

Microbial contamination study points to need for between-patient slit-lamp disinfection

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INDIVIDUALS who undergo slit-lamp examination face a potential risk for cross-infection if the instrument is not cleaned between patients, according to a study presented by Areeb H Moosavi BSc MBBS, and colleagues at the annual meeting of the Association for Research in Vision and Ophthalmology.

Their investigation was designed to determine the extent of microbial colonisation of various slit-lamp components during the course of a single clinic session at a specialist UK Eye Centre and to evaluate the effectiveness of their institution's current regimen for slit lamp decontamination that involves routine cleaning by the nursing staff in the morning using a chlorhexidine solution.

The researchers sampled 17 slit lamps for microbial colonisation, including five instruments used in the emergency room and 12 located in the outpatient clinic.

They obtained 51 swabs, as each slit-lamp was swabbed at three different sites (head rest, chin rest, transformer switch), and at three different times: first thing in the morning prior to cleaning; immediately after the routine morning cleaning; and at the end of the clinic session.

Standard hygiene insufficient

The results showed microbial colonisation on each of the three slit lamp components at the start of the day (11.8% to 35.3%) and that the morning cleaning was effective for reducing the microbial load but did not completely eradicate colonisation. By the end of the session, however, there was a significant increase ($P = 0.01$) in culture-positive swabs.

Most of the isolates represented normal skin flora (*Staphylococcus epidermidis*). There were no fungal-positive cultures. Of concern, however, three swabs taken from two slit-lamps in the outpatient clinic grew penicillin-resistant *Staphylococcus aureus*.

"Hands of health care personnel and tonometer heads are known vectors of nosocomial infections in the ophthalmic environment, and we were aware of cases of microbial keratitis developing in patients who were recently seen in the outpatient clinic at our major referral centre. No cause and effect relationships have been proven in the latter cases, but we were interested in investigating whether the slit-lamp might pose a possible source of infection for patients," said Dr Moosavi.

"Our findings suggest it may be worthwhile to re-examine the protocol used at our institution for the initial daily cleaning to further reduce or even eliminate microbial contamination. More importantly, however, we believe they point to a need to clean the slit-lamps between patients. Pressure to take short cuts in order to facilitate patient throughput in a busy clinic or ER setting may put our patients at risk for potentially serious infections."

Of the 51 swabs taken first thing in the morning prior to cleaning, 14 (27.5%) were positive. After the cleaning, 17.6% of the 51 swabs grew bacteria, whereas 43.1% were positive at the end of the session. The rates of positive cultures for the slit lamps in the ER (46.6%) and the outpatient clinic (41.7%).

At the first sampling, microbial colonisation rates were similar for the head rests and chin rests (35.3%). This rate was three times higher at those sites than for the transformer switch (11.8%). By the end of the session, the rate of microbial colonisation had increased for each of the three component sites, but the increases were especially marked for the head rest and chin rest and minimal for the transformer switch.

Among the 17 instruments, 12 had chin rests that grew positive cultures, nine had head rests that grew positive cultures, and three had evidence of bacterial

contamination of the transformer switch. Two head rests of clinic instruments and the chin rest of one of those slit lamps were the sources of the penicillin-resistant *S. aureus* cultures.

Dr Moosavi noted that the transformer switch was swabbed in the study because it is not routinely included in the pre-clinic cleaning regime. Even though it is only handled by the physician and not the patients, it is often the last thing touched by the physician (to put the slit lamp on) before contact with the patient.

"We were pleasantly surprised to find that the bacterial load on the transformer switch did not increase during the day, and that may represent good hand washing techniques by the physicians. However, we still recommend that the slit lamp cleaning at the beginning of the day, end of the day, and between patients should include the transformer switch," he said.

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