

Research shows that bacteria survive longer in contact lens cleaning solution than thought

16 April 2014

Each year in the UK, bacterial infections cause around 6,000 cases of a severe eye condition known as microbial keratitis – an inflammation and ulceration of the cornea that can lead to loss of vision. The use of contact lenses has been identified as a particular risk factor for microbial keratitis. New research, presented today at the Society for General Microbiology Annual Conference in Liverpool, shows that a bacterial strain associated with more severe infections shows enhanced resistance to a common contact lens disinfectant solution.

Researchers from The University of Liverpool and The Royal Liverpool University NHS Trust tested different [strains](#) of the keratitis-causing bacterium *Pseudomonas aeruginosa* for their ability to survive in a commonly used contact lens cleaning solution. The team compared nine clinical strains of *P. aeruginosa*, taken from hospital patients in the UK, with *P. aeruginosa* strain 9027, the standard strain used by lens solution manufacturers.

The results showed that the majority of clinical strains tested were killed within 10 minutes of being immersed in the contact lens solution, comparable with the standard reference strain. However, one clinical isolate, *P. aeruginosa* strain 39016 – associated with a more severe case of keratitis with a prolonged healing time – was able to survive for over four hours, much longer than the reference strain.

There are more than 3 million people in the UK using [contact lenses](#). This work suggests that clinically-relevant isolates with enhanced resistance should be included when testing the efficacy of contact lens cleaning solutions to ensure that the procedures are sufficiently robust to kill all *P. aeruginosa* strains.

Professor Craig Winstanley, who led the research, says: "Microbial keratitis can be devastating for a patient – it is important that the risk of developing this condition is reduced in contact lens wearers by improving [contact lens](#) disinfectant solutions."

The research group plan to investigate further isolates to find out how widespread the enhanced bacterial resistance is and to better understand the mechanisms underlying it. This will potentially help in the design of more effective disinfectant procedures.

More information: Professor Winstanley's PhD student Amanda Hall is presenting a poster entitled 'A virulent keratitis-associated strain of *Pseudomonas aeruginosa* exhibits prolonged survival time in contact lens fluid' at the Society for General Microbiology's Annual Conference 2014.

Provided by Society for General Microbiology

APA citation: Research shows that bacteria survive longer in contact lens cleaning solution than thought (2014, April 16) retrieved 17 November 2019 from <https://medicalxpress.com/news/2014-04-bacteria-survive-longer-contact-lens.html>

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