

Biometry instruments may be potential reservoir of bacteria and fungi, study shows

Study examines the prevalence of bioorganisms on biometry equipment and assesses cleaning practices in clinics throughout the United States.

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The immersion biometry technique of ultrasonography has been proven to be vastly more accurate than the more commonly used applanation technique. However, there is potential for infection with immersion biometry because there is contact of the immersion shell with the cornea, conjunctiva and/or sclera.

Because microorganisms may be present in solutions or on instruments used in the ultrasound process, poor equipment hygiene between patients can be a risk factor for infection. The virulence of the organism as well as the status of both the corneal epithelium and the patient's immune system is also an important consideration.

The Centers for Disease Control and Prevention published guidelines for instruments that come into direct contact with the external surfaces of the eye. The CDC guidelines state that the instruments should be wiped clean and then disinfected by a 5- to 10-minute exposure to a fresh solution of 3% hydrogen peroxide, a fresh solution containing 5,000 parts per million (mg/L) free available

chlorine (a 1/10 dilution of common household bleach, sodium hypochlorite), 70% ethanol, or 70% isopropanol.

The instruments should be air dried or thoroughly rinsed in sterile water and dried before reuse.

Study of clinic cleaning habits

We presented a study that investigated biometry equipment as a possible source of infectious organisms at the 2004 annual meeting of the American Society of Cataract and Refractive Surgery. The findings are also applicable to contact immersion as well as to applanation tonography tips and pachymetry probes.

The study evaluated the prevalence of microorganisms on biometry equipment (by sampling/culturing) and assessed the cleaning habits (by questionnaire) of 34 ophthalmology clinics around the United States. The ultrasound probe and immersion shell as well as the fluid expressed from the Luer lock and tubing were sampled and cultured by standard enrichment, isolation and identification microbiology methods. The questionnaire included the following questions: type of fluid used, frequency of fluid change, method of probe and shell cleaning, and frequency of tubing change and cleaning.

Microorganisms (both bacteria and fungi) were cultured from the probe/shell

and tubing from over half of the samples (53%). Although the microbes found are generally nonpathogenic, most are not commonly found in the eye, and all (except one) have been shown to cause ocular disease (keratitis and/or endophthalmitis). More than 12% of the samples

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— Leonardo J. Velázquez-Estades, MD, and colleagues

grew fungi. The relevant consideration is that one person's normal flora is being transferred to another patient in some cases, and these microbes can be opportunistic pathogens in the right host.

Half of the clinics reported that personnel changed the coupling fluid daily or after the bottle or balanced salt solution or syringe of fluid was empty. Alarming, most ophthalmology clinics (86%) did not follow the CDC cleaning guidelines for instruments that come in contact with the eye, and instead used a brief alcohol wipe for cleaning/disinfection. This poses a risk of infection, especially in diabetic and

other immune-compromised patients.

The results of this study may represent a best-case scenario because all the study centers knew they were being evaluated.

Universal precautions

To prevent the spread of organisms, universal precautions are important. Subjecting the immersion shell and probe to an aseptic soak in a beaker for 5 minutes and changing tubing and balanced salt solution between patients is straightforward. The relatively low cost to initiate this prophylactic precaution represents approximately \$2 per patient and is a small fraction of the Medicare reimbursement for biometry.

To simplify cleaning, ESI Inc., the manufacturer of the Prager Shell, has a specific shell/probe soaking tray and disposable sterile tubing kit with a one-way fluid flow check valve that, along with new balanced salt solution for each patient, can reduce the chances of microbial contamination. Clinic personnel can quickly, efficiently and economically eliminate bacterial contamination and help prevent bacterial spread to other patients.



For Your Information:

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■ ESI Inc., manufacturers of the **Prager Shell**, can be reached at eyesurgin.com or 763-473-2533.