Quick Safety

Disinfection of tonometers and other ophthalmology devices

Editorial Note: Please direct this Quick Safety to your organization's infection control and ophthalmology leadership.

Issue:

Health care organizations and providers that use tonometers and other devices that touch eyes need to be aware of an infection risk to patients. The American Academy of Ophthalmology has reported that transmission of adenovirus and herpes simplex virus HIV, hepatitis C virus (HCV), enterovirus 70, Pseudomonas aeruginosa, methicillin-resistant Staphylococcus aureus, Acanthamoeba, and prions (transmissible spongiform encephalopathies, such as Creutzfeldt-Jakob disease) could occur from failure to adequately disinfect ophthalmology devices, such as tonometers.[1]

Despite this information, a review of Joint Commission survey data identified either a lack of awareness of the requirements or misinterpretation of manufacturer's instructions — combined with lack of staff training and leadership oversight — related to the disinfection of ophthalmology devices. This has resulted in multiple declarations of an immediate threat to health and safety of patients.

Lack of compliance with reprocessing has been observed with the following items:
- Tonometers
- YAG laser lens
- Eye specula

Tonometer tips are particularly problematic because disinfectants can dissolve the glue that holds the hollow tip together, causing the tip to swell and crack. It's important to note that tonometer tips have been identified as sources of ophthalmic nosocomial outbreaks commonly linked to adenovirus types 8 and 19. Desiccated virus remains viable and can be recovered after 49 days on dried plastic or metal surfaces.[1]

Areas where these items are used include:
- Emergency departments
- Urgent care centers
- Ophthalmology clinics, optometrist offices, and procedure rooms
- Neonatal intensive care units (NICUs)

Items that touch mucous membranes — such as the eye — must be, at minimum, high-level disinfected. Items that contact or enter sterile tissues — such as instruments that are used for surgical procedures — or touch an ulcerated cornea must be sterilized.

Safety actions to consider:

Health care organizations can use the following safety actions to protect patients from the risk of infection associated with tonometers and other ophthalmology devices:

- Review cleaning and disinfection instructions for use of eye instruments to ensure that they are being reprocessed appropriately. Items that touch intact surfaces of the eye must be high-level disinfected. Those that touch non-intact surfaces of the eye or are used for eye surgery must be sterilized.
- Ensure that disinfectants listed as compatible, other than bleach, are U.S. Food and Drug Administration (FDA)-approved high-level disinfectants. Manufacturers often list products as compatible that may be used for pre-cleaning. Some of these products may be commonly available surface disinfectants but are not effective as high-level disinfectants.
- Have available and follow manufacturer instructions for use for both the devices used for ophthalmology examinations and procedures, as well as cleaning and disinfection products.
- Have an individual who is knowledgeable about the different types of disinfectants review the product label and instructions for use. If instructions are unclear, technical services for the manufacturer of the item and any products used in conjunction with reprocessing should be contacted.

The Joint Commission.

Resources:

1. Disinfection of Tonometers: A Report by the American Academy of Ophthalmology. *Ophthalmology*. 2017 Dec;124(12):1867-1875. doi: 10.1016/j.ophtha.2017.05.033. Epub 2017 Jul 11
Note: This is not an all-inclusive list.