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INSIDE

RELIAS MEDIA

The 'Care Paradox': HCWs Struggle to Help Patients and Protect Themselves

Restraint of psych patients troubles staff

By Gary Evans, Medical Writer

The widely reported[1] reduction in the number of the nation's mental health facilities has led to an increase in agitated and potentially violent patients in EDs.

Coinciding with this increase, healthcare facilities are also dealing with violence associated with the opioid epidemic. Dealing with these challenges and others, healthcare workers may find themselves having to restrain mental health patients, which creates an ethical dilemma, explains **Ambrose Wong**, MD, MSEd, an assistant professor of emergency medicine at the Yale School of Medicine in New Haven, CT.

"We are restraining, on average, four or five patients a day — which is a lot," he says. "Anecdotally, there are other health systems that are doing this even more frequently."

> "THEY COME TO US LOOKING FOR HELP, SO THE LAST THING WE WANT TO DO IS MAKE THEM FEEL WE WERE HOLDING THEM DOWN AGAINST THEIR WILL."

The traditional practice of using sedation and restraints for agitated patients can have long-term consequences for the mentally ill, who may be homeless, intoxicated, suffering from delirium, or dealing with dementia. The immediate threats of restraint include chest trauma, aspiration, respiratory depression, asphyxiation, and cardiac arrest, Wong and research colleagues note.[2] A secondary effect is that these

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patients may avoid subsequent care after being restrained for treatment.

"Physical restraints can have lasting psychological implications," he says. "We are learning that from both talking to patients who have [been restrained] and sometimes seeing it [in the data] — they are much more reluctant to come back to the ED or any psychiatric service."

Healthcare workers are nothing if not compassionate, making it all the more difficult to put patients through something that may increase harm, he says.

"They come to us looking for help, so the last thing we want to do is make them feel we were holding them down against their will," Wong says.

"It's all linked to having less access to psychiatrists and mental health services, and the fact that the burden of mental health is increasing overall just in terms of people needing access and being sicker."

The Paradox

Trying to help these agitated patients, who still must be assessed for injuries or other conditions, can be emotionally and mentally challenging for healthcare workers.

"The staff really feel sometimes that the only way to make sure that they and other patients are safe is to do these restraints," he says. "But what we found when we interviewed the staff is something called the 'care paradox,' which is that they almost have a conflict of interest that they have to choose between their own safety and the patient's safety."

The result can hamper the clinical teamwork needed to safely treat this marginalized population. "Hierarchy and professional silos hinder coordinated care between healthcare professionals," the researchers report.[3] "Barriers to effective teamwork appear to exacerbate safety threats when patients present with acute agitation."

The care paradox can contribute to feelings of burnout, an increasing problem in the demanding world of healthcare. "Experts have suggested strategies to promote collaboration between healthcare professionals in behavioral emergency care, including the implementation of a structured team approach in the form of a 'rapid response team' and formal delineation of roles and responsibilities," Wong and colleagues report.

In general, clinicians try to avoid these coercive measures with agitated paitents if at all possible. For some patients, it is unavoidable.

"Sometimes, patients come into the ED so acutely agitated that we cannot de-escalate them," Wong says. "It's a combination of the fact that they may be psychotic or very intoxicated, and there are certain substances that are more agitating than others, such as PCP or 'angel dust.'"

In terms of maintaining workflow and protecting other patients, it sometimes is necessary to restrain and sedate these agitated patients.

"They become calm and you can move on to other tasks in the ED," he says. "But the tradeoff is restraining these patients potentially has lasting consequences. The staff know that, but you have to make that decision very quickly."

In reviewing cases, Wong says there are some patients who are restrained too early and others where a delay results in a staff injury.

"It is not an easy line to draw," he says. "In order protect yourself, you might have to sacrifice the patient's safety a little bit — and that can lead to burnout."

Mental health experts — like those in Project BETA (Best practices in Evaluation and Treatment of Agitation)[4] — are trying to assist in early recognition of agitated mental health patients and improve de-escalation.

"Many facilities now use techniques such as intervention teams, which are paged instantly when there is an agitated patient, or 'management of assaultive behavior' protocols that seek to engage patients into voluntarily accepting treatment," the Project BETA authors report. "However, far too many agencies still treat all episodes of agitation in a fashion that might best be described as 'restrain and sedate.'"

The Project BETA guidelines and approaches to the problems are based on some of the fundamental tenets of emergency psychiatry, including:

- rule out any other medical causes of agitation symptoms;
- rapidly stabilize the patient;
- do not coerce patients into complying;
- find the least-restrictive setting for treatment;
- create therapeutic alliance.

"They did a really good job of listing those best practices, but the adoption of it is variable," Wong says.

Patient or Criminal?

Given the daily demeaning attacks and horrific assaults now frequently reported in healthcare, it can be tempting to view violent patients as criminals who should be punished, he says.

"Sometimes, in the world of occupational health and employee health, I hear experts talk about strategies that could potentially sacrifice patient wellness," Wong says. "For example, there are some folks who talk about prosecuting these individuals, locking them up, passing state and federal laws that persecute patients that assault healthcare workers."

This is a short-term fix for an admittedly horrible problem, Wong says, and one that does not really address the bigger question: Why is this happening?

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"They really need our help to get the mental health service they need," he says. "Throwing them in prison is not necessarily the right answer. It reinforces the stigma that these patients already have. It may make them feel that the healthcare system isn't necessarily where they want to go — but they really need our help."

One problem with developing violence prevention methods in healthcare in general is the lack of rigorous research and studies on patient safety, Wong says.

Randomized Trials Examine Violence

One of the few randomized controlled interventions to reduce violence against healthcare workers showed the efficacy of thorough data collection and the innovation of inviting individual units to solve perceived hazards.[5]

As federal lawmakers return to the issue of requiring violence prevention programs in healthcare, the 2017 study is being revisited, most recently in a webinar by The Joint Commision.[6]

The lead author of the study is **Judy Arnetz**, PhD, MPH, PT, professor and associate chair for research in the Department of Family Medicine at Michigan State University's College of Human Medicine. "The importance of this study is that we did have some control sites," she tells *Hospital Employee Health*. "Randomized controlled studies are still the gold standard in research."

Arnetz and colleagues randomized 41 units into intervention (21) and control (20) groups. The intervention units received unit-level reports of violence and data to use to develop interventions. The control units did not receive the incident data.

"Six months post-intervention, incident rate ratios of violent events were significantly lower on intervention units compared to controls," Arnetz reported in the paper. "At 24 months, the risk for violence-related injury was lower on intervention units, compared to controls. This data-driven, worksite-based intervention was effective in decreasing risks of patient-to-worker violence and related injury."

A survey of emergency physicans last year found that half have been assaulted while at work in the ED, while more than 70% have witnessed another assault. Only 10% experienced neither. *(See* HEH, *April 2019.)*

"Emergency departments are definitely known for being at

increased risk," Arnetz says. "One of the problems is it is so common and expected that it becomes a barrier to reporting."

Using a hazard-risk matrix as a tool for identifying increased risk and collecting data on reported incidents, the researchers found that four of the five EDs in the study met high-risk criteria.

"The [outlying] emergency department was in an inner-city hospital in a tough area," she says. "But they were in the categories of low probability of violence and medium severity. Staff were definitely getting injured, but the reason it was low probability was because they were not reporting."

Data collected from reported incidents eventually were shared with the individual units, who were asked to address the findings.

"One emergency department requested increased lighting in the parking lot surrounding the ED," Arnetz says. "That was an environmental strategy. One of the issues was that patients who were discharged, or family members, sometimes came looking for staff. They were angry or upset."

Another ED looked at its data and decided to balance work schedules better to avoid vulnerable periods when few staff were on the unit, she adds.

"Additional ED strategies included mandatory team-building classes, active shooter training, and customer service training," she says. "That was training of staff in a way that could help them become more sensitive to their patients' needs and to be more aware."

Overall, Arnetz stresses the importance of a violent incident reporting system, as data will drive and pinpoint prevention measures.

"I emphasize the importance of a central reporting system," she says. "Hospitals can at least develop that — or if that is not a realistic goal, they can try to collate data from the various sources. For example, security usually collects their data and occupational health services collect data on staff that come to them with violence-related injuries."

In addition to developing a good reporting system, there must be stakeholder engagement — both management and workers — to prevent violence in the facility.

"Healthcare workers need to know that there is a belief in developing a culture of safety that is supported by management action," Arnetz says. "By involving employees in the process, especially with improvements at the unit level, you increase the chances of developing effective interventions." ■

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Preventing Violence: Perception and Reality

Too many nurses expected to 'physically intervene'

While the ED is still the point of the spear in terms of healthcare violence, a new study supports the idea that the threat to workers is becoming more general and less unit-based. A survey of roughly 1,000 nurses in Canada found that the majority "believe that high-risk pockets of violence are being replaced by widespread and systemic workplace violence."[1]

The researchers conducted a survey from March 2017 to January 2018 in British Columbia, netting responses from 771 medical-surgical nurses and 189 nurses in mental health settings.

"For medical-surgical and mental health nurses, greater perceptions of workplace safety were related to employers listening to them with respect to violence prevention strategies," the researchers found. "Nurses in both settings were more likely to feel safe when they were

not expected to physically intervene during a 'code white' situation."

Mental health nurses felt safer with a sufficient number of trained code white responders on their unit. Medical-surgical nurses were more likely to feel safe when reviews of incidents were conducted and with fixed alarms in place throughout the workstation.

To delve deeper in the findings, *Hospital Employee Health* interviewed lead author **Farinaz Havaei**, RN, PhD, a post-doctoral fellow at the University of British Columbia School of Nursing in Vancouver.

HEH: You found that nurses in general feel safer when they are not expected to physically intervene during a violent incident. Has there been some historical perception that nurses would be expected to go to these lengths in code white incidents?

Havaei: Unfortunately, this is not just a historical perception. It is the reality. About one-third of medical-surgical nurses and two-thirds of mental health nurses indicated they were expected to physically intervene during code white incidents. And there are probably many explanations for this, including history, finite financial and human resources, rising violence, etc.

But the most important issue is that this has got to stop now because it is not safe. Nurses are not educated or prepared to physically respond to violence. It is not part of their job or scope of practice.

HEH: We know EDs are at risk of incidents, but you report a growing sense that violence can occur on any unit and in any patient population.

Havaei: Yes. According to evidence, workplace violence is difficult to eliminate or effectively manage because it is so deeply embedded within organizations' structures and cultures irrespective of the workplace specialization and the patient population. Structural violence is the source of discrimination based on, for example, gender, race, and sexual orientation, and can happen in any context.

HEH: You found that only about 30% of medical-surgical nurses and about 53% of mental health nurses reported having enough properly trained code white responders on their unit. Was this a general subjective feeling that there were not enough responders?

> "NURSES ARE NOT EDUCATED OR PREPARED TO PHYSICALLY RESPOND TO VIOLENCE. IT IS NOT PART OF THEIR JOB OR SCOPE OF PRACTICE."

Havaei: These data reflect nurses' perceptions. But, previous research[2,3] has found a strong relationship between nurse reports and institutional reports of events. Although these studies are not focused on nurse violence, they provide sufficient evidence around the validity and reliability of nurses' perceptions. Perceptions and self-reports of events are a useful proxy, especially when administrative data are lacking or access is limited.

HEH: You found about 66% of medical-surgical nurses had never observed a code white drill on their unit as opposed to 50% of mental health nurses. The lack of visible drilling seems like it could feed into an overall narrative of vulnerability and lack of preparation. Is part of violence prevention making it visibly apparent that efforts are indeed in place to prevent violence?

Havaei: Absolutely. Drills are important as they familiarize nurses and other healthcare providers with the part they ought to play should a violent incident occur. I think it is really important to prepare nurses and provide them with the opportunity to practice what to do during a code white incident before it actually happens. Both hospitals and educational institutions can play a part in preparing nurses and nursing students.

HEH: Regarding violence prevention strategies, you found some positives in terms of nurses reporting that facilities took action as a result of incidents. Can you comment on this finding, which runs counter to the weak administrative reactions some nurses report?

Havaei: We found nurses had higher workplace safety perceptions when they believed employers listened to them. This finding was consistent across both medical-surgical and mental health settings. Unfortunately, some administrators fail to actively engage nurses in problem-solving. Organizational empowerment research shows participatory decision-making enables nurses to provide better patient care more effectively and efficiently. Nurses can play key roles in identifying gaps in workplace safety and co-developing prevention strategies because they are at the forefront of patient care.

HEH: Given current trends, perceptions of threats of healthcare violence may continue to increase. Are there one or two take-home points you can recommend for hospitals to address this problem?

Havaei: I would say the key

message is that promoting a safe workplace is everyone's responsibility; e.g., clients and families who interact with healthcare staff in a respectful, nonviolent manner; nurses who recognize that violence is not part of the job and report actual and potential violence incidents to the responsible authority; employers who value and invest in an organizationwide culture of safety and comply with legislative and contractual requirements to ensure workplace safety; and health authorities and governments who mandate organizations to enforce policies and procedures to prevent violence in the workplace. ■

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Antivaccination Movement Fuels Return of Measles

Are some healthcare workers playing a role?

As of March 28, 2019, there were 387 cases of measles reported in the United States — shattering the 2018 total of 372 cases, the CDC reports.[1]

The total includes large outbreaks in several states, including Washington and New York. Employee health professionals probably need no reminding about the chaos that can result from a single undiagnosed case of measles sitting in the ED. It can set off an outbreak response that includes time-consuming and disruptive contact tracing of exposed patients and confirming immunity of healthcare workers. For example, one case in Arizona cost two hospitals some $800,000, largely due to ensuring the immunity of employees and furloughing exposed workers.[2]

Typically, hospitals require new employees to receive two doses of the measles, mumps, and rubella (MMR) vaccine or show proof of prior vaccination. CDC guidelines do not require employees born before 1957 to be immunized but recommend that they receive two doses in the event of an outbreak.

Possible Role of Healthcare Workers

Remarkably, a disease for which there is a vaccine so effective that measles was declared eradicated in the U.S. in 2000 has returned. It threatens not only those who refuse vaccination, but those too young to be vaccinated, and the frail and immune-compromised who cannot mount an immune response.

Measles is one of the most contagious of the infectious diseases. It is an airborne pathogen and can spread from contaminated surfaces and fomites near the infected patient. Healthcare workers caring for measles patients should be immunized, and wear an N95 respirator due to some reports of vaccine breakthrough. Two doses of the MMR vaccine confer 97% immunity, but fully immunized workers have been infected by patients.[3]

How did we get here? An antivaccine movement launching misinformation on the internet is largely responsible, but are some healthcare workers contributing to the problem?

There is some anecdotal information that suggests some physicians may be giving parents a bogus medical reason to decline vaccination in states and school districts with strict exemption policies, says **William Schaffner**, MD, professor of preventive medicine at Vanderbilt University in Nashville.

"Frankly, we ought to review the practices of physicians who glibly provide erroneous medical exemptions," he says. "They ought to be obliged to explain their practice and, if necessary, have their practice supervised and corrected. I think it is unethical to provide a medical exemption that is not valid."

Another vaccine advocate, **Karen Hoffmann**, RN, MS, CIC, FSHEA, FAPIC, president of the Association for Professionals in Infection Control and Epidemiology, shares a story that happened within her own family.

"We know that vaccines are the safest proven way to prevent

disease," she says, adding that she recently tried to make this very point to a relative at a family gathering. Hoffmann said one of her relatives explained she was not immunizing her child because her pediatrician said that all of the vaccines are not necessary.

Such anecdotal accounts are not uncommon, as a recently published commentary by public health experts cited "some pediatricians who publicly cast doubt on vaccine safety." Given the ongoing outbreaks and inconsistent state laws, the authors called for the federal government to mandate vaccinations.[4]

Asked to respond, the American Academy of Pediatrics (AAP) said it was of aware of no such reports involving its 67,000 members. However, the AAP added, not all pediatricians are members of the group.

Prior to the widespread influenza vaccination mandates now in place, many nurses were resistant to being immunized, which they regarded as a personal choice. A 2010 study cited some of the reasons for declining the flu shot among nurses were self-perceived good health, skepticism of the vaccine's value, and fear of side effects.[5]

"There were data to that effect, but the recent data that I have seen indicate that nurses are right up there with other healthcare providers [for flu immunization]," Schaffner says. "One of the contributors to the change is that nurses who work within institutions are increasingly subject to mandates and requirements. The bar has been raised."

Although it has been amplified exponentially by the internet, the antivaccine movement is generally traced to an infamous 1998 article in *The Lancet* that fueled fears that the MMR vaccine may cause autism. This article was "proven to be false" and fully retracted by the journal in 2010 after years of criticism from the medical community.[6]

Science recently struck back, with a massive study involving more than 650,000 children in Denmark. The researchers compared autism rates in unvaccinated children and those who had been immunized against measles, finding that "MMR vaccination does not increase the risk for autism, does not trigger autism in susceptible children, and is not associated with clustering of autism cases after vaccination."[7]

> "MMR VACCINATION DOES NOT INCREASE THE RISK FOR AUTISM, DOES NOT TRIGGER AUTISM IN SUSCEPTIBLE CHILDREN, AND IS NOT ASSOCIATED WITH CLUSTERING OF AUTISM CASES AFTER VACCINATION."

"That is a huge, powerful study," Schaffner says. "The Danes have medical care from birth to death, and they have a totally comprehensive medical record on everybody."

With the current appeal and constant repetition of conspiracy theories, Schaffner says it was just as well the study was not published in the U.S.

"It is important that it was done in Denmark and not in the United States," he says. "I have heard on occasion from antivaccine folks that we in the U.S. have created this 'myth' of vaccine safety."

Added to the accumulated weight of preceding data, the Danish study should finally put the autism-MMR link to the sword.

"If this doesn't put — at least scientifically — the question to rest, nothing ever will," Schaffner says. "But I don't think the antivaccine folks will be convinced. They have not been moved by data in the past."

An Astonishing Decision

A recent CDC report underscores that, as the parents of a child who nearly died of vaccine-preventable tetanus infection still declined immunizations after he recovered.

A six-year-old boy in Oregon, who had never received the tetanus shot or other routine childhood immunizations, cut his forehead while playing outside. His parents cleaned and sutured the wound, but six days later, an infection developed, likely due to *Clostridium tetani*, bacterial spores commonly found in soil, the CDC reports.[8] The diphtheria, tetanus, and acellular pertussis (DTaP) vaccine is recommended for children under seven, with the first three doses given to infants at two, four, and six months. The vaccine is a large part of the reason there has been a 95% decrease in tetanus — including a 99% reduction in fatal infections — since the 1940s, the CDC reports.

The unvaccinated child in Oregon began experiencing brutal neuromuscular symptoms associated with this infection. These included "episodes of crying, jaw clenching,

and involuntary upper extremity muscle spasms, followed by arching of the neck and back, and generalized spasticity," the CDC reports. "Later that day, at the onset of breathing difficulty, the parents contacted emergency medical services, who air-transported him directly to a tertiary pediatric medical center." Diagnosed with tetanus, the boy was an inpatient in a pediatric ICU for 47 days, so sensitive to light and sound he wore earplugs under care in a darkened room. A tracheostomy was placed for prolonged ventilator support and was not removed for 30 days.

After the child recovered, the ICU stay was followed by more than two weeks of additional rehabilitation therapy. He completely recovered after receiving medical care costing some $812,000. Although clinicians explained that tetanus infection does not confer immunity — meaning the child needed to complete the vaccination schedule to avoid future infections — the family declined all immunizations, the CDC reported.

"Now that's an antivaccination family," Schaffner says. "Despite their son's incredible life-threatening illness, they still declined vaccination. [The CDC] describes this very concisely, but you cannot imagine the agony of this illness for this child."

A nationally known vaccine advocate, Schaffner says clinicians and public health are in for a protracted battle to overcome resistance to vaccinations. For example, better health education is needed in schools to teach children about vaccines and the untold number of lives saved by them. With an effective measles vaccine preventing most cases since the early 1960s, the current resurgence in the U.S. finds even nursing and medical students shocked to learn about conditions before vaccination began, Schaffner says.

"When I tell our medical students that before we had vaccine, 400 to 500 people in the U.S. died each year due to measles and its complications, their jaws drop," he says. "They have no concept of how severe measles can be and that in the developing world, it continues to be a major killer of children."

Indeed, the World Health Organization offers this grim global snapshot: "Even though a safe and cost-effective vaccine is available, in 2017, there were 110,000 measles deaths globally, mostly among children under the age of five."[9] ■

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Story of a Nurse Skiing to Work in a Snowstorm Goes Viral

A cellphone photo of an oncology nurse cross-country skiing to work during a recent Utah snowstorm was widely shared on the internet, underscoring the mixture of dedication and joy with which healthcare workers see their duty to patients and colleagues.

"I am certainly not used to things going viral. When the local media called and asked to interview me, I said, 'I'm happy to be interviewed, but this is not really about me," says **Susan Childress**, RN, MN, OCN, director of nursing services at Huntsman Cancer Institute in Salt Lake City.

It was about patients in need of care, and overnight staff at the facility working long hours to provide it.

"That day, the schools were closed and all the kids stayed home, but hospitals — certainly a cancer center — do not get a snow day," she says. "There were a lot of dedicated people that stayed late until someone came to relieve them. People went to amazing efforts to get in that day. When you take care of patients, you do not have the luxury of [staying home]."

As a note for employee health professionals and the ongoing issue of presenteeism: Childress would not have gone into work — on skis or otherwise — if she was sick.

"It's a cancer hospital, but we have the same challenge that other hospitals have," she says. "Our leave system is paid time off, so you don't have sick leave or vacation — just a lump sum. A lot of people don't want to take that sick leave because it eats into their vacation time. We certainly remind employees that if they are sick, they need to stay home."

On the morning of Feb. 6, 2019, almost a foot of snow fell on Salt Lake City. An experienced cross-country skier, Childress knew she could make it the two miles to work and that it would make for a fun story for her colleagues. She had often thought of doing it — and here was the chance. *Hospital Employee Health* asked her to describe the adventure in the following interview, which has been edited for length and clarity.

HEH: The snow continued falling heavily that day when you left for work?

Childress: Yes, I got up early that morning because I was out shoveling my car off and getting ready to go at 4:30 a.m. I went in to get ready, and when I came out, it was all covered again. We had so much snow that morning.

There are a lot of young nurses who had their kids staying home from school, so the night nurses had to get home to their families. I thought about it, and I had always kidded myself that it might be fun to ski to work. I cross-country ski a lot, so it's not any big deal. One of the other nurses I work with snowshoed down from her house to the road and was able to get a ride to work.

HEH: Someone took your picture as you skied along the unplowed road?

Childress: I thought the nurses would get a kick out of it, so I asked someone who was digging out their car to take a picture. When I got to work, I put my skis right inside my office door because they were all snowy. I ran downstairs at about 7:30 a.m., which was a little after the usual shift change. I spent the next half hour just verifying that everybody was making it in and that we had a full plan for coverage because we had a pretty full house that day for patients.

HEH: You say the viral coverage began when a colleague took a picture of your skis?

Childress: Someone took a picture of my skis in my office door and tweeted it out. She kind of sheepishly said, "I hope you don't mind, but I just thought it was great that you skied today. I was showing the picture [of me skiing] to the nurses, and one said, "Can I tweet that out?" She tweeted it out, with something like "#nurses don't have a snow day." About a half an hour later, she runs in and says, "Sue, it's going viral!"

HEH: The communications press officer, who was working from home, began getting media requests?

Childress: Yes, and once it went on local TV, it went out to affiliates. I started hearing from friends back East from nursing school and colleagues from way back. There is so much hard news and controversies, and healthcare is not an easy place to work. I was fine with being the fun story for the day. It was pretty funny because someone called in saying they were were having a hard time getting in. The charge nurse said, "Well, Sue's here, she skied in."

HEH: Is this the kind of staff commitment you have across the board?

Childress: Yes, and I am certainly sympathetic to people who had a hard time getting in, but that is just the culture that we have here. We've got patients to take care of, and we have to get in. It was a really bad snow day, but patients came, too.

I got a call early that morning asking if we should cancel surgeries. I said, "No, we are not canceling surgeries if the surgeons are here." Most of them are skiers with four-

wheel drives. If the patient makes it here through all this, we need to do their surgery. It makes you proud of your staff. When I was checking in with night crew, I asked them if they were worried or needed any breakfast. They were saying they were fine and hopefully it won't be too long [for their replacements to come in]. ■

Dozens of Veterinary Hospital Workers Exposed to Plague-Infected Dog

In an incident that caused considerable anxiety and chaos, 116 employees and students in a veterinary teaching hospital were exposed to pneumonic plague by a dog with unrecognized infection, investigators report.[1]

The scourge of the Middle Ages in outbreaks that killed millions, *Yersinia pestis* is now treatable by antibiotics — but the prognosis diminishes if drug therapy is not given promptly.

Clinicians missed the initial diagnosis of the infected dog, which then exposed a lot of the hospital staff in transport throughout the facility, says **Paula Schaffer**, DVM, lead author of the report and a pathologist/assistant professor at Colorado State University Veterinary Teaching Hospital in Fort Collins.

A scramble began when the dog's plague infection was belatedly recognized, and many staff members contacted for post-exposure prophylaxis were frustrated and concerned about the delay.

"Misdiagnosis in the canine patient exposed a lot of people to a serious disease. This was the biggest concern," Schaffer says.

"Plague is treatable with antibiotics in animals and people when the diagnosis is made early. However, once the disease progresses, it can be very hard to treat successfully. This was very concerning for our staff. Fortunately, we had no reports of illness related to exposure."

While test results for the dog were pending, paper sheets were circulated to personnel to record contact with the dog. After the positive test result, emails were sent to those who signed, followed by an email to all personnel.

"The delay between suspicion and diagnosis of *Y. pestis* resulted in word of mouth traveling faster than official communication, which caused anxiety among personnel," Schaffer and colleagues reported. "Many expressed frustration that suspicion and diagnosis of plague did not occur earlier. Two hospitalwide meetings were held for questions, discussion, and feedback."

The communication process for zoonotic exposures at the hospital was set up to handle small-scale events and was found lacking in this case, according to investigators. The facility is now frequently updating email and phone lists and using a computerized log to document staff contacts that may be zoonotic exposures.

Employee fears were well-founded based on information from the World Health Organization (WHO), which still sees bubonic and pneumonic plague appearing in some human populations.

"Pneumonic plague, or lung-based plague, is the most virulent form of plague," the WHO reports.[2] "Incubation can be as short as 24 hours. Any person with pneumonic plague may transmit the disease via droplets to other humans. Untreated pneumonic plague, if not diagnosed and treated early, can be fatal."

Plague has a horrific history, killing some 50 million people in 14th century Europe, when it was known as the "Black Death."

Those exposed in Colorado included 64 hospital employees, 35 veterinary students, and 17 other employees and students in laboratory roles, Schaffer says.

Treatment recommendations included antimicrobial prophylaxis for those with highest concern for exposure (59% of total cases). Overall, one-third of the 116 people also were under fever and symptom watch.

There were several confounding factors about the case, one being that pneumonic plague is far more common in cats than dogs and is rarely seen in mid-winter, when the animal was brought in. The dog was seen near a dead prairie dog — an animal reservoir of the pathogen via fleas — but did not have classic signs of the infection (enlarged lymph nodes).

"Our protocols have been updated to stress that dogs can get pneumonic plague, that it may not present with typical enlarged lymph nodes, and that plague may present out of season," Schaffer says.

Plague is still present in the world and warrants caution with animals under treatment or brought in facilities as service animals or therapy pets, she emphasizes.

"Veterinary workers are at increased risk for infection with zoonotic diseases, and exposure to infectious agents is an occupational stressor with potential emotional toll," Schaffer and colleagues concluded. ■

REFERENCE

1. Schaffer PA, Brault SA, Hershkowitz C, et al. Pneumonic Plague in a Dog and Widespread Potential Human Exposure in a Veterinary Hospital, United States. *Emerging Infectious Diseases*. 2019;25(4): 800-803. doi:10.3201/eid2504.181195.
2. World Health Organization. Plague fact sheet. Available at: https://bit.ly/2YvVI6V.

Personal Protective Equipment Doffing Errors, Contamination Still Common

Personal protective equipment (PPE) doffing errors were common in a study of healthcare workers treating patients under contact isolation for multidrug-resistant organisms (MDROs), researchers report.[1]

Healthcare workers (HCWs) have been infected and colonized with MDROs, but the primary threat in the study scenario is cross transmission of pathogens from patient to patient. However, the study has implications for worker safety as well, as the type of doffing errors described could lead to occupational infections with much more dangerous pathogens like Ebola.

Researchers at Rush University Medical Center in Chicago studied 125 healthcare workers treating ICU patients who were on contact precautions for methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus* (VRE).

The workers' hands, gloves, and other PPE and equipment were sampled before and after each patient interaction. Researchers also observed removal of PPE and coded errors based on CDC recommendations.

Of 5,093 cultures of workers, patients, and the environment, 652 (14.7%) yielded the target MDRO, the study found.[1]

"Moreover, 45 HCWs (36%) were contaminated with the target MDRO after patient interactions, including four (3.2%) on hands and 38 (30.4%) on PPE," the authors reported. "Overall, 49 HCWs (39.2%) made multiple doffing errors and were more likely to have contaminated clothes following a patient interaction. The risk of hand contamination was higher when gloves were removed before gowns during PPE doffing."

Hospital Employee Health sought further comment on the study from lead author **Koh Okamoto**, MD, in the following interview, which has been edited for length and clarity.

HEH: You found that more than one-third of healthcare workers were contaminated with multidrug-resistant organisms after caring for patients colonized or infected with the bacteria. Would the contamination observed with MRSA and VRE predict similar results with other bacteria and viruses like Ebola?

Okamoto: We think our finding shows that the contamination with multidrug-resistant organisms and lapses in donning and doffing of PPE are not uncommon in busy clinical settings. However, different bacteria or viruses have different characteristics, such as infectious inocula, how long they are viable in environments, to what degree patients can be contaminated with those organisms, how easily organisms can be transmitted, and how easily organisms can be detected by current testing methods.

Although we are cautious about concluding that our findings would be similar with other organisms, certainly our findings provide an important message that our measures of protection against organisms are far from perfect and we need improvement, especially for highly virulent organisms such as Ebola.

HEH: Self-contamination when doffing PPE was a common finding during the 2014 Ebola epidemic. Given your similar findings, do you recommend methods like having a trained observer assist during PPE removal?

Okamoto: An intervention as simple as reinforcing the preferred order of doffing may reduce healthcare worker contamination with multidrug-resistant organisms. Having a trained observer assist could be another practical method in case of highly virulent organisms like Ebola.

HEH: You observed that 72% of workers who used a "gloves-first" removal approach made PPE errors. Is this one of the methods recommended by the CDC, and do you think that should be reconsidered in light of your findings?

Okamoto: Yes, it was one of the CDC recommended methods. Based on our finding, we believe additional study of doffing approaches is needed, and in the meantime, extra caution might be required when removing gloves first. ■

REFERENCE

1. Okamoto K, Rhee Y, Schoeny M, et al. Impact of doffing errors on healthcare worker self-contamination when caring for patients on contact precautions. *Infect Control Hosp Epidemiol* 2019;20:1-7.

CE INSTRUCTIONS

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CE QUESTIONS

1. **The Project BETA approach to manage agitated patients is based on some of the fundamental tenets of emergency psychiatry, including:**

   a. alert rapid response team as patient is in transport.
   b. rapidly sedate and isolate.
   c. put patient in restraints on ED entry.
   d. form a therapeutic alliance.

2. **Judy Arnetz, PhD, MPH, PT, a professor at Michigan State University, emphasized that the most important aspect of a violence prevention program is:**

   a. armed guards and metal detectors.
   b. a central database for incident reporting.
   c. customer service training.
   d. active shooter drills.

3. **A survey of more than 1,000 nurses in Canada found that the majority believe healthcare violence:**

   a. is becoming systemic.
   b. will remain primarily an ED issue.
   c. appears to be declining.
   d. is causing declines in patient census.

4. **Healthcare workers caring for known measles patients should be immunized, but what additional measure is recommended?**

   a. Post-exposure prophylaxis with immune globulin
   b. Work furlough for three days
   c. N95 or comparable respirator
   d. All of the above

CE OBJECTIVES

After reading each issue of *Hospital Employee Health*, the nurse will be able to do the following:

1. Identify particular clinical, administrative, or regulatory issues related to the care of hospital employees;

2. Describe how the clinical, administrative and regulatory issues particular to the care of hospital employees affect health care workers, hospitals, or the healthcare industry at large;

3. Cite solutions to the problems faced in the care of hospital employees based on expert guidelines from relevant regulatory bodies, or the independent recommendations of other employee health professionals.