

# Stick to the hygiene protocol to contain infectious spreading



**Uwe Pleyer MD**

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in Potsdam**

Eye infections spread easily, making proper hygiene the best barrier against communicable eye diseases, Uwe Pleyer MD, a professor of ophthalmology at the Charite Eye Clinic in Berlin, Germany told ophthalmic nurses and technicians at the yearly Congress of the DGII (German-Speaking Society for Intraocular Lens Implantation and Refractive Surgery).

“Eye infections are brought about mostly by bacteria and viruses and can be very communicable. Germs are everywhere – in the air, on the floor, and on/in every plant and living thing, even in water. Clinic co-workers and patients need to be aware of the risk of spreading infections through improper hygiene,” he stressed.

Eighty per cent of patients with conjunctivitis get it from a virus. Adenoviruses are known to cause the rapidly spreading conjunctivitis epidemics, however papova, polio, herpes simplex, varicella zoster, and cytomegalovirus have all been associated with conjunctivitis.

Adenovirus keratoconjunctivitis is associated with lymphadenitis, pharyngitis, acute conjunctivitis, photophobia and even reduced vision. Although these generalised symptoms usually went undiagnosed, Dr Pleyer told listeners that eye departments needed to recognise viral keratoconjunctivitis, since epidemics spread very quickly and included both patients and hospital workers.

Researchers know of 47 different viral serotypes that cause this highly infectious disease. The high number of adenoviruses makes building up immunity difficult and re-infections common. In Germany, healthcare workers are required to notify the health authorities of patients diagnosed with adenovirus infection, Dr Pleyer said.

Infected patients must be isolated, put on sick leave from work or school, and

removed from steroid therapy, if applicable, as steroids caused viral persistence. He advised ophthalmic staff members to disinfect whatever was touched by the patient, including instruments, surfaces, hands and other exposed skin parts, and to wear hygienic gloves, since disinfecting the hands alone was not sufficient. Finally, the ophthalmic staff have the urgent responsibility of informing patients and hospital co-workers about the infection.

The virus normally persists for 10 days in clothing and other textiles, 35 days on plastic and 49 days on metal. Drop containers are infected in 73 per cent of cases and must be disposed of, he stressed. In fact, re-infection through eye drop containers was so likely that Dr Pleyer advised the use of small individual or double-drop tubes for the administration of eye drops.

The idea of tracking the infected patient's path through the eye department and disinfecting anything he may have come into contact with was daunting, noted an ophthalmic nurse who attended Dr Pleyer's lecture.

“You need to disinfect the entire outpatient station, since you can never be too sure about where the patient has been. They used to tell us to open up the windows to air out the rooms of epidemic patients, but something tells me that this would not be effective here,” she noted.

Dr Pleyer indicated that the only effective means of stopping an adenovirus epidemic from spreading through the entire hospital was to follow the hygiene rules and spread the word quickly to avoid additional infections. He explained that within eight hours, bacteria had the capacity to spread up to one billion organisms on instruments. Proper disinfection could reduce germ numbers dramatically, by five log levels, he said.

The German Society for Hygiene and Microbiology issues a revised list every two to three years that details the most effective disinfectants for bacteria, fungi, and viruses. They recommend that common infectious sources, like tonometers and contact lenses, undergo careful disinfection.

German ophthalmic departments use an adenovirus quick test, known as the Adeno-detector test, to diagnose infections. The test costs patients €10 and the results appear in 10 minutes. It has 90 per cent sensitivity and specificity, which if positive, requires the lab doctor to notify health officials. Otherwise, if detected in a private office, the responsibility to report infectious keratoconjunctivitis falls to the presiding ophthalmologist, according to German law.

Regular hand disinfection cannot be stressed enough, Dr Pleyer indicated. Hospital staff must follow standard procedure here, and avoid typical mistakes such as using too little disinfectant, for too

short a time, with the wrong washing technique. Disinfectant dispensers must be kept at elbow level, to avoid direct hand contact, and jewellery must be left off.

For other types of viral infections, the hospital staff can use polymerase chain reaction (PCR) diagnostics. This examines the DNA of the agent, through separation and amplification. Tests involve a corneal swab and a PCR-sensitive medium.

Microorganism survival in the environment depends on temperature, growth medium, humidity, disinfection, acidity, oxygen, and overall hygiene. Dr Pleyer made an important distinction between agent inactivation, known as disinfection, which clinic co-workers carried out regularly for hands and environment, and sterilisation, defined as agent killing, which was more aggressive and reserved for instruments. Sterilisation kills all of the various forms that microorganisms take, including viruses. Disinfection therefore still incurred a certain risk of re-infection, he noted.

Contact lens wearers were susceptible to another common corneal infection, Pseudomonas keratitis. Once caused mostly by eye trauma or surgery, is now prevalent among wearers of reusable contacts. This infectious bacterial keratitis is most common with soft contacts worn day and night, occurring in 20/10,000 wearers. At night, the reduced amount of oxygen reaching the surface of the eye increases the chance of infection, Dr Pleyer observed.

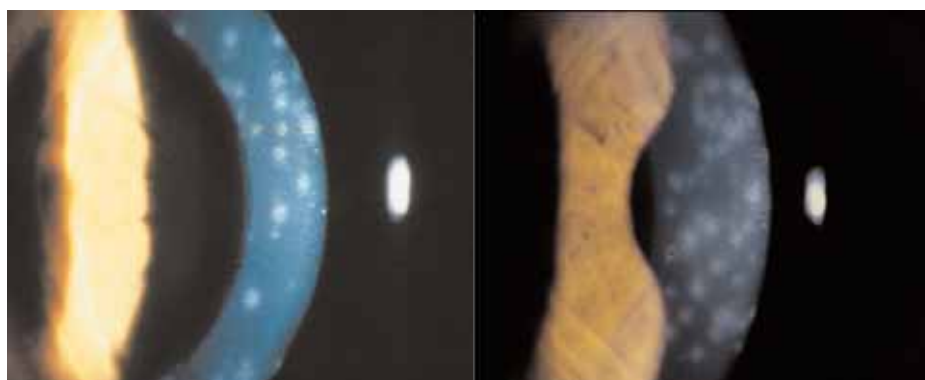
Soft daytime lens wearers are infected with infectious keratitis in 3.5/10,000 cases and hard contact lens daytime wearers in 1.1/10,000. Pseudomonas species are relatively aggressive and must be recognised early on. Dr Pleyer stressed that patients should not clean off their contact lenses using tap water, to avoid a potential source of infection. This form of infectious keratitis can be treated with antibiotics.

Cataract surgery patients can become infected with bacteria common to the skin around the eyes, such as staphylococcus. Atypical mycobacteria have been seen to infect the eye after refractive corneal surgery such as LASIK.

The worst-case scenario of a postoperative infection is endophthalmitis, which may cause blindness if not treated immediately. Endophthalmitis represents a medical emergency, Dr Pleyer maintained. He urges all of his patients who undergo ambulatory surgery to report any pain or reduced vision to him immediately, and not try to 'wait for it to pass'.



*Adenovirus Keratokonjunktivitis: Clinical presentation as conjunctivitis in the acute stage of the infection. Patient may suffer from pain, tearing and appearance as "red eye". At this time there is a high risk of viral spreading*



*Adenoviral Keratokonjunktivitis: Clinical presentation as keratitis in the Postacute stage of the infection. Patient may suffer from reduced vision, glare and photophobia*

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