade them that the vaccine is safe and effective.

- Because of ongoing social distancing policies, hospitals may need to employ smaller, targeted approaches than they typically use for other vaccines.
- Limited initial COVID-19 vaccine supplies mean systems must prioritize which facilities will receive the first shipments, and which healthcare personnel should be vaccinated first.
- The Pfizer-BioNTech vaccine requires ultra-cold refrigeration, a commodity not widely in place right now. Many systems are purchasing the necessary freezers and placing them under tight security.
- Experts advise health systems to employ consistent messaging about safety and efficacy, and to provide ample opportunity for healthcare workers to ask questions.

take the vaccine, some may need to be convinced it is safe and effective. Consequently, even before any of the vaccines were approved for emergency use, some health systems were developing plans.

For instance, some hospitals in Boston developed educational videos aimed at reassuring staff the rapid process used to develop the vaccines would create safe and effective immunizations. Similarly, Maine Health, a 10-hospital system, has been holding educational sessions via Zoom with its workforce.

Rolando recommends hospitals employ a multipronged approach, using several communication channels, all of which convey consistent messaging regarding the safety and efficacy of the vaccine. There should be plenty of opportunities for interaction, too.

"With something that is new, you can understandably expect that there will be questions, concerns, and anxieties around safety and effectiveness," Rolando says. "Have the ability [for people] to ask questions so that you can reassure them that there are people not only at the federal and state level, but also within your own institution who are looking at these issues."

Set an Example

In a paper outlining the ASHP's own principles for the COVID-19 vaccine rollout, the organization emphasizes the importance of minimizing vaccine misinformation.[3]

"Healthcare workers will be setting an example for patients, and it will be up to that frontline healthcare worker to ... translate their confidence and their willingness to take the vaccine to their patients," Dopp observes. "It is overwhelming what [frontline providers] have been asked to do. Now, we are asking them to shoulder another aspect of this."

Fortunately, the facts regarding safety and efficacy are encouraging thus far, according to Dopp, although she acknowledges some people are concerned about developers providing just two months of data within their applications to the FDA for emergency use.

"The farthest out that we expect to see adverse events from a vaccine is 42 days post-administration. Two months is a good amount of time to look for those safety signals," she says. "We will need to make sure that ASHP and other [healthcare] organizations are the force of truth ... and that healthcare workers are willing to seek that information."

Should healthcare organizations mandate the vaccine for workers? Most health systems are taking a more conservative approach. "We are hearing from most of our members that the COVID-19 vaccine will not be mandated. It will be offered voluntarily to those who want it," Dopp reports. "This is similar to what we saw with the influenza vaccine a number of years ago. We didn't see mandated healthcare worker vaccinations until a number of years after the influenza vaccine was around and available."

Rolando concurs it is premature to think about making the vaccine mandatory. "This is a new vaccine. We are still looking at the science," she says. "Right now, it is just about communicating the safety and benefits of the vaccine, and trying to encourage people to feel comfortable with it."

Rolando adds the first use of the vaccine is coming under an emergency use authorization, not a formal, full approval from the FDA. "That is something to be taken into consideration, too," she says. ■

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CDC Revises COVID-19 Quarantine Recommendations

In a move that affects healthcare providers and their patients, the CDC has refined its guidance regarding the length of time needed to quarantine for individuals exposed to COVID-19.

Previously, CDC recommendations stated those exposed to someone with the virus should quarantine for 14 days to prevent the potential spread of the disease to others. However, experts have concluded a shorter quarantine period should be safe in the vast majority of cases.

"After reviewing and analyzing new research and modeling data, CDC has identified two acceptable alternative quarantine periods," explained **Henry Walke**, MD, the incident manager for the CDC's COVID-19 response, during a media briefing about the new guidance on Dec. 2. "Under these options, quarantine can end after 10 days without a COVID-19 test if the person has reported no symptoms, or after seven days with a negative test if the person has reported no symptoms."

Although this guidance has been shared with public health agencies across the country, Walke stressed providers and patients should follow the specific guidance regarding quarantine length issued from their local public health authorities. "People should still watch for symptoms ... for a full 14 days after exposure, especially if quarantine is discontinued early," he said.

Walke expressed hope that reducing the length of quarantine would make it somewhat easier for people to abide by public recommendations. Namely, a shorter quarantine window reduces the economic hardship associated with staying out of work. "In addition, a shorter quarantine period can lessen stress on the public health system and communities, especially when new infections are rapidly rising," Walke said.

The new recommendations are based on extensive modeling performed by CDC and other agencies, including academic centers and some public health departments, noted **John Brooks**, MD, the chief medical officer for the CDC's COVID-19 response, who also spoke during the Dec. 2 media briefing.

"All of this points in the same direction, which is that we can safely reduce the length of quarantine, but accepting there is a small residual risk that a person who is leaving quarantine early can transmit to someone if they become infectious," he said.

Specifically, Brooks noted that in cases where quarantine is cut to 10 days, researchers calculated the residual risk is about 1%, and the upper limit of that risk is about 12%. "That's an acceptable risk I think for many people," Brooks said, noting that it aligns with the CDC's recommendations around isolation for someone diagnosed with COVID-19, which the agency is not currently changing. "Isolation can end in 10 days if a person has had more than 24 hours of recovery after their illness."

In the case of a seven-day quarantine, the residual risk with a negative test is about 5%. The upper limit of that risk is about 10%. However, Brooks stressed the timing of the test is important.

"Our modeling was based on collecting the specimen within 48 hours prior to the time of anticipated discharge," he said. "It could be a test that is done that day [of discharge], if it is an antigen test, but we provide the possibility of collecting the specimen up to 48 hours beforehand if [people] have a PCR test, which may take a day or two to get the results back."

The adjustments to the quarantine guidance should provide some relief to healthcare authorities at a time when case counts are surging along with the number of people who need to quarantine. "That is a lot of burden, not just on the people who have to quarantine but on public health. Many times, the public health authorities are responsible for monitoring people during quarantine, and they have to follow them to the end," Brooks observed. "We believe that if we can reduce the burden a little bit, accepting that it comes at a small cost, we may get a greater compliance overall with people completing a full quarantine ... and if we get more people on board to complete that overall, that will result in fewer infections."

With better adherence to quarantine, the CDC is hopeful contact tracing will prove more effective, too. "If a person is willing to be more compliant with a shorter quarantine, [he or she] may also be willing the share the names of contacts," Brooks said. "We know that people sometimes don't do that because they don't want to potentially give out the name of a friend or neighbor and force them into quarantine. As well, we hope this will increase the willingness of people to pick up the phone and answer public health calls because they've been one of the people who have been named."

For more information regarding recommended quarantine periods for people exposed to individuals with COVID-19, please read more of this CDC online resource, available at: https://bit.ly/37fft9f. ■

Teletriage Applications Help EDs Improve Efficiency, Respond to COVID-19 Pandemic

A virtual intake process has helped many providers handle the multiple priorities involved with caring for a surging number of patients with a highly infectious disease while keeping staff and other patients safe.

As the demand for virtual care has accelerated, teletriage has melded well with other telemedicine innovations that may permanently change many of the ways in which emergency care is delivered. Some early adopters explain what pushed them out of the gate early, how teletriage has helped them manage the challenges posed by COVID-19, and how they see the approach evolving.

Eliminate Downtime

Milwaukee-based Aurora Health Care turned to teletriage in 2016 when leaders there realized it could provide a big boost to efficiency in the way the health system leveraged the provider-in-triage (PIT) model in its multiple EDs.

Under the PIT approach, an advanced practice clinician (APC) is stationed at triage with a nurse. They start ordering labs and imaging for patients while those patients are waiting to see an emergency provider overseeing care. However, placing one APC at every site was not that efficient, according to **Paul Coogan**, MD, president of emergency services at Aurora.

By implementing teletriage, health leaders theorized one provider operating from a remote location could perform the PIT function for multiple EDs, thereby eliminating the need for onsite APCs and all the downtime. Although teletriage can be implemented in several ways, Aurora elected to work with the virtual platform developed by Brookfield, WI-based EmOpti.

After a patient checks in to the ED, he or she will be downloaded automatically into the teletriage system, explains **Christopher Ellingsen**, PA-C, the lead APC for Aurora's teletriage team.

"When it is their turn to be triaged, they will come into a triage booth, the nurse will do their vitals and get their story, and the nurse will then enter that information into the electronic medical record [EMR] chart," he says. "Then, the nurse will request a consult with [the teletriage provider] through the EmOpti software."

(Editor's Note: Read this March 2017 ED Management *article for more background on the Aurora teletriage program, available at this link: http://bit.ly/2K9PlDU.)*

Keep It Short

Typically, the encounter with the teletriage provider will last for about 90 seconds. If any tests are ordered, those can start while the patient waits for the emergency provider. When the process works well, many tests are completed before the emergency provider arrives, according to Ellingsen.

Coogan notes the time-to-discharge for patients is 20% to 25% shorter when they have undergone a teletriage consult. "That only makes sense because half of their labs are done by the time the physician or APC in the ED sees the patient," he offers.

Teletriage also is associated with a significant improvement in door-to-doc times. For instance, in the ED at Aurora Sinai Medical Center in Milwaukee, that time averaged

an hour or longer before teletriage implementation. Now, that time is closer to 10 minutes because the patient encounters the remote teletriage provider on the front end of the ED visit.

Patients suffering from stroke, heart attack, or other conditions requiring immediate attention will bypass teletriage and go to the ED for immediate care. However, there are some low-acuity circumstances in which patients can be managed and discharged based solely on the encounter with the teletriage clinician. This is a scenario that has proven particularly useful in the context of the COVID-19 pandemic.

Generally, the tactic is used only for a few patients per day, but it does deliver benefits in terms of patient and clinician safety. "It decreases the amount of PPE that we need to use ... and it also decompresses the waiting room, allowing us to see the patients that need us most in the ED, those who are most acutely ill," Ellingsen says.

Patients directly discharged from triage following their encounters with a remote clinician might be younger individuals with no comorbidities and stable vital signs. This group might include patients who have been exposed to someone with COVID-19 and need to be tested. "They are not hypoxic, they do not have tachycardia [rapid heartbeat], and they are not febrile," Ellingsen notes. "Certainly, they are not our elderly patients, patients who require oxygen, or those with significant medical histories."

Identify Champions

Remote teletriage providers tend not to write anything in the EMR other than orders because that hampers efficiency. "The patients understand their interaction with [the remote provider] is just a quick screening exam, and that they will eventually be seen by one of our onsite providers," Coogan explains. "The physician assistant or nurse practitioner who is working ... can do 15 to 20 consults an hour, frequently covering five [ED] sites."

For the most part, patients have been receptive to teletriage, and providers immediately saw value in the approach. "There is a lot of wasted time in medicine and in the ED," Coogan notes. "Any time you can get things going on patients while they are waiting for their ultimate destination helps to improve the workflow."

There were some initial concerns from nurses that teletriage might slow the process down. Coogan explains that while nurses may spend an extra 60 to 90 seconds in triage, there are 20 to 30 extra minutes saved in overall LOS downstream.

"It can be perceived initially as a challenge to nurse autonomy, but once they see the process going, nurses have realized that it is actually championing their autonomy," Ellingsen says. "Our nursing staff ... are really in control of this process, and I think they are the most important players."

Aurora uses teletriage at five EDs between 10 a.m. and 8 p.m., the busiest period. In addition, the system uses the platform with the 15% to 20% of patients who arrive by ambulance. Each ED uses "free-roaming ED," or "Fred," which is essentially the teletriage platform in portable form. This tool can be transported easily, allowing patients to interact with a remote provider even while patients are traveling from an ambulance gurney to a regular bed.

Aurora leaders are thinking about how they can leverage teletriage in even more ways. One idea is to use it for discharging patients at short-staffed sites. For example, there may be only one physician physically present — and he or she is busy sewing a complex laceration on one patient while many others are waiting for final instructions before going home. Coogan suggests these waiting patients could interact with a remote clinician through a mobile teletriage tool, receive their needed

EXECUTIVE SUMMARY

EDs that implemented teletriage approaches before the COVID-19 pandemic are ahead of the game just as the demand for virtual care has exploded. The approach has helped minimize in-person exposures and improved efficiency.

- Milwaukee-based Aurora Health Care integrated teletriage into the way it uses the provider-in-triage (PIT) model in 2016.
- The teletriage/PIT approach is associated with a 20% to 25% reduction in time-to-discharge for ED patients.
- Philadelphia-based Jefferson Health has used the PIT model and teletriage to significantly reduce the leave-without-being-seen rate in two EDs.
- Make it clear the role of the teletriage provider is to start any needed tests or medicines, not arrive at a diagnosis.
- With the advent of COVID-19, administrators moved the teleintake process out in front of the ED, helping minimize in-person contact for both screening and testing while also preserving PPE.

information, and leave without waiting so long.

Coogan says EDs struggling with boarding, patient flow, long waits, or patient satisfaction might want to consider teletriage. The platform could work well for sites thinking about adding staff but are unsure if there is enough volume to pay for extra personnel.

"It is not a cure-all for all of your problems, but it is a way to address the front end of the process of patient arrival and getting things started," he says.

Begin with PIT

Philadelphia-based Jefferson Health's journey toward teletriage began as part of an effort to reduce the leave-without-being-seen (LWBS) rate in one of its EDs. First, the health system implemented the PIT model, which made a sizable difference. The LWBS rate declined from about 5% to less than 1%. Door-to-provider times shortened from an hour or more to between nine and 14 minutes, explains **Judd Hollander**, MD, senior vice president for healthcare delivery innovation and the vice chair for finance and healthcare enterprises in the department of emergency medicine at Thomas Jefferson University.

Then, in a different ED, Jefferson started experimenting with teletriage between 11 a.m. and 6 p.m. "We picked those seven hours for practical reasons because we had a provider who could double-dip, doing two duties at the same time," Hollander explains. The approach proved successful, reducing the LWBS rate from about 3% to 1% in that ED.

At this point, it occurred to Jefferson leaders that one remote clinician could be handling the PIT role for the EDs at both hospitals: Thomas Jefferson University Hospital and Methodist Hospital. Administrators expanded teletriage hours to cover most of the day. The approach has delivered significant dividends in terms of efficiency.

"We see as many as 235 people through a single provider during the 16 to 18 hours we are covering [with teletriage], depending on the day of the week," Hollander reports. Overall, teletriage kept the LWBS rate in the 1% or less range at both EDs.

Clarify the Role

Be clear about what the role of the remote teletriage provider is. "I don't need to know what is wrong with the patient in teletriage. It may be pneumonia, bronchitis, or asthma. Once I decide the patient needs an X-ray, I am done," Hollander says. "The patient can then go to X-ray or I can give him a nebulizer, but I don't need to do a complete history and a complete exam."

Hollander adds teletriage providers do not really need any high-tech instruments to fulfill their role. In fact, when teletriage was implemented, he notes there was a remote stethoscope available to the remote clinicians, but providers barely touched it. "We used it eight times in the first 10,000 patients," Hollander says.

In the few cases for which more information might be helpful to the remote clinician, the in-person nurse or the tech who is with the patient during the teletriage encounter is on hand to listen to the lungs or perform any other assessments.

The teletriage process has helped frontline providers manage the demands of the COVID-19 pandemic, but they did make some adjustments. "We were able to take the teleintake process and put it out in front of the ED," Hollander explains. That helps minimize in-person contact for both screening and testing while also preserving PPE supplies.

The teletriage function also has fit in well with some other telemedicine initiatives Jefferson has deployed. For instance, ED staff have placed tablets in patient rooms to facilitate communications while minimizing clinician exposure. "We have decreased the amount of in-room visits to our COVID-19-positive patients and our patients under investigation. We have [also] leveraged those tablets to do face-to-face consults with other services as well," Hollander says. "We have a very low infection rate [among staff], and I think part of that is related to these [techniques]."

Another innovation is "JeffConnect," an on-demand app that enables anyone in the Jefferson region to visit with an emergency provider at any time of the day or night. Hollander notes the health system has leveraged clinicians who are quarantining but are well enough to take calls through this service.

To launch an effective teletriage process, EDs need a secure platform, reasonably clear video, software that can queue patients, and an ability to integrate the process into the EMR. Hollander acknowledges these features can be costly.

"I think [you need] to figure out what the institution's needs are, and balance them with the fact that healthcare is having a lot of financial issues right now," he says. "The trick is going to be [determining] how we can provide better virtual technology in a way that is money-saving for everybody." ■

Excessive Urine Testing Drives Unnecessary Antibiotic Use, Elongates Length of Stay

There is anecdotal evidence suggesting too many patients were undergoing urine tests to rule out urinary tract infections (UTIs), receiving unnecessary antibiotics, and enduring excessive waits in EDs.

To put these suspicions to the test, researchers conducted a retrospective cohort study on patients discharged from two academic EDs between 2015 and 2019. They divided patients into groups, based on the chief complaint, excluding patients who were placed in observation, received a psychiatric consultation, received a diagnosis of alcohol intoxication, or whose length of stay (LOS) exceeded nine hours.

Of the more than 16,000 patients presenting with chest pain, 19% underwent urine tests, even though only 0.01% would be expected to have UTIs from an epidemiological standpoint. For the 3,146 patients who underwent urine tests, slightly more than 10% received prescriptions for antibiotics to treat UTIs. As a comparison, just 1.4% of patients who did not receive urine tests received the antibiotics.

Regarding patients who presented to the ED with abdominal pain, the researchers reported 75% received urine tests, 17% of whom received prescriptions for antibiotics to treat UTIs. Additionally, 78% of women older than age 65 years who presented with weakness, an altered mental state, or confusion underwent urine tests. Twenty-seven percent received UTI antibiotics.

Focus on Symptoms

Investigators presented these preliminary findings in October 2020 during the virtual annual meeting of the American College of Emergency Physicians. Researchers plan to explore more details in patient charts to determine, among other things, whether the patients who received urine tests and antibiotics were experiencing any symptoms of UTI.

Still, these early findings indicate a possible pattern of excessive urine testing in the ED, leading to unnecessary antibiotic prescriptions and potential harm.

"Oftentimes, physicians are taught that a urine culture is the gold standard [for the diagnosis of UTI], but that is not the case," observes **Richard Childers**, an emergency physician at the University of California San Diego (UCSD) Medical Center who led this research team. "If [the patient] is not having symptoms, [a positive urinalysis] just doesn't matter. You can't benefit [from antibiotics] if you are not having symptoms of UTI."

Excessive urine testing may not just adversely affect antibiotic stewardship. In a separate analysis, UCSD researchers studied the LOS of all patients who were discharged from the ED during the 2015-2019 study period. Patients who underwent urine tests remained in the ED for an average of 78 minutes longer than others. When examining all patients who underwent lab tests, those who underwent urine tests spent an average of 21 minutes longer in the ED than others.

Provide Education

What is driving the widespread use of urine tests to rule out UTIs in patients who present without symptoms? Childers suspects the

EXECUTIVE SUMMARY

Recent data suggest many patients without symptoms of a urinary tract infection (UTI) are tested for the condition in the ED, with some likely to be receiving antibiotics unnecessarily. Investigators report urine testing in the ED is associated with longer stays.

- Of more than 16,000 patients who presented with chest pain at two academic EDs between 2015 and 2019, 19% underwent urine tests, even though only 0.01% would be expected to have UTIs from an epidemiological standpoint. Slightly more than 10% of patients who underwent urine tests received antibiotics to treat UTI.
- Regarding patients who presented with abdominal pain, researchers reported 75% received urine tests, and 17% of these patients received prescriptions for antibiotics to treat UTI.
- A separate study revealed a nurse-driven intervention can help curb unnecessary urine cultures and associated antibiotic use. Although the study was conducted on an inpatient unit, investigators report it could work just as well in the ED.

answer may be related to the desire to establish an explanation for whatever symptoms have prompted patients to seek care.

Childers notes he and colleagues often see patients who present with "vague abdominal pain" that is hard to explain away. "That is oftentimes not satisfying for the patient ... we have a desire to find a definitive answer to explain things. A UTI is definitely attractive as an explanation because then we can say that [we have] an antibiotic to give that will fix it."

Childers stresses emergency physicians care about patient flow. Considering the effect of excessive urine testing on LOS in the ED, he is optimistic physicians can be persuaded to make improvements. Perhaps leaders can provide more education, coupled with reassurances that changing will not be accompanied by more administrative busy work.

"Maybe that will be a lower bar to meet to change their behavior than asking them to do extra work," Childers offers.

Enlist Nurses

Another potential pathway to improvement is through a nurse-driven intervention. This approach proved effective in a pilot program at the Johns Hopkins Hospital in Baltimore.[1]

"We know that one of the major drivers of inappropriate antibiotic use is UTIs," explains **Valeria Fabre**, MD, lead investigator. "There is what we call asymptomatic bacteriuria, which basically means that people can have bacteria in the urine without having a UTI ... if you [perform a urine culture] on a patient who does not have symptoms of a UTI, you may find bacteria. Once you see that bacteria in the urine, it is very hard for most clinicians not to treat that."

Considering this tendency to treat even asymptomatic patients based on the results of the urine culture, Fabre and colleagues developed an intervention focused on avoiding urine cultures in most patients without any symptoms of a UTI.

Historically, antibiotic stewardship or diagnostic stewardship-focused interventions are tailored to ordering providers or pharmacists, leaving nurses out. In their model, Fabre and colleagues included nurses, part of a larger initiative focused on involving nurses in antimicrobial stewardship.

Nurses learned the principles of diagnostic stewardship. A nurse champion drove the project, serving as a liaison between 37 nurses who worked on the unit and the antibiotic stewardship program. The team implemented an algorithm to guide nurses in their discussions with hospitalists when they believed a urine culture may not be needed.[2]

During the intervention period, Fabre would visit the unit once a week and examine some patient examples from that week or that day with the nurses. "We would review cases retrospectively or, if they were cases that were pending, we would [focus on] increasing their comfort level in using the algorithm and making these determinations, says Fabre, associate medical director of the antimicrobial stewardship program and an associate hospital epidemiologist at the Johns Hopkins Hospital.

By using this approach, the mean urine culture rate per 100 patient days declined from 2.30 to 1.52. This compares to the urine culture rate increasing from 2.17 to 3.10 when the intervention was not in place.

Nurture Collaboration

For nurses to comfortably take up these issues with the treating provider, Fabre says the culture must be collaborative. Fortunately, that was the case in the unit where the intervention was implemented and studied. "The unit has to embrace that open communication," Fabre

says. "In most places, there is a lot of effort to [facilitate] those types of conversations, it is OK to question your colleagues."

A Situation-Background-Assessment-Recommendation (SBAR) tool is available to help clinicians communicate more effectively and succinctly.[3] "Many times, depending on how you say something, you will have a different impact on the other person's response," Fabre notes.

Unit leadership support is critical to the success of this approach. "If you don't have that support, then the intervention cannot happen, at least in this format," Fabre cautions.

The unit where the pilot program took place still uses the intervention with the ongoing support of a nurse champion. Investigators also have disseminated the algorithm to other units.

"You can't just drop the algorithm and expect people to use it," says Fabre, who provides extra education to those other units.

Fabre sees no reason why the nurse-driven intervention could not be used effectively in the ED. When someone in the ED orders urine cultures for patients with no UTI symptoms, and those patients are admitted later, it is left up to the inpatient providers to make treatment decisions.

"They will see that the patient had a urine culture [and] conclude there must have been a reason. If the urine culture is positive, they will treat the patient," Fabre observes. "From the get-go, the urine culture was highly likely not needed. That leads to so much inappropriate antibiotic prescribing."

It can be difficult to change behavior, particularly in instances where providers are not rewarded for doing the right thing. Fabre advises champions of this effort to focus on patient safety. Provide examples of patients who were harmed because they received inappropriate antibiotic treatment. "People react to that," Fabre says.

Additional tips and tools used to implement a range of nurse-driven antimicrobial stewardship interventions at the Johns Hopkins Hospital are available at this link: https://bit.ly/37lsAWI. ■

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1. Fabre V, Pleiss A, Klein E, et al. A pilot study to evaluate the impact of a nurse-driven urine culture diagnostic stewardship intervention on urine cultures in the acute care setting. *Jt Comm J Qual Patient Saf* 2020;46:650-655.
2. Johns Hopkins Medicine. Algorithm for inpatients with or without a urethral catheter. https://bit.ly/2WegEj7
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Acupuncture as a Pain Management Alternative

The National Center for Complementary and Integrative Health, a division of the National Institutes of Health, is funding a multicenter study of the feasibility of offering acupuncture to patients who present to the ED complaining of pain and/or anxiety.

In a pilot program that took place between Nov. 1, 2013, and Dec. 31, 2014, at Abbott Northwestern Hospital in Minneapolis, researchers found acupuncture was both acceptable and effective for pain and anxiety reduction.[1] *(Editor's Note: Read this November 2019* ED Management *article for more background: http://bit.ly/2IPVG6U.)*

Now, other investigators will be taking a more in-depth look at the protocol used in the Minneapolis pilot, particularly regarding sorting out any practical roadblocks. **Jeffery Dusek**, PhD, director of research at the Cleveland-based University Hospitals Connor Integrative Health Network, says he and colleagues will consider what patients, providers, and administrators think about the possible benefits of acupuncture.

Establish Criteria

The study is taking place in the EDs of three academic medical centers: University Hospitals Cleveland Medical Center, Vanderbilt University Medical Center, and the University of California San Diego Medical Center. At each site, 50 patients presenting with pain will be randomized to receive either

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acupuncture or usual care. "This is going to be a heterogeneous mix of pain. It could be neck pain, back pain, flank pain, or abdominal pain," Dusek says.

A research coordinator will be on site working with the triage nurse to identify appropriate candidates. Generally, anyone with a pain score of 4 or higher on a 0 to 10 scale is eligible for inclusion. "Anything related to an accident or a gunshot or anything traumatic would not be eligible [for inclusion], nor would migraine-related pain because migraine protocols in the ED often have a specific cocktail of interventions," Dusek says. Patients who are pregnant or who arrive by ambulance also are ineligible.

In every case, the research coordinator will check with the treating provider to ensure there is no reason why the patient should not be randomized to receive acupuncture. Patients assigned to acupuncture will not receive any medications for pain until one hour after they have undergone their acupuncture treatment. At that point, they will go to usual care.

"We will look at pain and anxiety scores at the time of discharge ... and then we also [look at] the scores one week later," Dusek says.

Consider ED Factors

Each site will include two properly licensed acupuncturists: a primary and a backup. "This will be [an acupuncturist] who has no other duties in the ED," Dusek explains. "The acupuncturists are totally paid for by the [NIH], and they will be providing the care as they would, for example, in an outpatient clinic."

Patients will go to a private room or to an area cordoned off by curtains. Here, any risks would be reviewed, and the patient would consent. Regarding treatment time, Dusek notes that in the pilot study, the acupuncture needles usually were retained in a patient's body for 28 minutes, at which point the practitioner would remove the needles and count them.

RESEARCHERS HOPE THEIR WORK LEADS TO FEWER UNNECESSARY OPIOID PRESCRIPTIONS.

The intervention takes place in the early portion of a patient's ED visit, but then care proceeds as it normally would, with no impediments to the clinician's prescribed course. Nonetheless, Dusek notes investigators hypothesize patients randomized to receive acupuncture will, over the course of their ED stay, be exposed to fewer opioids than patients in the usual care group.

Address Disparities

Investigators expect to conclude their data collection and interviews by late 2022. At that point, Dusek hopes to conduct a larger efficacy-focused trial that includes five to seven EDs. The goal is to provide data that will convince payors to reimburse acupuncture treatment in the emergency environment, a stumbling block that has thus far prevented larger-scale implementation. Additionally, Dusek and colleagues hope their work leads to fewer unnecessary opioid prescriptions.

"One of the things that I think has been lost in this [discussion] is how these types of therapies have oftentimes been only available to people who are of means who can find these therapies in outpatient clinics," Dusek explains. "In our pilot work ... half of the participants were African American and half were not. We really like the idea that acupuncture in the ED setting can diminish the disparities between people who have access to this therapy."

Dusek adds that all three participating sites in the new study serve diverse populations. He anticipates the results will include patients coming from a wide variety of socioeconomic groups. ■

REFERENCE

1. Reinstein AS, Erickson LO, Griffin KH, et al. Acceptability, adaptation, and clinical outcomes of acupuncture provided in the emergency department: A retrospective pilot study. *Pain Med* 2017;18:169-178.

CME/CE OBJECTIVES

After completing this activity, participants will be able to:

1. Apply new information about various approaches to ED management;
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3. Implement managerial procedures suggested by your peers in the publication.

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CME/CE QUESTIONS

1. **Researchers at the University of California, San Diego conducted a retrospective cohort study to look at whether there is excessive urine testing in the ED, and whether this practice is associated with inappropriate antibiotic use. Of the patients who presented to the ED with abdominal pain, researchers reported __ received urine tests and ___ received prescriptions for antibiotics to treat UTIs.**

   a. 20%, 13%
   b. 35%, 16%
   c. 55%, 25%
   d. 75%, 17%

2. **There are numerous logistical challenges specific to the COVID-19 vaccine. For instance, the Pfizer-BioNTech vaccine requires:**

   a. a new type of syringe.
   b. special training to administer.
   c. three shots with different dosage levels.
   d. ultra-cold refrigeration.

3. **The CDC has refined its guidance regarding the length of time needed to quarantine for individuals exposed to someone with COVID-19. Experts now say quarantine can end after _____ without a COVID-19 test if the person has reported no symptoms, or after _____ with a negative test if the person has reported no symptoms.**

   a. 12 days, 10 days
   b. 10 days, seven days
   c. eight days, six days
   d. seven days, five days

4. **Philadelphia-based Jefferson Health's journey toward teletriage began as part of an effort to:**

   a. introduce telemedicine.
   b. boost morale.
   c. reduce the leave-without-being-seen rate.
   d. conserve personal protective equipment.