



# HOSPITAL EMPLOYEE HEALTH



THE PRACTICAL GUIDE TO KEEPING HEALTHCARE WORKERS HEALTHY

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RELIAS MEDIA

## New CDC Tuberculosis Guidelines May End Annual Testing of HCWs

*Emphasis on blood tests, improved treatment*

By Gary Evans, Medical Writer

The CDC is expected to issue new tuberculosis testing guidelines for healthcare workers that end routine annual TB screening in favor of a baseline test on hire and retesting after an occupational exposure, the co-author of the document tells *Hospital Employee Health*.

These revisions come as TB testing and treatment have improved, while the routine risk of healthcare workers acquiring TB at work has steadily declined.

“There is no literature to support” that healthcare workers are at high occupational risk of contracting TB from their patients

anymore, says co-author **Wendy Thanassi**, MD, MA, MRO, a professor at Stanford University and chief of Occupational Health Services at the VA

Palo Alto Health Care System in California.

Other factors in the decline of TB as an occupational threat are the engineering controls and prevention measures that have become routine in many hospitals.

“Hospitals have done such a good job with environmental controls — negative pressure rooms, air filters, air circulation, and identifying patients and wearing masks early,” she says.

“We have seen transmission decline because of these environmental controls.”

OTHER FACTORS IN THE DECLINE OF TB AS AN OCCUPATIONAL THREAT ARE THE ENGINEERING CONTROLS AND PREVENTION MEASURES THAT HAVE BECOME ROUTINE IN MANY HOSPITALS.

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Gary Evans at (706) 424-3915.

The CDC reported 9,093 new cases of TB in the United States in 2017.<sup>1</sup> That translates to a rate of 2.8 cases per 100,000 people, a decline of 2% from 2016 that continues a trend of TB reduction. For example, in 2000, there were 16,308 new cases of TB, a rate of 5.8 per 100,000 people. However, TB is still a threat, and employee health professionals should remain vigilant.

“People do have TB, which is a very serious disease,” Thanassi says. “Active TB has a 10% mortality rate. But it is very rare that we find it incidentally in a healthcare worker without finding it first in a source [patient].”

According to the CDC, the rate of TB “among non-U.S.-born persons in 2017 was 15 times the rate among U.S.-born persons. Previous studies have shown that the majority of TB cases in the United States are attributed to reactivation of latent TB infection.”

Some healthcare workers from countries with higher TB prevalence may have been administered the Bacillus Calmette–Guérin (BCG) TB vaccine, which is not routinely used in the U.S. Those vaccinated may experience a cross-reaction to a TB skin test, registering a false positive. The CDC currently recommends use of the TB blood tests for workers who have been immunized with BCG.

The new guidelines are expected to encourage broader use of the TB blood tests over the traditional skin tests, which often are performed in a more labor-intensive two-step approach to ensure accuracy. However, the new guidelines likely will state that those using traditional skin tests can continue to do so, as the CDC typically defers to local preferences rather than a one-size-fits-all approach in its recommendations.

Having used the TB blood tests exclusively for years, Thanassi says the focus should be using the blood tests on hire and treating latent TB at that point rather than conducting routine screening thereafter. There also are new effective treatments of shorter duration for healthcare workers with latent TB, which can remain dormant for years before activating.

“When we find people who are positive based on these blood tests, we can have them treated for their latent TB right away,” Thanassi says. “This obviates the need to test people every year because we are not finding that healthcare workers are converting year to year. The next testing that would be necessary for employees would be upon exposure to an active TB case.”

Such routine testing of healthcare workers is yielding a succession of negative tests in the 97% range and is no longer a good use of employee health resources, she adds.

“This removes a lot of unnecessary time and money expended,” Thanassi says. “Hopefully, it will allow occupational health to stop spending time with negative tests and redirect their focus to the employees who do have latent TB, and start treating them. I believe it is a public health imperative to identify and treat these employees right away.”

As of press time, the CDC had not issued the new guidelines. While Thanassi expected they would be released soon, a CDC spokesman was less definitive.

“We are reviewing the current guidelines and may update them later this year,” says **Scott Bryan** of the CDC National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention.

Another co-author of the guidelines, Lynn Sosa, MD, a TB

epidemiologist at the Connecticut Health Department, declined a request for comment until the CDC update is published.

In anticipation of the new guidelines, the Association of Occupational Health Professionals in Healthcare (AOHP) slated a session on the topic this year at its annual meeting, Sept. 4-7 in Baltimore.

“Currently, many occupational health professionals are obligated by local or national policy to conduct up to tens of thousands of TB tests annually,” according to a statement from AOHP.

“The updated national guidance will empower practitioners, in most cases, to eliminate annual TB testing while maintaining pre-placement and post-exposure testing, as well as to advocate for treatment of those with latent TB infection.”

As of press time, the current CDC guidelines<sup>2</sup> say facilities can use the TB skin test or blood test for healthcare workers at baseline, and then retest thereafter depending on risk categories.

Risk factors include the prevalence of TB in the patient population and the community. Hospitals at medium risk are recommended to test healthcare workers annually.

The new CDC guidelines are expected to drop the risk categories, essentially conflating them down to the low-risk recommendation of retesting healthcare workers only if there has been a TB exposure incident, Thanassi says.

## Ending HCW Angst

*HEH* asked Thanassi to comment more on the TB testing program at the VA Palo Alto Health Care System in the following interview, which has been edited for length and clarity.

**HEH:** How have you approached TB testing of healthcare workers?

**Thanassi:** We have not used the skin test since January 2009. For 10 years, we have recognized the value of the blood test over the skin test, which has a lot false positivity related to people who were born in another country and had the BCG vaccine, or who came in contact with non-TB mycobacteria.

SUCH ROUTINE TESTING OF HEALTHCARE WORKERS IS YIELDING A SUCCESSION OF NEGATIVE TESTS IN THE 97% RANGE AND IS NO LONGER A GOOD USE OF EMPLOYEE HEALTH RESOURCES.

We recognize the importance of the blood test in getting an accurate diagnosis. We were one of the first major centers to switch entirely to using the blood tests. We have a history of tens of thousands of tests now. None of the generations of the blood test cross-react with the BCG. That has been an advantage of these from the very beginning.

**HEH:** Why is that such an important factor?

**Thanassi:** It is very important because there are many employees walking around in fear that they have TB because they have been told that their skin test was positive. They worry that they may be taking a year

of toxic medications, maybe they should be worried about [exposing] their newborn baby or their elderly grandmother.

So, if we can take those people who had a positive skin test — who believe for maybe a decade that they have latent TB — and offer them the blood test, we can tell them quite definitely that they do not have TB, that it was a cross-reaction with their old vaccine.

**HEH:** That is an aspect of TB testing that is not often emphasized.

**Thanassi:** It is a tremendous weight off their chests. It is quite important to take that burden from people.

There are a lot of benefits to the blood tests on a personal level that sometimes may go unrecognized. We will have a lot of wonderful healthcare workers in the U.S. who come to us from the Philippines, Mexico, Vietnam, India. They are tremendously well-trained healthcare workers; they just came from an environment where they got this vaccine because their country has a higher prevalence of TB than we do.

**HEH:** How have TB treatments improved?

**Thanassi:** TB treatments have changed dramatically in the last decade. The treatment for latent TB used to be nine months of daily isonicotinylnhydrazide (INH), which is quite liver-toxic. This toxicity can put people in the hospital and occasionally causes fatalities. It had about a 67% efficacy rate because there was a lot of noncompliance with that long of a treatment program.

Now we have a treatment that is just three months, once a week of INH plus rifapentine. Essentially, it is 12 weeks of antibiotics to get rid of latent TB. The combination of these new tests that are accurate and a new treatment that is short and safe

means that we really should be able to take care of latent TB before it reactivates. ■

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# U.S. Hospitals Prepare as Ebola Outbreak Continues

*Johns Hopkins drills on PPE, environmental contamination*

**A**s an Ebola virus outbreak continues in the Democratic Republic of Congo, healthcare workers in the United States remain at risk of an infected traveler presenting to their ED for care.

Recent trends show the outbreak may be worsening, raising the likelihood that cases may come into the U.S. During the previous Ebola outbreak in West Africa in 2014–2016, two nurses who treated a dying patient at a Dallas hospital contracted the virus but survived. (*See Hospital Employee Health, December 2015.*)

That outbreak was characterized by a lot of confusion about personal protective equipment (PPE), particularly the finding that healthcare workers frequently contaminated themselves doffing their PPE.

“We learned after Dallas the critical importance of effective PPE,” says **Lauren Sauer**, MS, deputy director of critical event preparedness and response at Johns Hopkins Hospital in Baltimore. “It’s not just about having the right PPE — it’s about safely putting it on and taking it off. Taking it off is really high-risk, so we need to make sure all providers know how to do that safely and routinely.”

There was the expectation by the CDC, at least at the onset of the last Ebola outbreak in 2014, that individual U.S. hospitals could safely

isolate these patients. The CDC went to rapid response teams after the nurse infections in Dallas. National facilities with biocontainment units handled the known incoming cases, which were primarily U.S. caregivers infected in West Africa.

“THE ONLY WAY WE ARE GOING TO BE ABLE TO ENSURE THE SAFETY OF OUR HEALTHCARE WORKERS IS TO START WITH THE INITIAL IDENTIFICATION OF THESE PATIENTS.”

In the aftermath of that Ebola outbreak, the U.S. adopted a tiered healthcare response system, going from frontline hospitals, assessment facilities, and designated treatment centers.

“The idea is that each of these hospitals has different capacities,” explains **Jennifer Andonian**, MPH, an epidemiologist and program manager of the Biocontainment Unit at Johns Hopkins.

The vast majority of U.S. hospitals

are considered “frontline” — which, according to the Department of Health and Human Services,<sup>1</sup> means they should be prepared to:

- rapidly identify and isolate a suspected Ebola patient;
- notify appropriate facility staff and public health authorities
- contact an assessment hospital or Ebola treatment center to coordinate patient transfer;
- have enough Ebola PPE for at least 12 to 24 hours.

At the next level above frontline facilities, there are 217 Ebola assessment hospitals with the lab capabilities and network contacts to test for the virus. They also are required to have enough PPE for up to 96 hours of patient care in isolation, along with waste-handling capabilities for highly infectious agents. Beyond that, the Ebola hospital network has 63 designated treatment centers, which have the capability to care for at least two Ebola patients for their duration of illness.

In essence, the basic principles of “identify, isolate, and inform” apply from the frontline community hospital to facilities with sophisticated biocontainment units, Andonian says.

“The only way we are going to be able to ensure the safety of our healthcare workers is to start with the initial identification of these patients,” she says. “The [hospital network]

system has been in evolution and has really been designed to support that. The general premise is that we all need a baseline level of preparedness.”

A primary reason for this is that infectious diseases have an infamous disregard for borders, international or otherwise. “In today’s interconnected world, diseases can spread from an isolated, rural village to any major city in as little as 36 hours,” the CDC warns.<sup>2</sup>

“The goal isn’t necessarily just to take care of a single Ebola patient but to protect the healthcare system from that initial impact,” Sauer says. “People should definitely be asking travel screening questions. We have implemented that in our emergency department. There are several high-risk outbreaks right now that warrant travel questions — even if Ebola was not occurring.”

For example, the WHO recently reported another hospital outbreak of Middle East Respiratory Syndrome (MERS) coronavirus in Saudi Arabia that totaled 39 cases and resulted in four deaths.<sup>3</sup> Nine healthcare workers were infected with the emerging respiratory virus as a result of exposures in the ED and an ICU in the same hospital. None of the dead were healthcare workers.

“There is Crimean-Congo hemorrhagic fever in Pakistan and a Lassa fever outbreak in Nigeria and a couple of other countries,” Sauer says. “Travel is a really helpful tool when you are intaking a patient.”

## The Front Door Is Open

Johns Hopkins is one of 10 designated Ebola treatment centers across the U.S. with “enhanced capabilities” such as designated biocontainment units and other control and treatment measures.

Although such facilities are designed in part to accept transferred patients with highly infectious diseases, they also must prepare for a suspect case walking in off the street. In a recent drill at Johns Hopkins, Andonian included the ED and biocontainment unit.

“Realistically, patients don’t show up looking for a biocontainment unit,” she says. “They present through the front door to the emergency department, so we really have to have those ‘identify, isolate, and inform’ processes in place.”

The basic PPE needed is considerable, even for frontline hospitals that will be looking to quickly hand off a patient to one of the Ebola assessment facilities.

The CDC recommendations for possible cases of Ebola in frontline hospitals include such PPE as disposable fluid-resistant coveralls and gowns; a single-use full-face shield; and two pairs of gloves that include one with extended cuffs.<sup>4</sup> More extensive measures are recommended if a suspected or confirmed Ebola patient is bleeding or vomiting.<sup>5</sup>

“PPE is absolutely important as healthcare facilities in the U.S. brace themselves for infectious diseases, whether that is Ebola, viral hemorrhagic fevers, or talking more broadly about airborne transmissible pathogens,” Andonian says.

The repetition of PPE training is a critical aspect of drills, Sauer notes.

“We find with this enhanced PPE we are really retraining our staff’s muscle memory,” she says. “We are training staff so they are confident in their PPE and understand the nuances and the body mechanics of it. Then they will be confident in their ability to work in the PPE and in this environment without contaminating themselves.”

Trained observers assist healthcare workers in correctly removing the PPE.

“If a healthcare worker was to become contaminated, we have training and protocols in place to remediate that depending on the severity,” Andonian says.

For example, healthcare workers involved in the care of Ebola patients can communicate via a mobile phone app to report any symptoms.

“That allows us to send text message prompts for symptom monitoring,” Andonian says. “That is something we do for any healthcare worker who comes into contact with the patient themselves. We apply similar principles if someone had an exposure, depending on how high-risk.”

In addition to a focus on donning and doffing PPE, the Hopkins drill emphasized the importance of avoiding contaminating the patient care area and the surrounding environment in general. The central question, Sauer says, was “How do we remediate and reduce that bioburden in the environment?”

A lot of this is spatial awareness when working within patient rooms, including establishing clean spaces and using mechanical disinfection systems or surface wipes, Andonian says.

Setting up protocols and practicing such measures will bolster treatment and response for pathogens more common than Ebola, she adds.

“These practices really transcend beyond high-consequence pathogens,” Andonian says. “These principles can help identify patients with measles, chickenpox, or tuberculosis. If we can do the basics really well, we should have better systems in place to identify these high-risk but low-probability cases.” ■

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# Ebola Vaccine Given to U.S. Caregivers, Healthcare Workers in Congo

*Twenty-one healthcare workers have died in latest outbreak*

An Ebola outbreak that has killed more than 20 healthcare workers in the Democratic Republic of Congo (DRC) is proving a trial by fire for an experimental vaccine, but there are insufficient data to establish the efficacy of the immunization.

While thousands of healthcare workers have been immunized, it is not clear whether those who have contracted Ebola delivering care to patients had been vaccinated.

“A previous trial<sup>1</sup> showed 100% [vaccine] effectiveness, which is possibly unrealistic,” says **Jennifer B. Nuzzo**, DrPH, SM, a senior scholar at the Johns Hopkins Center for Health Security in Baltimore. “They are offering it to healthcare workers, and many healthcare workers have been vaccinated. But what we haven’t seen is a denominator to know what percentage of [infected] healthcare workers have been vaccinated.”

As of Feb. 17, 2019, the Ebola outbreak in the DRC region of North Kivu totaled 840 cases, including 775 confirmed and 65 probable. A total of 537 deaths were reported, for a case-fatality rate of 64%. Since the outbreak began in

August 2018, 68 healthcare workers have been infected and 21 have died, the World Health Organization (WHO) reports.<sup>1</sup>

“In DRC, more than 66,000 people have been vaccinated — more than 21,000 of them are health and other frontline workers,” the WHO reports. “The yet-to-be-licensed rVSV-ZEBOV vaccine has been shown to be highly protective against the Zaire strain of the Ebola virus in a major trial.”<sup>2</sup>

A request to clarify the number of infected healthcare workers who were immunized had yielded no WHO response as this story was filed. In one of its outbreak reports, the WHO listed immunization of healthcare workers as one of the areas being strengthened to interrupt chains of transmission.<sup>3</sup>

The outbreak is complicated by armed conflict and civil disruption in the region, meaning the efficacy of the vaccine may have to be determined in the aftermath.

“That analytic component is needed,” Nuzzo says. “The unofficial impression from the folks on the ground there is that it has been

effective, but I think there are some instances in which people have been vaccinated and haven’t been protected, which is pretty common with any vaccine.”

Healthcare workers receive the vaccine pre-emptively, and the strategy for the general population is ring vaccination. “When a case is identified, they try to find their contacts and offer them vaccine,” she adds.

“Healthcare workers are one of the few, if not the only, group that do not have to be tied to cases in order to get the vaccine,” she says. “Some people have called for an enlargement of pre-emptive vaccination that they are doing, some kind of geographic campaign to try to anticipate where future cases may be headed. So far, that hasn’t been done yet.”

## U.S. Worker Discharged

A missionary from the U.S. exposed to the Ebola virus while caring for a patient in the DRC was given the vaccine within 24 hours and subsequently did not develop

infection. After the exposure and vaccination, the caregiver was flown out of Africa and quarantined in a state-of-the-art facility for the requisite three-week incubation period at the Nebraska Medical Center in Omaha, says **Ted Cieslak**, MD, the infectious diseases specialist who oversaw the case.

As employee health professionals know, with cases of post-exposure prophylaxis it often cannot be determined whether the vaccine or treatment prevented infection or if the caregiver would have remained healthy regardless.

“We will never know whether that was the critical factor or whether he was just lucky and if his exposure was not intense enough [to seroconvert],” Cieslak says. “We think the Ebola vaccine is good for the first few days post-exposure.”

If he had developed Ebola, the plan was to transfer care to the nearby Nebraska Biocontainment Unit, where three infected healthcare workers were treated during the 2014-2016 outbreak in West Africa.

“He cared for a patient who ultimately proved to have Ebola,” he says. “They considered it a high-risk exposure.”

Congolese healthcare workers who cared for the same patient also were vaccinated post-exposure.

“There are these concerns about any perceptions that the American or Western providers may get [the vaccine] and it is not as available to the Congolese,” he says. “I think that has led to some [care units] not giving it until there is an exposure or there is high risk in their particular province.”

It is encouraging that the aforementioned Ebola vaccine trial was 100% efficacious, but further data are needed to really determine whether it will become a pre-emptive

measure beyond outbreak settings, he notes.

“There has been some criticism of that trial — it wasn’t big enough, etc.,” Cieslak says. “I’m sure more studies need to be done before the U.S. Food and Drug Administration would be willing to license that vaccine. Certainly, the preliminary data look very promising.”

The U.S. caregiver entered voluntary quarantine in Nebraska and was routinely assessed for fever and other symptoms. He remained asymptomatic.

“Under the terms of [the quarantine] agreement, providers were supposed to remain three feet away from him unless they were wearing gloves and mask,” Cieslak says. “I would postulate that is an abundance of caution. It’s technically not necessary, since again he was incapable of transmitting [Ebola] since he was not symptomatic.”

This factor is worth underscoring, as some completely asymptomatic healthcare workers were quarantined upon return from the last Ebola outbreak — even though the public health consensus was they could have simply stayed home and reported any symptoms.

“It is the political impulse with every scary-sounding outbreak to try to keep it out of our country,” Nuzzo says. “That is something we have to anticipate and develop strategies to try and prevent.”

There are political implications to the DRC outbreak that are hampering control efforts, she adds. Last October, the WHO convened a committee to review the outbreak but declined to issue a Public Health Emergency of International Concern.

“The WHO has not elected to reconvene the committee since then, even though the outbreak has gotten

much worse,” she says. “It’s very political. The fear is that countries would take non-evidence-based actions, like decide to make it harder to travel to and from the area.”

## Call to Action

In a recent perspective piece, Nuzzo emphasized that the international response has been inadequate.

“Though the current outbreak doesn’t yet match the scale of the West Africa epidemic, its trajectory thus far and the underlying conditions in the DRC are cause for worry,” she wrote.<sup>4</sup>

“North Kivu is home to more than 6 million people. If the outbreak goes unchecked, it could ... lead to travel, trade, economic, and security implications reaching far beyond the region.”

The response was dealt a serious blow when the U.S. government, citing security concerns, pulled the CDC workers from the DRC, Nuzzo says.

“They have unmatched knowledge,” she says. “The CDC has been responding to Ebola outbreaks for 40 years. There are over 500 WHO personnel there, and they have been able to operate with security personnel.”

According to the WHO, the last Ebola outbreak, which lasted from December 2013 to April 2016, led to 28,000 cases and 11,000 deaths.

WHO’s post-mortem report of that outbreak concluded that “the weight of evidence suggests that a rapid response to the discovery of new Ebola cases can stop transmission, preventing minor outbreaks from becoming major epidemics in large, mobile populations.”<sup>5</sup> ■

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# NIOSH Occupational Injury Network Will Close This Year

*Federal budget officials rule data not comparable between sites*

A promising network of hospitals to track and prevent healthcare worker injuries and illness will shut down in September, the National Institute for Occupational Safety and Health (NIOSH) reports.

The NIOSH Occupational Health Safety Network (OHSN) ran afoul of the Office of Management and Budget (OMB), which must approve government data collection systems. The OMB determined the network data were not sufficiently representative of all healthcare facilities; thus, benchmarking and interfacility comparisons could not be made. OHSN collected information from hospitals on a voluntary basis.

After this decision, “OMB review indicated that because the information collected in this manner was not representative of healthcare facilities — that is, it would not capture a larger demographic of hospitals nationwide — we could not conduct interfacility comparisons,” says **Teresa Schnorr**, PhD, director of the NIOSH Division of Surveillance, Hazard Evaluations, and Field Studies. “Because the interfacility comparison was a main

component of the OHSN model, NIOSH decided to end the data collection.”

OHSN was founded in 2013. NIOSH was trying to expand the OHSN system to as many as 300 hospitals as recently as 2017. Participating hospitals reported patient-handling injuries; slips, trips, and falls; workplace violence injuries; needlesticks; and other blood exposures.

Asked to clarify why the data between facilities were not comparable, Schnorr says “the [OMB] decision was based upon the voluntary manner in which the hospitals were enrolled. At this time, there are no plans to replace OHSN with another model. NIOSH is able to continue to accept data from actively participating hospitals through Sept. 30, 2019.”

**Amber Mitchell**, DrPH, MPH, CPH, is director of the International Safety Center, which has been tracking needlesticks and other exposures for decades through its Exposure Prevention Information Network (EPINet). The loss of the OHSN means there will be no national surveillance system that

captures other types of occupational injury and illness incident data in healthcare facilities, she says.

“Healthcare occupational and employee health practitioners struggle with identifying how programs in their institutions compare to others in their specific industry and how to make them more robust with better and safer outcomes for workers,” she says.

Asked about the comparability problem, Mitchell says the OMB decision was “short-sighted” because occupational injury and illness incident data “does not need to be epidemiologically comparable across facilities to be useful.”

That said, there is nothing unique to occupational data in particular that makes comparison and generalization difficult.

“On the contrary, comparing occupational incident data is extremely straightforward,” she says.

As comparability relates to patients, there are large numbers of underlying and confounding factors related to their care and outcomes, including age, immune status, and comorbidities, Mitchell says.

“However, if it is identified

that a worker is exposed to blood because they were not wearing eye protection, we know how to protect them from future exposures — increase accessibility and use of eye protection,” she says.

If a worker is injured by slipping on a wet floor because there was no signage, the intervention is equally obvious. “Put signs up,” she says.

“We can’t know how to intervene if we don’t know where or why workers are getting injured,” she says. “This doesn’t require complicated

epidemiologic biostatistical facility-to-facility comparisons. It requires access to incident data, networks of resources and tools, a community of industry-specific professionals, and the ability to determine changes over time.”

A question-and-answer post on the OHSN website said this about using the system for comparison against other facilities and as a benchmark for users to look at their own past data:

“The system was designed for both purposes. The ability for a hospital to

compare its performance against other hospitals was an overarching purpose of OHSN. While OHSN has shown it can be a helpful tool for individual participating hospitals, the OMB criterion and the resources required to maintain the system prevent us from continuing support, and so require a halt in enrollment.”<sup>1</sup> ■

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# Nurse Work Environment the Key to Patient Safety

*Original emphasis lost within patient safety movement*

Two decades after the patient safety movement began, there is still a troubling disconnect regarding one of its key tenets: a needed transformation of the nurse work environment to protect patients from medical errors and other adverse events.

The modern patient safety movement essentially began in 1999 with the Institute of Medicine’s (IOM’s) *To Err Is Human* report, which revealed that medical error was one of the leading causes of death in the United States.<sup>1</sup> The IOM — now known as the National Academy of Medicine — issued a companion report in 2004 that underscored that the nursing work culture is a critical factor in patient safety.<sup>2</sup>

These reports showed that, with regard to patient safety, nursing work culture “is the number-one most important thing. Patients will never be safe as long as work environments are as chaotic as they are, with such high levels of nurse burnout and

stress,” says **Linda Aiken**, PhD, RN, FAAN, FRCN, a nursing professor and director of the Center for Health Outcomes and Policy Research at the University of Pennsylvania in Philadelphia.

Aiken, author of several critical occupational nursing studies, including some of the research that led to passage of California’s landmark nurse staffing law, says the nurse work culture is not just a key factor for patient safety — it is *the* key factor.

“If you have a poor overall work environment, you could not possibly have a good culture of patient safety,” she says.

In her most recent study, Aiken and colleagues researched 535 hospitals in four states in 2005 and 2016. “Survey data from thousands of nurses and patients showed that patient safety remains a serious concern,” the researchers found. “Only 21% of study hospitals showed sizable improvements (of more than

10%) in work environment scores, while 7% had worse scores.”

It should be noted that *To Err Is Human* was released with considerable fanfare and the immediate endorsement of then-President Bill Clinton and the Department of Health and Human Services. The nurse work environment report was released in comparative obscurity five years later, and that may be a factor in Aiken’s findings.

“In spite of the IOM recommendations to improve nurses’ clinical work environments to keep patients safe, in 2015-16 a third of nurses in the study hospitals rated the work environment in their hospital as only fair or poor,” Aiken and colleagues found. The concept of “a blame-free safety culture where staff feel empowered to question authority has not been fully achieved,” they concluded.

The researchers also found considerable evidence of nurse

burnout, “a known patient safety hazard,” with roughly one-third of RNs scoring high on a common measure of the condition.

## ‘Shockingly Poor’

*Hospital Employee Health* asked Aiken to comment further on her findings in the following interview, which has been edited for length and clarity.

**HEH:** While there has been some success, you make the point that the patient safety movement that began with the first IOM report in 1999 has left out the nursing work environment to some extent.

**Aiken:** We asked, 20 years later, has anything gotten better? We took a snapshot today of what proportion of hospitals have really improved their environments. And those that improved, have they really gotten better in terms of patient safety and in terms of good outcomes for nurses? The answer is, yes.

We concluded in our paper that one of the reasons why the progress in reducing patient harm for medical errors has been so slow and uneven is that the major recommendation of the IOM was to improve the nurse work environment. We found that only 20% of the hospitals really made substantial change. We used a pretty low bar, which was what percentage of hospitals have improved their work environment by at least 10%. It was only 20% of hospitals. Close to 80% either declined or stayed the same — which is amazing.

**HEH:** Many nurses in the study rated their hospital work environment as either fair or poor. What led to the breakdown in the idea that patient safety was linked to a better work culture?

**Aiken:** I think the major

disconnect that came out of the IOM report was that the work environment was never identified as a patient safety intervention, even though it was a headliner. But if you look at patient safety, they never mention the work environment, so it kind of got lost.

All kinds of useful things have been done in controlled circumstances to reduce harm to patients, like checklists in response to central-line infections. But what we find in real practice is that if you try to superimpose those things on a poor work environment, where nurses really don’t have enough time to surveil patients or even to provide all the care that is required, none of those safety initiatives are really implemented at the level of reliability that results in reductions to patient harm. That was the original idea behind the IOM report — they said there is something not right in the environment in which healthcare is delivered.

**HEH:** You note that this remains a problem even after a series of measures on a safe work environment were subsequently developed by groups like the Agency for Healthcare Research and Quality.

**Aiken:** You see in our paper that the patient safety environment is shockingly poor still today. You have 50% of nurses that say that their mistakes are held against them. That is a key flaw in this culture of patient safety in many ways.

First of all, if people are afraid to report, then we won’t learn what we need to learn to prevent errors. It also gives us a false low estimate of medical errors. We depend primarily on nurses to report errors, and that’s how we assess if we have made any progress. If 37% of nurses report that staff don’t feel free to question authority, that is a major problem in providing safe care.

**HEH:** How important is nurse staffing to patient safety?

**Aiken:** We found that it is a major factor. This particular measure that we use in the work environment has five subscales. The most important subscale that drives nurse assessments of the overall quality of the work environment is staffing adequacy. [Our research has shown] that every additional patient that a nurse takes is associated with about a 7% increase in mortality.<sup>2</sup>

Most of that represents preventable mortality that is somehow associated with insufficient care that allows bad things to happen to patients. Staffing is definitely associated with safety.

**HEH:** You conclude that work culture is more important than a patient safety culture.

**Aiken:** What we found in our study is that the work environment is a better predictor of patient safety than a culture of patient safety because it is more inclusive. A culture of patient safety is a part of the overall work environment. We were the major researchers who evaluated the California nurse-patient ratios, which all of our research shows definitely worked well and were in the public interest.

**HEH:** Why has the importance of work environment to patient safety been so difficult to communicate?

**Aiken:** I don’t think there has been a connection in the minds of hospital administrators and even their patient safety staff. I don’t think they connect the nurse work environment and the high risk of nurse burnout with patient safety. They are obviously highly connected.

That was one reason we wrote this paper. We are trying to get them to understand that having a safe level of nurse staffing and a work environment that allows nurses to

spend most of their time in direct care of patients is a patient safety intervention. It is probably the most powerful patient safety intervention that they could possibly be working on. ■

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# Poll: Pregnant HCWs Administering Hazardous Drugs Without PPE

Although antineoplastic drugs primarily used in chemotherapy are a known hazard to reproductive health, 9% of pregnant nurses polled said they never wear gloves when administering the medications, the National Institute for Occupational Safety and Health (NIOSH) reports.

In another breach of recommended personal protective equipment (PPE), 38% of pregnant nurses said they never wear gowns while administering the drugs. Seven percent of pregnant nurses reported giving these drugs during the second trimester of pregnancy. The troubling findings come from one of the few studies to look at pregnant nurses and administration of hazardous drugs.<sup>1</sup>

“We really wanted to see if pregnant nurses are aware of the reproductive risks of working with antineoplastic drugs, and if they are getting the message that they need to use protective gloves and gowns,” says **Christina Lawson**, PhD, a NIOSH epidemiologist and lead author of the study.

The researchers could not determine whether the reported practices represented an education gap or other factors.

“We can look to previous studies

to hypothesize the reasons,” Lawson says.

One prior study of nonpregnant workers administering the drugs found that the most frequent reason for not wearing gloves was that “skin exposure was minimal.”<sup>2</sup> Reasons given for not wearing gowns included they were not provided by employer, not part of policy, or that other workers did not wear them.

This is particularly concerning because these hazardous drugs are no longer limited to oncology, as they are being administered in dermatology, neurology, and other specialties.

NIOSH reports that roughly a dozen antineoplastic drugs are human carcinogens and an equal amount are “probable” carcinogens. Given the long-term cancer risk, failure to wear PPE to administer the drugs poses risk to all workers. Lawson and colleagues found that 12% of nonpregnant nurses did not wear gloves when administering antineoplastic drugs. Likewise, 42% never used gowns.

The findings underscore the clear need to raise awareness, something employee health professionals may want to consider at their facilities by reviewing PPE policies.

“One of the reasons we wanted to publish this in the *American Journal of Nursing* — as opposed to a scientific [research] journal — was to get the word out and raise more awareness among nurses,” Lawson says.

The study, which assessed PPE by pregnant and nonpregnant nurses who administer antineoplastic drugs, used data from the Nurses' Health Study.

“It takes a multipronged approach to raise awareness among employers and employees from many different avenues — including training, providing the gloves and gowns, and emphasizing the importance of protecting nurses and other healthcare workers,” Lawson says. ■

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## CE QUESTIONS

- 1. Wendy Thanassi, MD, MA, MRO, a professor at Stanford University, said blood tests for latent TB do not cross-react with which vaccine?**
  - a. Varicella zoster
  - b. Guillain-Barré
  - c. Tdap
  - d. Bacillus Calmette–Guérin
- 2. The toxic effects and long duration of treatment for latent TB were mitigated by adding which drug to isonicotinylhydrazide?**
  - a. Ciprofloxacin
  - b. Rifapentine
  - c. Vancomycin
  - d. Colistin
- 3. In the tiered U.S. hospital system for Ebola, most facilities are considered in which category?**
  - a. Assessment
  - b. Frontline
  - c. Treatment centers
  - d. None of the above
- 4. The NIOSH Occupational Health Safety Network is being shut down because the Office of Management and Budget ruled the OHSN could not be used by individual facilities to:**
  - a. measure current progress against past performance.
  - b. adopt preventive measures to avoid injuries.
  - c. compare their data to other facilities.
  - d. show avoided costs through injury prevention.

## 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.