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Infection prevention

Reusable protective eyewear tied to greater risk of contamination

Protective eyewear is supposed to prevent infectious materials from reaching the eyes of OR staff, but recent research has revealed a link between reusable protective eyewear and an increased risk of cross contamination and infection.

"We found that the protective eyewear itself can be a causal factor in ongoing contamination," Victor Lange, MS, MSPH, ICP, CRC, CRA, told OR Manager. "If staff are reusing eyewear between cases and not properly disinfecting them, the remaining bioburden can pose an infection risk to workers and patients."

Lange, director of infection prevention and control/quality and risk management, Promise Hospital of San Diego, has a background in research on improving outcomes related to occupational and patient infections.

Not able to find existing clinical literature on eyewear contamination, Lange investigated eyewear use by OR staff and whether reusing eyewear poses a unique risk.

Victor Lange, MS, MSPH, ICP, CRC, CRA

"We know infectious pathogens can be introduced into the eyes either directly via splashes or droplets, or from touching the eyes with contaminated fingers or other objects," says Lange. "What we found in the study is that many sprays and splashes can happen without OR staff members knowing it."

They may not feel liquid splashing them in the face, but there still can be an aerosolized mist or even a particulate matter that can be introduced into their eyes or onto eyewear, he says.

Contamination

Lange collected 315 pieces of protective eyewear (276 disposable and 39 reusable) worn by OR staff during 71 surgical cases. The cases occurred in four ORs over a 30-day period.

Using sterile technique, he cultured all surfaces of both disposable and reusable eyewear at the end of each case, and he cultured all reusable eyewear again after disinfection. Germicidal wipes were used to disinfect the eyewear.

Nearly half of all eyewear tested cultured positive for contamination post use.

A total of 37.7% of the disposable eyewear and 94.9% of the reusable eyewear cultured positive for contamination post use. In many cases, contaminants were found on eyewear even though staff members were unaware of being splashed or sprayed.

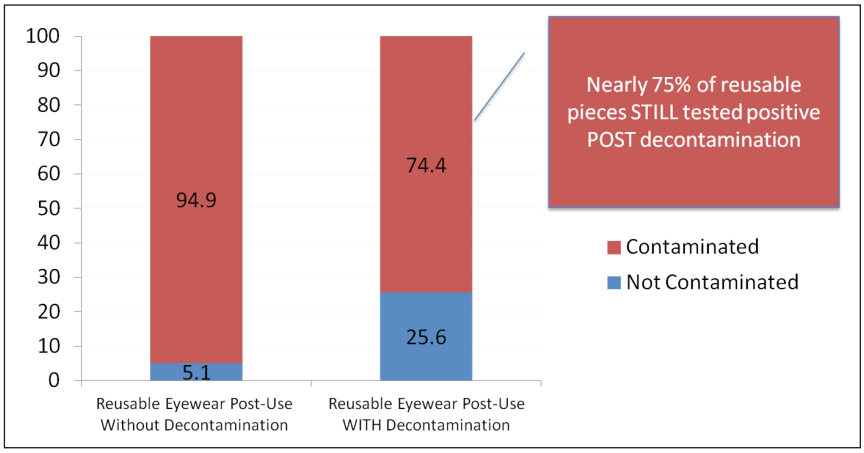
After disinfection, 74.4% of the reusable eyewear remained contaminated with pathogens known to cause hospital-acquired infections (sidebar).

These included:

- coagulase-negative *Staphylococcus* (43.9%)
- Gram-positive cocci (36.1%)
- *Bacillus* (10.6%)
- diphtheroids (5.6%)
- *Micrococcus* (3.5%).

Were staff to reuse the eyewear, as they often do, unaware of contamination, they

risk increased exposure. For curiosity's sake, Lange says he also disinfected and recultured some of the disposable eyewear because some facilities may reuse disposable eyewear between cases for cost savings. Of the 25 pieces he recultured, 96.4% remained contaminated. Disposable eyewear is not intended for reuse, and the reculture proved contamination also remained behind.



Source: Victor Lange, MS, MSPH, ICP, CRC, CRA, director of infection prevention and control/quality and risk management, Promise Hospital of San Diego. Used with permission.

Disinfection

Because of the design features of protective eyewear, it is difficult to eliminate all contaminants, says Lange. This increases the likelihood of OR staff not only transferring those contaminants to subsequent patients, but also contaminating their own eyes as a result of touching their eyewear and then rubbing their eyes.

For proper disinfection, protective eyewear would have to be immersed in a disinfectant bath for a certain amount of time and allowed to dry. However, the time it would take to do this would be prohibitive, he says.

Protection

Lange recommends that OR staff wear disposable protective eyewear for all cases, not just cases where splashes and sprays are anticipated, and dispose of the eyewear at the end of each case.

Any reusable eyewear would have to be designed in such a way that it cannot harbor contaminants, he says, such as a single molded piece of plastic or other material. Anything else increases infection risk for staff and patients. ❖

—Judith M. Mathias, MA, RN

References

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