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INSIDE

RELIAS MEDIA

Safety First: Employee Health and Accident Investigations

By Gary Evans, Medical Writer

When it comes to accident investigation, appearances can be deceiving.

A physician was injured after slipping on a wet hospital floor, but the clues to the cause led away from the site of the accident. A root cause analysis revealed that the chain of events that led to the injury began six months prior, when a maintenance contract lapsed on a dishwasher that was several floors above the accident site.

In addition to treating and reporting injuries, employee health professionals can be instrumental in accident investigations, says **Stephen A. Burt**, BS, MFA, president and CEO of Healthcare Compliance Resources, an affiliate of Woods Rogers Consulting in Roanoke, VA.

Hospital Employee Health caught up with Burt before he conducted a workshop on accident investigation training at the Sept. 5-8 conference of the Association of Occupational Health Professionals in Healthcare (AOHP) in Glendale, AZ.

> THE MAJOR CAUSES OF ACCIDENTS AND INJURIES IN HEALTHCARE INCLUDE OVEREXERTION, REPETITIVE STRESS, PATIENT HANDLING, NEEDLESTICKS, AND SLIPS, TRIPS, AND FALLS.

"The whole idea of an accident investigation is really to prevent future occurrences," he says. "I teach root cause analysis, where you try to find the one thing that if changed, eliminated, or minimized, the accident would not have happened. There may be two causes sometimes, but most of the time you can really narrow it down to one."

The major causes of accidents

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and injuries in healthcare include overexertion, repetitive stress, patient handling, needlesticks, and slips, trips, and falls.

"It is the whole spectrum," he says. "Anytime you have a report of an employee getting hurt, usually employee health gets involved. Often, it is on the back side when an [injured] employee comes to the clinic. But in many facilities, they go out, take a look, and try to see how it could have possibly been avoided."

While violence in healthcare is an increasing concern, its unpredictable nature does not generally lend these incidents to the root-cause analysis approach for accidents, Burt explains.

OSHA defines a root cause analysis as a search for the "fundamental, underlying, system-related reason why an incident occurred that identifies one or more correctable system failures."[1] Likewise, The Joint Commission issued a framework for root cause analysis that emphasizes a similar approach.[2]

"The problem with using a systematic approach for workplace violence is the human nature of the incident," Burt explains. "People who initiate or who are causative factors in workplace violence are usually unpredictable."

Root cause analysis certainly can help define possible scenarios and reasons why someone is potentially violent, but "I think we would be hard-pressed to use the root cause methodology to predict behavior or actions," he says.

What should be predictable is that failure to maintain equipment could eventually result in a malfunction that causes an accident. In the aforementioned case of the physician fall, the source of the water that made the floor hazardous was not immediately apparent.

"There was water on the floor, but there were no carts, no housekeeping staff on the floor," Burt says. "We noticed that the ceiling was leaking — a ceiling tile was dripping."

Upon removing the tiles, a wet pipe was exposed, creating the initial appearance that it was leaking, says Burt, who investigated the case when he worked in a Virginia hospital.

"The water was not coming from the pipe, but running 'along' the pipe. So, we traced the pipe all the way back to the wall."

Again, the water was coming from several floors above from a leaking dishwasher.

"We found that the root cause of the whole thing was that the purchasing department hadn't notified dietary that the contract for the preventive maintenance had lapsed," he says. "No one was coming to inspect and check the machine."

A Framework for Investigations

In general, accident investigation in healthcare should follow these six steps, Burt recommends:

- notification and response;
- site investigation and interviews;
- root cause analysis;
- report of findings and review;
- implement corrective measures;
- ongoing monitoring.

"That gives people a framework of what to do when you are notified," he says.

In the site investigation phase, photos are often taken, but Burt also favors a less conventional approach.

"Something that has always helped me is to take out a piece of paper and draw it," he says. "Sometimes your eye and hand see things that the camera doesn't. It is a little different approach to accident scene investigation."

The investigation eventually leads to a decision point regarding interventions needed to prevent a recurrence; for example, better communication between the purchasing and dietary departments. The corrective measures must balance protecting employees with the real-world issues of healthcare cost containment. Sometimes major changes are warranted, such as if a floor cleaning product used hospitalwide is linked to multiple slips and falls, he says.

"It is a matter of looking at all the variables and doing a cost-benefit analysis in making decisions," Burt says. "We do have cost constraints in healthcare. You have to figure out what is best for the situation and how to maximize the dollars that you have to spend."

After consulting with hospitals on proper respiratory equipment use in the wake of 9/11 and the anthrax attacks, Burt saw that occupational health departments could play a greater role in accident investigations.

"I wanted employee health to be more involved," he says. "Not just looking at the employee that was hurt, but the how, the why, and questions about the physical environment."

For example, Burt noted some of the questions that arise after an employee is stuck by a needle in hospital laundry.

"How did it get there? Did a nurse leave it there?" Burt says. "Was it dropped out of a trash bag or a sharps container? There are a lot of things going on there that employee health can help with. Seeing the injured employee is, of course, important, but the investigative side can help get to those root causes and eliminate future accidents."

Homegrown Safety

Employee health professionals facing a demanding list of responsibilities may see little time in their schedule to take on safety duties, particularly as they extend to outlying units and affiliated clinics and facilities. In a presentation also planned for the AOHP meeting, an occupational health leader says one answer is a "homegrown" safety approach that trains and empowers volunteers with diverse healthcare backgrounds.

"SEEING THE INJURED EMPLOYEE IS, OF COURSE, IMPORTANT, BUT THE INVESTIGATIVE SIDE CAN HELP GET TO THOSE ROOT CAUSES AND ELIMINATE FUTURE ACCIDENTS."

These employees may have regular jobs ranging from nursing, engineering, or hospital security, says **Cory Worden**, MS, CSHM, CSP, CHSP, ARM, REM, CESCO, an employee health and safety officer at Memorial Hermann Health System in Houston.

The result is a web of safety knowledge that improves an organization's safe culture through ownership and accountability.

"A lot of healthcare systems have patient safety, quality, and infection prevention at each of their campuses," he says. "Those programs are very macro and run from the top of the organization down. With employee safety, most organizations either don't have an employee safety manager or that person does double duty with risk management or occupational health."

With leadership in employee safety falling to him and one colleague, Worden sought ways to extend the reach of the program.

"While we can't have managers at each of the campuses, we still need to have safety expertise there," he says.

Personnel who volunteer for safety in these other units are provided with training on the basics as well as the key regulations and recommendations by OSHA and the National Institute for Occupational Safety and Health (NIOSH), respectively, he says.

"We created a resource that contains information about the safety program, how to set up a committee, sample agendas, templates for minutes, and all kinds of training items to do a hazard analysis," Worden explains.

A Sharepoint portal available to employees also includes documents that can be used as handouts, posted on bulletin boards, or sent out as emails.

"These are materials to get out to employees on a consistent basis," Worden says. "It also provides resources for them when they do safety fairs or different events."

The tools include observation checklists so data can be gathered on specific practices.

"We may find in 10 observations

of patient-handling that in five of them the employees were not using the right equipment," he says. "These are leading indicators on whether we are working safely or are at risk of an injury."

Those who volunteer for these duties are offered professional development and paths to safety certification by national organizations.

"Professional development increases their skill level, confidence, and morale," Worden says. "It shows they are a leader in employee safety, and that role is taken seriously."

Training programs also are conducted through an affiliation with Texas A&M University in College Station.

"Our leaders go through courses that cover different safety areas, including safe patient handling, communication, and bloodborne pathogen exposure prevention," he says.

In addition to training and certification, some of the safety volunteers are nominated for awards and honors by the various national associations.

"These volunteers are taking this on and doing it with the same vigilance as a professional," Worden says. "We always make sure we set them up for success and show that we appreciate them."

The program is yielding positive results, dropping in three years from an injury rate of 4.74 per 100 employees to 2.78 injuries per 100 workers.

Work Culture Perceptions

Those are tangible results, but there is some evidence that just the perception of a safety-conscious culture can result in fewer accidents and injuries. Researchers are exploring this connection in some preliminary data from an unpublished study, says **Aaron Spaulding**, PhD, of the Mayo Clinic in Jacksonville, FL.

In a study of 1,800 employees working in a large tertiary hospital in the Midwest, Spaulding analyzed occupational injuries and safety climate perceptions by employees.

> "IF THEY BELIEVED THAT THEIR PEERS AND SUPERVISORS WERE DOING THE RIGHT THING IN TERMS OF SAFETY, THEY HAD FEWER INJURIES."

The perception of a responsibility to comply with safety rules within the unit by healthcare workers was associated with fewer injuries, he said. It follows that policies and feedback that reinforce the safety culture will better protect healthcare workers.

"If they believed that their peers and supervisors were doing the right thing in terms of safety, they had fewer injuries," he says. "As we looked at the overall number of injuries occurring on a work unit, the more highly they scored their supervisors and peers on safety, the less likely they were to get injured."

In contrast, workers that viewed the safety culture as lax were less likely to comply with protective measures to prevent injuries and accidents. From the employee standpoint, this could include seeing that safety issues are going unaddressed, protocols are not followed, and malfunctioning equipment remains unrepaired.

"They may think maybe [safety] isn't that important — nobody else cares," he says. "From a peer perspective, if everybody around me is not doing these activities, then why should I?"

There may be issues with safety in terms of what is communicated to workers on the floor by facility leadership, he adds.

"From a general employee perspective, the supervisor tends to be the voice of the organization," he says. "If management and leadership are really supporting a safety culture, that tends to go a long way in terms of shared values and beliefs [of workers]."

The study found that workers in direct patient care were more likely to incur injury, but were less likely to miss work, he says.

"That was somewhat surprising," he says. "They were at greater risk as direct patient care employees, but workers in nonpatient care were more likely to experience absent days."

Possible explanations include that patient care workers feel a responsibility to be at work for their patients and colleagues, he notes. While these preliminary findings were to be discussed at AOHP, a more detailed analysis will be forthcoming when the research is published, he says. ■

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NIOSH: Violence in Healthcare Is Increasing

'We think we are seeing a true trend'

Although there are cautions and caveats about generalizing the data, occupational health researchers are tracking a disturbing increase in violence in a network of surveillance hospitals.

Researchers with the National Institute for Occupational Safety and Health (NIOSH) analyzed workplace violence injury data from hospitals participating in the Occupational Health Safety Network (OHSN) from 2012 to 2015.[1] Overall, 106 participating hospitals reported a 72% increase in workplace violence injuries. The rate went from 4.4 injuries per 1,000 full-time equivalent (FTE) workers in 2012 to a high of 7.6 per 1,000 FTE. The rate declined to 7.2 in 2015.

The study did not assess the reasons for violence, but cited patient factors such as the increasing prevalence of substance abuse, mental illness, dementia, and other conditions as likely contributing causes. In addition, workplace factors like understaffing, high turnover, and long patient wait times can exacerbate the situation.

Applying a different statistical measure called an "adjusted workplace violence injury rate," the NIOSH researchers reported that injuries due to violence increased by an average of 23% each year. That is a rather staggering finding, and there are caveats to be cited, but it bears noting at the outset that the researchers think the increase is real.

"The caveats are important, but even given them, we are relatively confident that what we are seeing among this group of hospitals is something that is also being seen nationally," says **Matthew Groenewold**, PhD, MSPH, lead author of the NIOSH study. "Workplace violence incidents do seem to be increasing in hospitals generally in the U.S., and we definitely see it in the data from our OHSN hospitals."

Caveats include that the participating OHSN hospitals represent a "self-selected" group, and not a randomized sample representative of hospitals nationally, he says.

"But one reason that we think we are seeing a true trend — an increase — is that if you look at nationally representative data from the Bureau of Labor Statistics, you see a similar trend," he says.

Nurses and nursing assistants were the primary victims of violence, with the majority of assaults coming from patients. The latter is based on the finding that the recorded assailants were almost always patients, but the problem is that the incidents were not always completely documented by the hospitals.

"The OHSN hospitals have tools for data collection, with sort of a minimum core set of variables that ought to be collected," Groenewold says. "But we found that data the participating hospitals submitted to us often had either missing or unknown values for a number of these variables."

Furthermore, it was not clear from the survey whether the missing information was simply unknown or was known but not reported.

"In order to do an effective job of prevention, you really have to have a good handle on what is going on," he says. "Collecting and routinely analyzing surveillance data in order to monitor how frequently these workplace violence incidents happen — and also the characteristics associated with them — is really important to prevention."

NIOSH is recommending just that to its OHSN hospitals, asking for further investigations of incidents to provide the specifics if possible.

"The occupational health department or whoever else is investigating should actually go out and collect the rest of the data," Groenewold says. "The flip side of that may be that in a lot of cases where these variables were left blank or marked unknown, the information was known and it just wasn't recorded."

The recommendation in that case is to make improvements in reporting procedures or informatics to remove barriers and facilitate the complete entry of the known data.

As cited in the paper, "OSHA defines a work-related injury or illness as recordable if it results in death, unconsciousness, days away from work, restricted work, transfer to another job, or requires medical treatment beyond first aid."

"From the OHSN perspective, we only analyze data for OSHA recordable incidents," Groenewold says. "We don't mean to say by that, the [other incidents] are not important. Hospitals certainly can record those data. We would not discourage them from recording those data and analyzing it."

A total of 3,263 violent events were reported by the hospitals. By occupation, nurses in OHSN-

participating hospitals sustained most workplace violence injuries (40%), followed by nonpatient-care personnel (33%) and nursing assistants (20%).

Within outpatient care in OHSN-participating hospitals, the most common location of workplace violence injuries was the ED (19%). Beyond the ED, most workplace violence events occurred in patient rooms (53%), followed by corridors, elevators, and stairwells (10%), and examination rooms (6%).

"Among the 540 injuries where the severity was reported, 261 (48%) resulted in lost work days, job restrictions, or transfers," NIOSH reported.

Nurse Aides at Risk

Pharmacists and physicians had the lowest rates of workplace violence events. Compared to all other healthcare workers, nursing assistants and nurses experienced higher rates of workplace violence. The study also suggests the possibility of an "underappreciated disparity" in workplace violence injury rates between nurses and nursing assistants who work in hospitals.

The excess risk for nurses for workplace violence injuries is well-documented in the literature, Groenewold says. Similarly, reports clearly indicate that nurse assistants in long-term care settings are at heightened risk of violence.

"Other than a couple of studies that we cite in the paper, there has not been a lot in the literature describing the excess risk to nursing assistants working in hospitals," he says. "We found that, although nurses account for most workplace violence injuries, nursing assistants in hospitals have a much higher rate of injury. Their risk really seems to be higher."

One explanation is that hospital nurses work in administrative, educational, and other duties that are not directly involved in patient care. Such is not usually the case with nursing assistants, who spend much of their time in patient-care duties.

"The fundamental mechanism underlying both nurses' and nursing assistants' high workplace violence injury rates is likely to be their more frequent, prolonged, and direct exposure to patients compared with other hospital workers," the authors concluded. ■

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The Link Between Burnout and Medical Errors

The adage that protecting the worker protects the patient is increasingly borne out in studies of burnout and medical errors. In a recently published example, researchers evaluated physician burnout, well-being, and work-unit safety grades in the context of self-reported major medical errors.

In a national survey of physicians, burnout was measured using a questionnaire that assessed levels of depersonalization and emotional exhaustion. Fatigue was measured using a standardized self-assessment questionnaire. Symptoms of depression also were evaluated and respondents were asked this question about suicidal ideation: "During the past 12 months, have you had thoughts of taking your own life?"[1]

Work unit safety grades were assessed using the traditional A to F scale, and the physicians were asked this question about medical errors: "Are you concerned you have made any major medical errors in the last three months?"

Of 6,586 physicians responding, 54% reported symptoms of burnout, 33% reported excessive fatigue, and 6.5% reported recent suicidal ideation. In addition, 4% reported a poor or failing patient safety grade in their primary work area, and 10.5% reported a major medical error in the prior three months.

"Physicians reporting errors were more likely to have symptoms of burnout (78% vs. 51.5%); fatigue (47% vs. 31%), and recent suicidal ideation (13% vs. 6.5%)," the authors reported.

"In this large national study, physician burnout, fatigue, and work unit safety grades were independently associated with major medical errors," they concluded. "Interventions to reduce rates of medical errors must address both physician well-being and work unit safety."

Hospital Employee Health discussed the implications of the findings with lead author **Daniel Tawfik**, MD, MS, an instructor in pediatric critical care at Stanford University School of Medicine in Palo Alto, CA.

HEH: You conclude that even in units with a strong safety culture, burnout is still independently predictive of medical errors.

Tawfik: We know from prior studies that burnout actually predicts

subsequent reporting of errors, and reporting of errors predicts subsequent burnout. It does seem to be a vicious cycle, where one begets the other, and you can end up in a spiral. There has been a prevailing thought that just improving safety practices of individual work units is really all that is needed to reduce medical errors, and by extension break this cycle.

But what we found in this study was that even after adjusting for those safety practices of the work unit, there still was a very strong relationship between burnout and medical errors. That tells us that just trying to improve the safety practices themselves is helpful, but it is not sufficient to truly reduce medical errors.

To really achieve better error reduction we need a multipronged approach that includes improvements to safety practices, but also focuses on individual physicians themselves in reducing their burnout.

HEH: You also found a kind of incremental effect, meaning that medical errors tend to rise along with burnout scores.

Tawfik: This is specifically related to the burnout scales. Often, we categorize people into either they are experiencing burnout or they are not. We tend to dichotomize, and actually much of the paper was analyzed in that way. But we also looked at the burnout scores along these scales.

The measurement of burnout takes place on three different scales, and each scale ranges from 30 to 54 points. We found that even one-point changes on those scales up or down was associated with a change in the likelihood of reporting errors. That suggests to us that it's not just an issue of experiencing burnout or not — it is actually a continuum. Even moving a little bit along that continuum can make measurable differences.

HEH: Intuitively, one would think that units with lower safety grades would have more medical errors. However, you found a little more granular data on that.

Tawfik: We did find, as hypothesized, that physicians in units with worse safety grades did report more errors. They have three to four times the odds of reporting an error if they are in one of those units with a poor or failing safety grade. But we found that does not explain the whole picture. Even physicians in units with a safety grade of "A," if they were burned out, had a much higher likelihood of reporting recent errors, versus those in units who were not burned out.

> "EVEN AFTER ADJUSTING FOR THOSE SAFETY PRACTICES OF THE WORK UNIT, THERE STILL WAS A VERY STRONG RELATIONSHIP BETWEEN BURNOUT AND MEDICAL ERRORS."

So that tells us that just moving units from a safety grade of "B" to "A" doesn't reduce as many errors as it could if you were also focused on reducing the burnout in physicians.

HEH: You found that individual wellness factors can be protective, but as they decline burnout appears?

Tawfik: Wellness is a constellation of factors that includes quality of life and the lack of depressive symptoms. In addition to burnout, we looked at markers of well-being. We looked at depressive symptoms, fatigue, suicidality. We found with all of these markers of well-being clinically significant associations between poor well-being and more medical errors. So it is not just burnout itself, but all of these markers of well-being that we looked at that showed similar relationships.

HEH: You found high levels of fatigue in the physicians. Was that in line with the previous research?

Tawfik: That is similar from what we expected from prior studies. In general, it is higher among physicians than in the general population. But that is what we expected. We used that as an adjustment variable to adjust away the fatigue aspects. In the analysis, the relationship we reported for burnout and medical errors was adjusted for the level of fatigue that each physician was having.

Dealing with the resource-demand imbalance is really going to be the most important way to address fatigue. One important contributor to burnout, and likely to fatigue as well, is the excess documentation burden that really has crept into medicine over the last decade or so. Physicians are spending more time documenting what happened with their patients than they are actually spending with the patients themselves. ■

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Reducing Burnout Through Spiritual Leadership

Timeless values give workers a sense of purpose, community

Spiritual values common to many major religions can provide a powerful tonic against burnout in healthcare workers, giving them a sense of purpose and community if incorporated into leadership and work culture, an advocate of such programs emphasizes.

"The theory underlying spiritual leadership, as well as the model we use, is universal," says **Jody Fry**, PhD, a professor at Texas A&M University-Central Texas in Killeen. "You can reduce burnout in any organization, and hospital employees all face burnout just because of the nature of the work."

A recent paper by Fry and colleagues reports that incorporating spiritual values in a group of clinical lab workers showed effectiveness in adding meaning to their work and reducing burnout.[1]

"This is from a management leadership perspective in terms of how can we bring a greater sense of purpose and community into the work?" says Fry, the coordinator of the One Planet Leadership Program at the university. "The world's spiritual religious traditions are primarily about how to go inward to find a source of strength beyond ourselves so we can go forward and love and serve others."

'Spirituality' Not Necessarily Religious

Although pastoral and chaplain programs are a mainstay of healthcare counseling, some facilities balk at the notion of introducing "spirituality." This may be from wanting to avoid advocating a specific faith or, on the contrary, some concern about the nebulous nature of the word.

"The spiritual aspect of it is really not religious-based at all," says Fry, who has been researching and teaching about this subject for almost two decades. "It is fundamentally about focusing on the spiritual needs that we all have, including a sense of calling and purpose."

A search for meaning is fundamental to the human condition, and this often is manifested in a sense of belonging to a community, he says.

"We want to have a sense of integrity and be understood and appreciated for who we are, just as we are," Fry says. "Our research has shown that if you can satisfy these needs in an organization, some pretty magical things can happen."

Components of spiritual leadership resonated with medical lab workers, who responded positively to a series of value statements.

"This research shows it can have a significant impact on reducing burnout in at least one area of healthcare," he says. "There are a lot of pressures, and the lab workers are removed from patients or clients. They don't have direct contact, but can kill people by making mistakes — that is pretty heavy pressure."

Walk the Walk

The lab workers assessed value statements like, "The leaders of my organization walk the walk as well as talk the talk." Another example is, "The work I do makes a difference in people's lives." To the extent healthcare workers can be empowered to feel these core beliefs, the less likely they are to succumb to burnout and other manifestations of occupational angst.

"Ultimately, what is required is some higher power. It can be an organization, especially if it is truly loving and serving its stakeholders — its people," he says. "If the organization can give people a sense of purpose grounded in what we call values of 'altruistic love,' that's the higher power. It doesn't have to be a divine entity."

Another value statement assessed in the study is, "I feel my organization appreciates me in my work. I feel highly regarded by my leaders."

One way to introduce a spiritual aspect to leadership is supporting mindfulness training, a meditation approach that is becoming increasingly popular in wellness programs of all stripes.

Spiritual values like compassion and empathy resonate with workers, and they will respond if these traits are part of the work culture, Fry says.

"This is based in loving values such as kindness, forgiveness, acceptance," he says. "The hypothesis of the whole study is that spiritual leadership would work through community membership to reduce burnout, and we have found that. Spiritual leadership creates a sense of a loving community, and we come together to support each other." ■

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Make Protective Eyewear More Accessible

Workers without eye protection exposed to splashes

Which healthcare worker body site is most frequently exposed to blood and body fluids, according to national surveillance data? The eyes have it.

The major cause of this is that workers don't have access to eye protection, says **Amber Hogan Mitchell**, DrPH, MPH, CPH, president and executive director of the the International Safety Center.

The center runs the Exposure Prevention Information Network (EPINet) so hospitals can measure occupational exposures to sharps injuries and other blood and body fluid exposures. *Hospital Employee Health* asked Mitchell to comment on her call for a new "culture of accessibility" in healthcare, which would make routine access to eye protection a given.

HEH: This is kind of a new paradigm in looking at personal protective equipment (PPE). Is this something you thought of in light of our inability to be separated from smartphones?

Mitchell: We always have our phones accessible. How is it that we are not transitioning that accessibility demand to something that is going to protect us, like PPE? How can we shift that culture to, "Oh my gosh, I forgot my eye protection!" That panic that we have when we forgot our phones.

HEH: What trends are you seeing in eye exposures in surveillance data?

Mitchell: We know from our EPINet data that 65% of all exposures are to the eyes. We found that less than 6% of all those exposures are to employees who were wearing eye protection of any kind. That could be face shield, goggles, even eyeglasses with side shields.

I just did a presentation to the American Association of Critical-Care Nurses in Boston and I asked the audience why they felt this was the case. Most of them said it because the PPE — especially eye protection — is not accessible to them. They are frequently not on the infection control caddies or PPE carts. They may be somewhere off in a storage room, but healthcare workers don't know where they are.

So the accessibility issue really rises to the top. Some hospitals are actually considering something like when a new employee starts and they get their ID badge, they also get to pick the kind of eye protection they like. They are given a badge and eye protection. More facilities are thinking about what longer-term, reusable PPE looks like as part of their uniform. Or for disposable eyewear, making space in wall caddies for that as well.

HEH: Is this primarily eye protection, or is there an accessibility gap for other PPE?

Mitchell: Patient rooms and exam rooms are all outfitted with multiple sizes of gloves. But I think people think about gloves more as protecting the patient than protecting themselves. Gloves have become more of an infection prevention protective barrier. When they are in an isolation room, there may be disposable gowns available outside that room or on a caddy.

But most of the exposures are actually happening to the face — there is limited accessibility for personal protective equipment that protects the mucous membranes like eye protection, surgical masks, and face shields. Accessibility has become a real problem.

HEH: You suggest that personalizing eye protection may lead to greater compliance.

Mitchell: Surgical personnel pick a surgical cap that really defines who they are — whether they like to cook, they like dogs, or surfing. You will see people with these different types of caps on that really reflect their personality. That may be a way to improve eye protection use — having different colors, themes, or styles.

There are several manufacturers making eye protection that looks more like outdoor protection or for sports lovers. There are a lot of different styles and sizes, and also prescription eye protection. We could have these available through discount codes or other ways people could pick their own style. Making reusable eye protection a more personal choice is an opportunity to increase compliance. It could be something that is comfortable to you, reflects your personality, or say if you are working in pediatrics, something that reflects your patients.

For disposable eyewear, I think it is really a matter of building out these traditional infection control caddies that are either wall- or cart-mounted. They should have areas for disposable eyewear that do not take up a lot of space. The reusable eyewear is sturdier and takes up more space, but disposable eyewear has come a long way.

I think the greater likelihood of increasing compliance is if people had a choice to wear something that best suited their personalities and their patients. There are vendors that have eye protection that is slip-resistant and really flexible. The technology for eye protection has come a long way from the rigid, heavy plastic of a decade ago. ■

Texas-sized Mumps Outbreak Includes Nine HCWs

Investigation and follow-up is labor-intensive

A large outbreak of mumps last year in Texas included nine healthcare workers, many of whom were apparently infected in the community.

The outbreak was very disruptive as healthcare workers with no proof of immunity had to be furloughed, and one occupational case was acquired by a phlebotomist.

"This was a nurse who was born before 1957, but had no documented immunity," said **Thi Dang**, MPH, CHES, CIC, a state health investigator who worked to educate workers and prevent mumps spread in healthcare facilities. "She collected specimens from suspected cases and did not consistently wear a mask."

The 2016-2017 mumps outbreak in Texas was the largest in 20 years, Dang recently reported in Minneapolis at the annual conference of the Association for Professionals in Infection Control and Epidemiology (APIC).

"We had nine mumps cases who worked in healthcare, including in acute care, a community clinic, EMS/fire, a skilled nursing facility, and a state-supported living center," Dang said. "The point is that even if you don't have cases in your hospital, they could be coming in from the community because your staff live in the community."

From 2011 to 2015, annual mumps cases in the state ranged 13 to 68 people. Dang usually only sees nine mumps cases annually in the large rural public health district she covers.

"From October 2016 to May 2017 in Texas we had 490 cases with 12 outbreaks," she said. "In our region, we had 387 cases with seven outbreaks."

In her health district, the situation became like "outbreaks within outbreaks." For example, the phlebotomist who acquired mumps in a hospital exposed 34 patients before the diagnosis was made, she said.

"We monitored those 34 patients, and two of them went into long-term care so we monitored them there as well," she said.

A childhood disease now largely eliminated through vaccination, mumps can result in outbreaks in susceptible populations much as is seen with measles. With both viruses, clinicians who rarely see a case may miss the diagnosis, compounding subsequent follow-up of exposures. Mumps is a paramyxovirus that usually causes parotitis, the classic swelling in the salivary glands. It also can present with a low-grade fever, malaise, and headache.

"It spreads through mucous or droplets from an infected person, usually through a cough or a sneeze," Dang said. "The incubation period for mumps is anywhere between 12 and 25 days. However, we typically see signs around 16 to 18 days following an exposure."

Within the wide variety of healthcare facilities in her health district, Dang said many staff knew little about mumps, and proof of immunity often was lacking. During the outbreak, mumps education signs and procedure masks were placed at entrances and in waiting areas.

"The staff at these facilities were educated on the signs and symptoms of mumps and how to properly mask patients," she said. "We made sure they were separating people with potential mumps from the rest of the population in a waiting area or in the actual hospital."

Anyone in the community diagnosed with mumps was excluded from work or school until five days after onset of parotitis. "It was really difficult to get immunization history for these patients, for children as well as adults," Dang said.

The mumps message was somewhat complicated by flu season, which calls for respiratory etiquette to prevent spread in waiting areas and within facilities.

"It was difficult to get people focused on looking for parotitis and to still emphasize and follow respiratory etiquette," she said. "They had to tie in the [saliva] swabbing with the rest of the regular respiratory precautions that people were looking for. That was actually a big learning curve."

Much like community members, healthcare workers with active mumps were excluded from work until five days after onset of parotitis.

"Ever facility I talked to, I asked them to check for documented immunity [of staff]," she said. "Documentation was two doses of MMR [measles, mumps, and rubella vaccine], physician documentation of disease, or positive titers. Birth before 1957 was not accepted as evidence of immunity."

Healthcare workers with documented immunity — even if they did not wear a mask and were exposed to a mumps case — were not recommended for exclusion from work, she said.

"Those who did not have documented immunity and had unprotected exposures were excluded from work from the 12th day after the first exposure to mumps through the 25th day after the last exposure," Dang said.

Complicating the response, Texas state law allows individual long-term care facilities to decide whether staff must be immunized for mumps. "None of the facilities I worked with had any immunization requirements," she said. "They only did the minimum, which was to offer hepatitis B and influenza [vaccines]. That was very difficult for me, coming from acute care."

The number of healthcare workers excluded from duty due to lack of documented immunity included five in skilled nursing facilities, three in acute care facilities, and one in a community rehabilitation center.

In January 2018, the CDC recommended giving a third dose of the MMR vaccine in outbreaks — an action that was not implemented until after the outbreak. Thus, even for those with the standard two-dose history of immunization would receive a third dose if they are considered by local health authorities at increased risk of acquiring mumps during an outbreak. ■

AOHP, NIOSH Update Respirator Resources

The Association of Occupational Health Professionals in Healthcare (AOHP) has updated its Web Resources Guide, which includes links to all manner of regulations, guidelines, and training materials by federal agencies and healthcare organizations.[1]

In addition, the National Institute for Occupational Safety and Health (NIOSH) has posted a series of answers to commonly asked questions about respirator use. The Filtering Out Confusion questions deal with respirator reuse, fit-testing, seal checks, and other issues.[2-4]

For example, consider this new NIOSH answer to a common question on fit-testing[3]:

Question: Can I have facial hair and still be fit-tested to wear a tight-fitting respirator?

NIOSH: "The OSHA respirator standard prohibits tight-fitting respirators to be worn by workers who have facial hair that comes between the sealing surface of the facepiece and the face of the wearer. Facial hair that lies along the sealing area of a respirator, such as beards, sideburns, or some mustaches, will interfere with respirators that rely on a tight facepiece seal to achieve maximum protection.

Research tells us that the presence of facial hair under the sealing surface causes 20 to 1,000 times more leakage compared to clean-shaven individuals. Gases, vapors, and particles in the air will take the path of least resistance and bypass the part of the respirator that captures or filters hazards out. A common misconception is that human hair can act as a crude filter to capture any particles that are in the airstream between the sealing surface and the user's skin.

However, while human hair appears to be very thin to the naked eye, hair is much larger in size than the particles inhaled. Facial hair is not dense enough and the individual hairs are too large to capture particles like an air filter does; nor will a beard trap gases and vapors like the carbon bed in a respirator cartridge. Therefore, the vast majority of particles, gases, and vapors follow the air stream right through the facial hair and into respiratory tract of the wearer. In fact, some studies have shown that even a day or two of stubble can begin to reduce protection."

In a related development, the AOHP and NIOSH signed a three-year Memorandum of Agreement (MOA), effective July 12, 2018, that extends the association's collaborative relationship as a Total Worker Health affiliate.

NIOSH launched the Total Worker Health program in June 2011 to advance worker well-being with policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts, the AOHP reports. ■

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HOSPITAL EMPLOYEE HEALTH

CE INSTRUCTIONS

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CE QUESTIONS

1. **Stephen A. Burt, BS, MFA, said a root cause analysis approach can identify and predict incidents of violence.**

   a. True
   b. False

2. **A homegrown healthcare safety program resulted in the injury rate of 4.74 per 100 employees decreasing to which of the following in three years?**

   a. Zero
   b. 1.75
   c. 2.78
   d. 3.33

3. **One reason NIOSH researchers think increasing rates of violence represent a true trend is a comparable increase in which other database?**

   a. OSHA 300 log
   b. Bureau of Labor Statistics injuries database
   c. CDC NHSN surveillance
   d. Joint Commission Sentinel Alert

4. **Which of the following was not accepted as documentation of mumps immunity for healthcare workers during a Texas outbreak?**

   a. Two doses of MMR
   b. Physician documentation
   c. Blood titer evidence
   d. Birth before 1957

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.