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RELIAS MEDIA

Rhode Island Passes Landmark Law Protecting HCWs from Surgical Smoke

Small state takes big step; others may follow

Gary Evans, Medical Writer

In what may be a tipping point in the long struggle to end surgical smoke exposures in the operating room, Rhode Island has become the first state to mandate that healthcare facilities take measures to protect healthcare workers (HCWs) from the hazardous plume.

Testifying before passage of the bill recently was **Julie Greenhalgh**, RN, an operating room nurse with 42 years of experience in Cranston, RI.

“As a young nurse, we were at the beginning of cauterization,” she said. “We knew that it smelled — a powerful, obnoxious odor — but we weren’t aware of the side effects.”

She attributes her chronic lung disease to decades of occupational exposure to surgical smoke.

“I have a constant cough, bronchitis, and asthma,” she said.

“I have never smoked cigarettes and never had asthma as a child.”

Testifying at a Feb. 14, 2018, hearing on the bill, Greenhalgh held up a plastic bag of medications she uses to treat her lung disease.

“I have three inhalers that I use every day as well as some

oral medications,” she said. “I have been trying to promote this for many years. Passing this bill will allow nurses to work to save patient lives without putting their own lives in danger.”

Effective Jan. 1, 2019, the Rhode

“WE KNEW THAT IT SMELLED — A POWERFUL, OBNOXIOUS ODOR — BUT WE WEREN’T AWARE OF THE SIDE EFFECTS.”

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Island law gives hospitals and surgical centers 90 days to submit a policy to state health officials detailing their plan for “evacuation of surgical smoke plume [as] required in operating rooms.”

Terri Plante, RN, an operating room nurse with 16 years’ experience, also testified in support of the bill, describing working in ORs with and without smoke evacuation equipment.

“If you are not using smoke evacuation, the smoke comes up from the surgical incision,” she said. “Your eyes burn, your throat burns, it’s in your hair, and your clothing smells. The smoke travels throughout the entire operating suite. It travels under the door and into the hallways.”

In contrast, use of equipment to remove the plume is “100% different,” she added. “You are not choking and coughing and there is no smell in the operating room.”

Some hospitals have the surgical evacuation equipment in use, but others use it only according to the surgeon’s preference. Echoing a common complaint about the situation, Plante said OR nurses are exposed for longer periods during multiple procedures by different surgeons.

“As nurses, we are there for 8-, 10-, and 12-hour shifts for three, four, and five days a week. [That is] a lot of exposure. It’s pretty bad,” she said.

Highlighting the toxic nature of surgical plume was **Danielle Glover**, MPA, associate director of government affairs at the Association of periOperative Registered Nurses (AORN). “There are 150 chemicals in physical plume,” she testified at the hearing. “[It contains] toxic gases such as carbon monoxide and hydrogen cyanide, carcinogenic and mutagenic substances.”

Will OR Nurses Leave Field?

Signed into law in June 2018, the legislation was originally introduced by RI State Rep. **Joseph M. McNamara**, who was convinced in part by the hazard data.

“I looked at the statistics related to the ascent of surgical plumes, especially data [for] nurses in the OR exposed to this for long periods of time — five or six hours,” he tells *Hospital Employee Health*. “It was the equivalent of smoking half a pack of cigarettes a day. It really has a cumulative detrimental health effect on these individuals.”

This contention has not been without controversy, as skeptics and critics claim the threat of surgical plume is being overstated to sell the evacuation equipment. (*See related story, page 124.*) However, no one testified in that regard at the Rhode Island hearing, with McNamara saying the primary pushback during discussions was the cost of purchasing and implementing the equipment.

“With these surgical teams and the level of training these individuals have, certainly any expense would be mitigated by them not being exposed to these plumes and surgical smoke,” McNamara says. “It is detrimental to their health, and therefore they don’t want to participate in this line of nursing. That is a real cost — highly trained people are leaving this profession because of the environment they have to work in. They know it is unhealthy.”

Having done some basic dissection work with scalpels in college, McNamara was impressed by the equipment when he tested it by cutting oranges.

“The devices I tried had the evacuation systems hooked up to them,” he tells *HEH*. “I was amazed at the precision of these instruments. It’s a small hose that is attached to the end of the instrument that is very light and swivels 360 degrees.

State by State?

Saying he hopes Rhode Island inspires other states to follow suit, McNamara argues the increasing use of technology like laser surgery and electronic scalpels underscores the need to address the issue.

AORN certainly sees the Rhode Island law as a model for other states, and also is concerned about nurses leaving the field, Glover says.

“This is definitely a concern that we hear,” she says. “Perioperative nurses are twice as likely as the general public to develop respiratory illnesses. When you are being exposed to smoke on a daily basis — all of the toxins and the mutagenic, carcinogenic substances in it — this is definitely something that we have heard from our nurses.”

AORN will be in touch with its members in Rhode Island to help them comply with the law.

“The law requires the adoption of policies that require the evacuation of surgical smoke,” Glover says. “What a hospital or an ASC policy says is not outlined in the legislation. They can do what works best for them. There is a lot of flexibility for facilities.”

AORN has resources available for facilities that want to go smoke-free, encouraging voluntary efforts while it continues to lobby for state laws.

“Colorado had legislation last year that was very like [RI], so more states are looking at this and considering it,” she says. “Part of it is

about raising awareness of the issue and making sure that the education is out there.”

Half a Million Exposed

In that regard, the National Institute for Occupational Safety and Health (NIOSH) reports that almost 50% of workers who may come into contact with surgical smoke have never received any education about the mix of chemicals and biologicals found in the plume. “Each year, an estimated 500,000 healthcare workers, including surgeons, nurses, anesthesiologists, surgical technologists, and others, are exposed to laser or electrosurgical smoke,” NIOSH reports.¹

Plume removal advocates in California pushed a bill that made it as far as the governor’s desk this year, but it was vetoed and rerouted through California’s Division of Occupational Safety and Health.

“They are looking at going through the regulatory route,” Glover says.

The Rhode Island law is not tied to state or federal OSHA, which has no specific regulation on the issue and can only protect workers in the OR though its general duty clause.

“The general duty clause is insufficient because it is not specific about what exactly a safe workplace is and they don’t provide clear guidance on smoke evacuation or elimination,” Glover says. “That creates a lot of inconsistencies between facilities and systems. At this point, OSHA recognizes the dangers of surgical smoke, but there is no clear guidance [for evacuation].”

As a result, the protracted status quo finds many healthcare workers inhaling surgical smoke daily because there is little federal or state

enforcement and their hospital leaves the decision to the preference of surgeons. While surgeons often are typecast as highly individualistic “cowboys,” more of them may gradually accept the equipment as early adopters like **Christian DiPaola**, MD, and normalize the practice.

“When I was a resident in an orthopedic surgery, nobody really used the smoke removal devices,” says DiPaola, an orthopedic surgeon specializing in spine procedures at the University of Massachusetts Medical School in Worcester. “It was something that always bothered me. It is annoying and noxious. Smoke is no good for you — that is obvious.”

Nurses complained, but DiPaola says many of his surgeon colleagues said the plume did not bother them. Given NIOSH reports of the toxins and carcinogens in the smoke, he compares the current situation to having employees X-ray patients without taking the well-established measures to prevent occupational radiation exposures.

“If people didn’t pay any attention to that, heads would be rolling,” he said.

DiPaola started looking into surgical smoke removal after his fellowship in a hospital that used evacuation devices. He even tried to invent his own, eventually getting in touch with a manufacturer selling a design that suctions the smoke right as it is released from the scalpel, eliminating the need for handheld tubes that are sometimes used.

The hospital accepted his proposal to stock the disposal equipment, but did not force other surgeons to follow suit.

“The day I started using it, I never went back,” DiPaola says. “I won’t do a case without it. I even use it for very small cases, but in the big

scoliosis cases that I do, you cauterize a lot.”

The nurse reaction was immediate and favorable, but other surgeons continued to work without plume removal.

“Ultimately, what goes on in the surgical field is the surgeon’s choice,” he says. “The nurses appreciated the air quality in the room and I thought,

‘This is something we are doing for everybody, not just for me.’ It didn’t add any complexity to my operations — it’s just a little piece of foam that sticks out.”

Within the hospital, the use of the evacuation device has grown slowly, as others are gradually exposed to the equipment and the difference in OR air quality.

“Almost invariably, the people that try it don’t stop and go back,” he says. ■

REFERENCE

1. Steege AL, Boiano JM, Sweeny MH. Secondhand Smoke in the Operating Room? Precautionary Practices Lacking for Surgical Smoke. *Am J Ind Med* 2016;59(11):1020–1031.

Hazards of Surgical Plume: Is the Jury In?

Despite skeptics, issue gaining momentum

In the face of accumulating evidence and political momentum, there are still skeptics and critics who claim the hue and cry over surgical smoke is much ado about nothing.

The consensus from these observers seems to be that the risk to healthcare workers is being exaggerated by manufacturers trying to sell plume removal devices.¹ But consider that this is the equivocal conclusion of a 2013 peer-reviewed article from the United Kingdom that is commonly cited among the evidence that the threat is overblown:

“The potentially carcinogenic components of surgical smoke are sufficiently small to be respirable,” the authors note.² “Infective and malignant cells are found in the smoke plume, but the full risk of this to the theater staff is unproven. Future work could focus on the long-term consequences of smoke exposure.”

That is not particularly reassuring, especially to an OR nurse who may be inhaling surgical smoke for many hours a day throughout a full work week.

“I would challenge them to work

in a smoky environment in the OR day after day like a perioperative nurse, tech, or anesthesia provider,” says **Kay Ball**, PhD, RN, CNOR, FAAN, professor of nursing at Otterbein University in Westerville, OH. “Our exposure is much greater than surgeons in many cases. My PhD research³ shows that perioperative nurses report twice the incidence of many respiratory problems compared to the general population.”

The duration and frequency of exposure is an important variable, says **Christian DiPaola**, MD, a surgeon at the University of Massachusetts Medical School in Worcester.

“Most surgeons have a clinic schedule and an OR schedule,” he says. “I tend to operate two or three days a week. An OR nurse or a scrub tech is going to be in that setting typically 40 hours a week. That’s an important factor.”

Still, it can be difficult to link long-term occupational exposure with development of disease, as another paper cited by skeptics concluded that “long-term exposure to surgical smoke, as measured by the duration of operating room

employment, does not appear to increase the risk of lung cancer.”⁴

Intuitive Repulsion

Some compare the situation to cigarette smoking, which went through various research and challenges before being irrefutably linked to cancer. DiPaola, who uses smoke removal devices, cites more immediate reactions and intuitive repulsion.

“Have you smelled the air? Take a whiff and you’ll know it. Your brain is telling you,” he says. “You walk outside an OR where they are not using smoke evacuation — it smells like a barbecue.”

The presence of the smoke bothered him from the onset in surgery, but the only clinical sign DiPaola links to the smoke is headaches.

“There were times I would get headaches, and that is probably one thing I would tie to it,” he says. “I have allergies, anyway. I take seasonal allergy medication, and I certainly don’t want to be adding to that. I noticed the headaches got way better. But the long-term things, you are

not going to necessarily link. Are you going to get lung cancer?”

To those outside the OR, it may be difficult to understand why anyone would willingly breathe surgical plume given these findings by the National Institute for Occupational Safety and Health (NIOSH).⁵

“Surgical smoke has been shown to contain a variety of toxic gases, vapors, and particulates including carbon monoxide, polyaromatic hydrocarbons, benzene, hydrogen cyanide, formaldehyde, viable and nonviable cellular material, viruses, and bacteria,” according to NIOSH. Transmission of human papillomavirus (HPV) “through surgical smoke has been documented,” NIOSH warns. “Surgical smoke has been shown to be mutagenic, cytotoxic, and genotoxic.”

Surgical smoke exposure can cause eye, nose, and throat irritation. It also has been linked to headaches, coughs, and nasal congestion, the agency notes.

“Surgical smoke has been shown to induce acute and chronic inflammatory changes (e.g., emphysema, asthma, chronic bronchitis) in the respiratory tract of animal models, but data on long-term effects of exposure to surgical smoke are not available,” NIOSH states.

Given such findings by the nation’s leading occupational health research agency, proponents of smoke removal have lost patience with what they see as a debate marked by false equivalency. After all, patients and healthcare workers alike see the no-smoking signs when they walk through the doors of any hospital.

“The sign on every front door reads ‘This is a Smoke-Free Facility,’”

Ball says. “Maybe we should add, ‘Except in the OR.’ The evidence is there and the smoke evacuation equipment and devices are available, so why are some healthcare professionals still dragging their feet?”

Ball began researching and speaking on the surgical smoke issue more than three decades ago. She finds the prevailing complacency astounding, noting that there has been a near doubling of the Institute of Medicine’s estimate that it takes about 17 years to change clinical practice after research evidence shows it is warranted.

“It’s a challenge to enlighten the naysayers on all of the evidence showing surgical smoke is hazardous,” Ball says, noting that AORN has compiled a list of roughly 200 studies on the hazards of inhaling plume.

Both Ball and DiPaola say the solution is not as easy as healthcare workers wearing masks, which do not filter out the particles in surgical smoke.

“It doesn’t work — the mask doesn’t block smoke,” DiPaola says. “We are not wearing sealed respirator devices. We all have to get certified for TB masks so they have a certain level of air filtration, but the standard surgical masks don’t function that way.”

The issue may eventually have to be resolved in the courts, as people who develop cancer or another disease with no other risk factors than surgical smoke will hire attorneys and sue hospitals and surgery centers.

“One lawsuit and the whole system is going to be scrambling,” DiPaola says. “When the attorneys get involved and hospitals find they are on the hook, that is going to be the straw that breaks the camel’s back.”

Another aspect of the questioning and criticism is that plume-removal advocates are sometimes tarred with charges of conflict of interest. Some get involved in education or supporting the companies that manufacture the equipment. DiPaola discloses he has investments with one of the companies he contacted to find plume removal equipment. However, he emphasizes that he undertook to protect himself on his own initiative years earlier, trying to invent a plume removal device he could use during surgery.

Asked about this issue, Ball said, “I give noncommercial presentations on the hazards of surgical smoke and how to properly evacuate it. Sometimes my lectures are at conferences, and sometimes they are sponsored by industry. I never promote one product over another, and my lecture content is always based on evidence.” ■

REFERENCES

1. McFarlin UL. Blowing smoke: Profit motive — and scant evidence — propel dire warnings about surgical fumes. *Stat* May 11, 2017. Available at: <https://bit.ly/2rZJrGQ>.
2. Mowbray N, Ansell J, Warren N, et al. Is surgical smoke harmful to theater staff? a systematic review. *Surg Endosc* 2013;(9):3100-3107.
3. Ball, K. Compliance with Surgical Smoke Evacuation Guidelines: Implications for Practice. *AORN J* 2010;92:142-149.
4. Gates MA, Feskanich D, Speizer FE, et al. Operating room nursing and lung cancer risk in a cohort of female registered nurses. *Scand J Work Environ Health* 2007;33(2):140-147.
5. Steege AL, Boiano JM, Sweeny MH. Secondhand Smoke in the Operating Room? Precautionary Practices Lacking for Surgical Smoke. *Am J Ind Med* 2016;59(11):1020-1031.

Is Surgical Smoke a Threat to Patients?

It is a fascinating hypothetical question to consider what patients would say if they were given some kind of informed consent about being exposed to surgical smoke during their operation. Although the actual risk to patients may be diminishingly small, a line listing the various toxins and mutagenic materials in plume may give them pause.

“If I were lying on a surgical table, it is certainly not something I would want to be exposed to,” says **Gayle Davis**, director of corporate communications at the Association of peri-Operative Registered Nurses (AORN).

If a threat to patients was ever established, the stakes would be raised considerably to require surgical plume removal. Given that the occupational threat to healthcare workers still is subject to some lingering debate, assessing the risk to patients still is difficult. However, some researchers have tried to look at the question.

For example, a research team in Poland¹ assessed the exposure of patients to organic surgical smoke during laparoscopic cholecystectomy. The selected biomarkers of exposure to surgical smoke included benzene, toluene, ethylbenzene, and xylene. The concentrations of these chemicals in the urine samples were assessed for patients before and after surgical procedures.

“Qualitative analysis of the

smoke produced during laparoscopic procedures revealed the presence of a wide variety of potentially toxic chemicals such as benzene, toluene, xylene, dioxins, and other substances,” the authors reported. “Exposure of the patient to emerging chemical compounds is usually a one-time and short-term incident, yet concentrations of benzene and toluene found in the urine were significantly higher after the surgery than before it.”

Another study assessed the risk of surgical site infections, trying to determine if procedures evacuating plume resulted in lower SSI rates than those where the smoke was not removed.

The question was: Since viable bacteria and viruses can survive in the smoke, could they contaminate the surgical wound and cause infection? Clearly the burden of biomaterials was being removed in the experiment, but no statistical significance was found between the infection rates in ORs with smoke and those that removed plume, says lead author **Christian DiPaola**, MD, a surgeon at the University of Massachusetts Medical School in Worcester.

“Our study was underpowered,” he tells *Hospital Employee Health*.

The study² included 1,312 spine surgeries, with cases divided into a control group and an intervention group that removed surgical smoke.

“Of the 712 cases in the control group, 24 SSIs occurred (11 deep, 13 superficial), for an overall incidence of 3.4%,” DiPaola and colleagues concluded. “Of the 600 cases in the smoke evacuator group, 12 SSIs occurred (8 deep, 4 superficial), for an overall incidence of 2%. The observed difference in SSI incidence was not statistically significant ($p = 0.17$).”

“The idea is there, but proving it in a study is very hard to do,” he said. “This paper was a way to first consider it as a potential factor. We do all kinds of layers of infection mitigation in everything we practice. You scrub your hands, you sterilize your equipment, there are many layers of infection control practices. We wanted to think about the smoke plume as a potential source. Let’s at least include that as variable for future studies.” ■

REFERENCES

1. Wesolowski W, Kucharska M, Sapote A, et al. Chemical composition of surgical smoke formed in the abdominal cavity during laparoscopic cholecystectomy – assessment of the risk to the patient. *Int J Occup Med Environ Health* 2014;27(2):314-325.
2. Krueger S, Disegna S, DiPaola C. The effect of a surgical smoke evacuation system on surgical site infections of the spine. *Clin Microbiol Infect Dis* 2018 3:DOI:10.15761/CMID.1000132.

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Post-flu Syndromes Include Stroke, Heart Attack, Disability

Healthcare workers urged to get vaccinated, lead by example

Advocating flu vaccination of healthcare workers to protect themselves and patients, a leading national epidemiologist says there is increasing evidence of post-influenza illnesses that can lead to heart attack, stroke, and permanent disability.

“The virus is even more nasty than you thought,” **William Schaffner**, MD, said Sept. 27 in Washington, DC, at a National Foundation for Infectious Diseases press conference on the upcoming influenza season. “Flu can predispose individuals to heart attack and stroke and can also initiate a slide into progressive disability.”

These events can occur even after one recovers from the acute respiratory illness. Indeed, influenza infection causes a systemic inflammatory reaction that can leave one vulnerable to several sequelae, said Schaffner, a professor of preventive medicine at the University of Vanderbilt Medical School in Nashville.

“This lingering inflammation can cause damage to the blood vessels, particularly those to the heart and the brain,” he said. “As a consequence, the accumulating evidence now shows that there is an increased risk of heart attack and stroke during the two to four weeks after recovery from acute influenza.”

Another post-flu event that is becoming clearer is that recovery from the initial infection may not be complete in the frail and elderly. Instead, flu can trigger a cascade into decline.

“They may never return to their pre-flu functional level,” he said. “Flu

can knock down that first domino of progressive decline and progressive disability.”

While the seasonal vaccine efficacy is unpredictable year to year, it serves as an important safeguard to prevent pneumonia, hospitalization, and death.

“Vaccination also makes it less likely that you will spread the virus to others,” he said. “Nobody wants to be what I call the ‘dreaded spreader.’ Getting vaccinated is the socially responsible thing to do — while protecting yourself, you are also protecting those around you.”

The vanguard of these “communities of immunity” are healthcare workers, he emphasized.

“It is critically important that we lead by example by getting vaccinated to protect ourselves and our patients,” Schaffner said.

Vaccine Components Established

On the heels of a brutal 2017-2018 flu season, the vaccine strains for the 2018-2019 season have been set.¹ The CDC and its advisors have determined the 2018-2019 U.S. trivalent influenza vaccines will include the following strains:

- A/Michigan/45/2015 (H1N1) pdm09-like virus;
- A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus;
- B/Colorado/06/2017-like virus (Victoria lineage).¹

“Quadrivalent influenza vaccines will contain these three viruses and an

additional influenza B vaccine virus, a B/Phuket/3073/2013-like virus (Yamagata lineage),” the CDC stated.

The overall vaccine efficacy was estimated to be only 40% in the 2017-2018 season. The main problem was a mismatch between the circulating influenza A (H3N2) strain and the one in the vaccine. For H3N2, the vaccine was only 25% effective, but even that low efficacy reduces the chance of a person seeking medical treatment by one-fourth.

“The 2017-2018 influenza season was a high-severity season with high levels of outpatient clinic and emergency department visits for influenza-like illness (ILI), high influenza-related rates, and elevated and geographically widespread influenza activity for an extended period,” the CDC reported.²

Last season, flu illness ran high for a long time — from January 2018 through the end of March.

“ILI peaked at 7.5%, the highest percentage since the 2009 flu pandemic, which peaked at 7.7%,” the CDC concluded. “ILI was at or above the national baseline for 19 weeks, making the 2017-2018 season one of the longest in recent years.”

A record number of child deaths occurred in 2017-2018, totaling 180 children. Only 20% of them had been immunized, the CDC reported.

Live Mist Vaccine Back

The CDC recommends “routine annual influenza vaccination is for all people six months and older if

they have no contraindications. Inactivated influenza vaccines (IIVs), recombinant influenza vaccine (RIV), and live attenuated influenza vaccine (LAIV) are expected to be available for the 2018–19 season.”

Also, recommendations regarding the use of LAIV4 have been revised, putting the mist vaccine popular with children back on the table under certain restrictions. Citing lack of efficacy, the CDC did not recommend the live vaccine last year or the prior season. The decision to recommend the vaccine came after the CDC’s Advisory Committee on Immunization Practices (ACIP) reviewed several sources of efficacy data.

While including the live attenuated vaccine as an option, ACIP said LAIV4 should not be administered “to children aged two through four years who have received a diagnosis of asthma or whose parents or caregivers report that a healthcare provider has told them during the preceding 12 months that their child had wheezing or asthma or whose medical record indicates a wheezing episode has occurred during the preceding 12 months.”

In addition, the live vaccine is contraindicated for those who are immunocompromised for any reason. “Close contacts and caregivers of severely immunosuppressed persons who

require a protected environment” should not use LAIV4, either. Nor should pregnant women or people who have received antiviral medications within the prior 48 hours, the CDC recommends. ■

REFERENCES

1. Grohskopf LA, Sokolow LZ, Broder KR, et al. CDC. Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices—United States, 2018–19 Influenza Season. *MMWR* 2018;67(3):1–20.
2. CDC. Summary of the 2017–2018 Influenza Season. Aug. 31, 2018. Available at: <https://bit.ly/2rkXwPk>.

Focus on Staff Immunization After Bad Flu Season

Is it time for more mandates?

Mandatory flu vaccination policies for healthcare workers resulted in 95% vaccination rates last season, but immunization fell off dramatically in settings where requirements, emphasis, and ease of access were not in place, the CDC reported.¹

Overall, 78.4% of healthcare workers received influenza vaccination during the 2017–2018 season, one of the most severe in history.

“More than 900,000 people were hospitalized and more than 80,000 people died from flu last season,” the CDC emphasized.² “These new estimates are record-breaking and emphasize the seriousness and severity of flu illness and serve as a strong reminder of the importance of flu vaccination.”

A total of 2,265 workers responded to a CDC online survey

to assess flu vaccination coverage last year, which was similar to the four preceding seasons.

“As in previous seasons, coverage was highest among personnel who were required by their employer to be vaccinated and lowest among those working in settings where vaccination was not required, promoted, or offered onsite (47.6%),” the CDC noted.

Continuing a historical trend, long-term care workers had the lowest immunization rates (67.4%), despite working with a population at increased risk of severe complications.

“In contrast to healthcare personnel working in hospitals, a much lower proportion of survey respondents working in long-term care settings reported having a requirement for vaccination, and 23.5% reported that their employer

did not require, make available on-site at no cost, or promote vaccination in any way,” the CDC reported.

The combination of a deadly flu season and the vaccine data are likely to be cited by proponents of broader application of mandatory policies, particularly in long-term care.

“Implementing workplace vaccination programs that have been successful in increasing coverage in hospital settings, including vaccination requirements, could increase coverage in long-term care and other settings with historically lower vaccination coverage,” the CDC concluded.

Vaccination was highest among hospital workers at 91.9%, followed by ambulatory care at a 75.1% immunization rate.

“Overall, vaccination coverage

in 2017–18 was higher among physicians (96.1%), pharmacists (92.2%), nurses (90.5%), and nurse practitioners and physician assistants (87.8%), and lower among other clinical healthcare personnel (80.9%), assistants and aides

(71.1%), and nonclinical health care personnel (72.8%),” the CDC concluded. ■

REFERENCES

1. CDC. Influenza Vaccination Coverage Among Health Care Personnel —

United States, 2017–18 Influenza Season. *MMWR* 2018;67(38);1050–1054.

2. CDC. National Press Conference Kicks Off 2018-2019 Flu Vaccination Campaign. Sept. 27, 2018. Available at: <https://bit.ly/2xKK1Od>.

New USP Hazardous Drug Rules Coming Soon

What employee health professionals need to know

The U.S. Pharmacopeia (USP) continues to revise its standards to protect workers exposed to hazardous drugs, including those involved in compounding medications.

Although employee health may not have oversight of a facility’s hazardous drug policy, involvement and awareness is encouraged to protect workers. Hazardous drugs like those used in oncology include those that can cause cancer, genetic damage, and reproductive problems. While these effects necessitate following workers long-term, immediate effects of being exposed to the drugs include nausea, dizziness, and nasal damage.

The three general hazardous drug categories are antineoplastic, non-antineoplastic, and reproductive hazards. Design improvements may be needed to prevent exposures, but there also are compliance factors like insufficient stocks of personal protective equipment or failing to wear it if available. Occupational exposures also can occur if facilities are not using closed-system drug transfer devices. (*See Hospital Employee Health, March 2018.*)

HEH talked to **Ken Maxik**, director of patient safety for CompleteRx, a hospital pharmacy management company, about some of the changes.

HEH: Can you generally describe some of the actions the USP is taking?

Maxik: Over the last couple of years, the USP has been making some changes to their sterile and nonsterile compounding. They started by releasing USP 800, which deals with hazardous drug compounding. Then earlier this year they released USP 795, which deals with nonsterile compounding. Then more recently they released USP 797, which deals with sterile compounds.

What they essentially did in trying to match these three chapters is break off the section on hazardous drug compounding, which previously was a part of USP 797. They created it as a new chapter in USP 800, which I believe they did to place greater emphasis on safety related to compounding hazardous medications. In the [overview] of the USP 800 chapter, they point out that part of the purpose of the chapter is to describe worker safety.

HEH: Is this more a matter of emphasis, or are their new recommendations that employee health professionals should be aware of?

Maxik: There are changes. For example, they are now recommending that you conduct environmental wipe sampling of your hazardous

drug surfaces for residue. They are also recommending that you have policy and procedures for safety data sheets to document effective training and proper garbing. They also outline that they now want you to use closed-system transfer devices. That must be used for administration. That is something that is new, and they are recommending that you use closed system devices for the compounding portions. They are trying to prevent aerosolization from occurring. They also aligned that with a recommendation to have a medical surveillance program in place [for employees].”

HEH: Are these recommendation or requirements?

Maxik: USP by itself does not enforce its own recommendations. They do not have an enforcement division. The way that USP recommendations get enforced is through state boards of pharmacy and accreditation organizations, which adopt the USP recommendations. They either put it into their accreditation standards or their state board rules and regulations.

HEH: Generally, when you look at these changes, would you say that healthcare facilities that adopt these measures will better protect their workers?

Maxik: Absolutely. We are already

finding in facilities that we are working with that the pharmacies have placed the recommended changes into their capital budgets. That way, they can redesign their clean rooms and split out the

separate clean rooms for hazardous compounding. Also, many of the organizations have begun to conduct risk assessments, which are called for in the USP 800 chapter. They are now identifying and assessing

the risks to employees. I'm certainly not saying everybody didn't have something previously, but they are developing what their organization's mitigation strategies will be for those potential risks. ■

How to Deal With the Disruptive, Difficult Physician

Employee health professionals assessing their work culture can point to difficult and disruptive staff, sometimes entire units.

Dealing with such a physician or group always is a tough proposition. That is especially so when, for example, a physician is a high-revenue generator, a leader in a specialty, or otherwise powerful and important to the organization. And how do you get staff to comply with directives without singling out individuals for discipline?

Accountability is key, even though there has been a movement away from holding individuals accountable in favor of redesigning systems to encourage the desired behavior, says **Gerald B. Hickson**, MD, senior vice president for quality, safety, and risk prevention at Vanderbilt University Medical Center in Nashville.

Rude or abusive physicians must be managed affirmatively no matter how much cachet or power they have within the hospital, Hickson says. Vanderbilt uses a program that addresses disruptive physician behavior in an escalating fashion, and he says it must be employed without regard to the doctor's position in the hierarchy.

Dealing with dysfunctional systems requires returning the right amount of professional accountability to the healthcare environment, but without returning

to the unproductive approach of past decades, Hickson says. No one wants to go back to the old way of shaming and blaming individuals for every error, he says, but there must be accountability for disruptive and abusive behavior.

"If you focus only on intentionally designed systems without pairing it with professional accountability, you get a lot of discussions that don't go anywhere," he says. "We can all agree that washing hands is a good thing, but just saying that doesn't make people wash their hands. At some point, you have to hold people accountable."

Hickson recalls how a unit at Vanderbilt was not compliant with handwashing expectations, and when called to task, staff said conditions on the unit were not conducive to good hand hygiene. He agreed that they could not be held responsible if the hospital did not provide adequate conditions for good hygiene, so the hospital improved the work area in the way the staff asked.

"After we made all of those improvements, to their specifications, their performance didn't improve a bit," he says. "We can spend a lot of time as quality and safety officers fixing things that need to be fixed, but it must be coupled with a clear, unambiguous declaration that we expect our members to do every time. Unless you have people, process, and

technology aligned to help you with professional accountability, your safety program cannot move forward because of the influence of a very small number of people who decide these things don't apply to them."

That reasoning can be applied to a number of quality and safety efforts — everything from handwashing and timeout compliance to physician interactions with staff and patients, he says.

"If you don't have a plan for dealing with the subset of people who don't comply with expectations, it is hard for everyone else to maintain high reliability," he says.

Whether the unacceptable behavior is poor hand hygiene or a physician who is verbally abusive to staff, hospital leadership must engage the problem head-on and make clear that such behavior is not acceptable, Hickson says. Once the organization makes the proper behavior possible by providing the necessary resources and processes, it is reasonable to expect compliance with your expectations, he says.

"Some of the best interventions come from people who are manning a desk somewhere but realize they are part of the safety team. If they see someone engaged in behavior that is not appropriate, they interact in a socially appropriate way," Hickson says. "That means you never embarrass, never humiliate, but you

do let them know that there was an opportunity missed to do the right thing.”

At the same time, however, Hickson says healthcare leaders must remember that physicians and staff work in an inherently stressful environment and not come down hard on them for every lapse in performance.

Conversations about problem behavior should acknowledge that stress, note appreciation for how much the physician or staff members get right, and emphasize that the goal is to avoid a pattern of this unacceptable behavior, he suggests.

“It’s about providing input early and often. When we see lapses, don’t wait until everybody understands that this physician is problematic,” Hickson says. “Engage that person early, and leadership must do this in a consistent way so that it is clear nobody gets a pass.”

That consistent application of expectations and consequences can falter when the disruptive physician is a high-revenue generator, or someone who wields a lot of power and influence for various reasons, Hickson says. That is when healthcare leaders must be steadfast in applying the same expectations as they would for any other physicians.

Otherwise, a small percentage of disruptive physicians can have an outsized effect on hospital operations, morale, turnover, outcomes, safety, and patient satisfaction, Hickson says. About 2.5% to 4% of all clinicians — physicians, nurses, and others — have difficulty being respectful to colleagues and patients, he says.

“Those same people also tend to have difficulty respecting rules and complying with expectations for behaviors,” Hickson says. “These same people can be very influential and when they decide they’re not going

to do something like a timeout, then that gives others the idea that they don’t have to do it either.”

What abusive or disrespectful behavior rises to the level of needing leadership intervention? The line is not clear; rather, it is determined on a case-by-case basis regarding how much the behavior affects the work environment.

Any individual’s tipping point will be different, Hickson notes. Some people are going to report the first time a physician says something snarky or grabs a cracker without asking, while others will wait a long time until they cannot stand it anymore. Still others will never report the disrespect or abuse.

Hospital leadership does not have to investigate every report of such behavior, Hickson notes. It is important to collect all information about potentially disruptive physicians or staff, he says, but only about 2% of such reports need a full investigation by the hospital.

“We don’t sweat the single reports. Most of them are simply a story and there’s no way to find the truth,” Hickson says. “But we do go to the physician and say, ‘We got this report, and it doesn’t seem consistent with our core values. We know there are two sides to every story, so I’m just going to ask you to reflect on these events and I trust you to do the right thing.’” ■

CE QUESTIONS

- 1. Regarding surgical smoke exposures in the operating room, Rhode Island recently became the first state to:**
 - a. mandate N95 respirator use by surgical personnel.
 - b. review all nonemergency surgeries likely to generate plume.
 - c. require healthcare facilities to submit their policies to remove surgical smoke.
 - d. All of the above
- 2. Rhode Island State Rep. Joseph M. McNamara said the surgical smoke legislation is an important first step, but plume evacuation equipment must be improved to ensure surgical precision is not compromised.**
 - a. True
 - b. False
- 3. According to William Schaffner, MD, even after influenza infection has cleared, post-flu syndromes can include:**
 - a. asthma.
 - b. no immunity to the same flu strain.
 - c. progressive disability in the elderly.
 - d. delayed adverse reactions to vaccine components.
- 4. The overall flu vaccine efficacy was estimated to be only 40% in the 2017-2018 season. The main problem was a mismatch between the circulating influenza A (H3N2) strain and the one in the vaccine. For H3N2, the vaccine was how effective?**
 - a. 7%
 - b. 15%
 - c. 25%
 - d. 36%



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