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Dissenting opinion: An ICP who favors fit-testing

Saw workers convert despite N95 use

Though annual respirator fit-testing is being widely criticized, an infection control professional strongly recommends the practice after seeing a group of co-workers get infected with tuberculosis even though they were wearing N95 respirators.

"I don't know why people wouldn't do it," says **Christy Tarr**, RN, BSN, CIC, infection control coordinator at Wheeling (WV) Hospital. "One employee getting exposed because of improper [respirator] fit is one too many."

The defining moment for Tarr came about three years ago when a TB patient — who was not compliant with respiratory etiquette — infected a number of workers even though they were following infection control recommendations to wear particulate respirators. Tarr and colleagues surmised that the workers' masks must have fit improperly, allowing airborne TB to slip through to their respiratory systems.

"We had a cluster of employees who converted [TB skin tests] because this patient was almost what is called a 'superspreader,'" she tells *Hospital Infection Control*. "The employees were wearing respirators and still converted, so we took a very aggressive approach to analyzing our respirators and fit tests."

The hospital had been using a qualitative fit-testing program that involved detecting smells, tastes, or irritants to see if the mask was properly sealed.

"The qualitative is very subjective," she says. "It is dependent on how well someone senses something. We formed a multidisciplinary team to evaluate how we do things, and the team found one overwhelming issue and that was the employees did not feel secure in the respirators they were using and the fit-testing process."

Tarr and colleagues switched the program over to a quantitative test using a machine that detects leaks in the facial seal of the respirator.

"With the quantitative, it is a number," she says. "It's very scientific. The machine looks at particles in the air and does some computations. A lot of the subjectivity is taken out. It just tells you whether or not you have a breach in your [mask] seal. We [also] evaluated several mask styles and found an adjustable reusable respirator."

Popular diets can change seal

The annual fit-testing program began about two years ago and has yielded surprising results for a procedure that has been branded as having little benefit. Though the quantitative fit-testing

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equipment and software constitute an expensive purchase — in the \$10,000 range — the initial expenditure was well worth it, she says.

“It has been very beneficial,” she says. “We have caught employees throughout the year [with inadequate fits]. We have been surprised to find that people who have lost weight on [popular diets] have lost significant amounts in their face. It affected their seal and some ended up having to use a different respirator style because they failed the fit test with their old mask.”

Under the program, employees have their fit testing in conjunction with their annual PPD (purified protein derivative) TB test. At some time during their birth month, the workers go to employee health and complete a medical evaluation form while they wait to then have their PPD applied.

“They are dispersed throughout the year just about evenly,” she says. “On your birth month, you come in, and it is kind of like a one-stop shop.”

In the time between the PPD application and the reading of the test, a physician reviews the medical evaluation form and makes the decision whether the employee is cleared for fit-testing or needs additional evaluation.

“In the interim time between the application of PPD and when it needs to be read — about 48 to 72 hours — the physician has a chance to review the questionnaire and see if the employee needs a

physical or if they can go ahead and be fit tested,” Tarr says. “So by the time the employees come back for their PPD read, they know whether or not they need to be examined or just go ahead and be fit tested.”

To ensure compliance, the hospital maintains a policy that employees are not permitted to work if they did not get their PPD applied and read before the last day of their birth month. “We actually [fit test] all employees that have the potential to have to work in airborne precautions,” she says. “We have 2,000 employees, and about 900 of those meet the criteria for needing a fit test. We actually fit test about 1,200 people a year to account for all of the employee turnover.”

Employees use reusable, adjustable N95 respirators and store them in zip-lock bags on their units. An identical “test” mask is used for the fit-testing procedure. The mask has a hole in it for connection to the fit-testing equipment.

Employees bring both their test mask and dedicated mask, which is also stored in a zip-lock bag — to their annual fit-testing.

“Once you do the work and get the process coordinated, you develop a well-oiled machine,” Tarr says. “It is much smoother than you ever dreamed, and you have good data and records. You feel confident that you have people in masks that fit them.” ■



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