

Fusarium Keratitis --- Multiple States, 2006

On March 8, 2006, CDC received a report from an ophthalmologist in New Jersey regarding three patients with contact lens--associated *Fusarium* keratitis during the preceding 3 months. Initial contact with several corneal disease specialty centers in the United States revealed that other centers also have seen recent increases in *Fusarium* keratitis. This report summarizes the public health response to date in the United States and provides important prevention messages for contact lens users.

Microbial keratitis is a severe infection of the cornea. Risk factors for infection include trauma (generally with plant material), chronic ocular surface diseases, immunodeficiencies, and rarely, contact lens use (1--3). An estimated 30 million persons in the United States wear soft contact lenses; the annual incidence of microbial keratitis is estimated to be 4--21 per 10,000 soft contact lens users, depending on whether users wear lenses overnight (4). Fungal keratitis is a condition more prevalent in warm climates; in the southernmost United States, up to 35% of microbial keratitis cases are fungal keratitis, compared with 1% in New York (5,6). The proportion of fungal keratitis attributable to *Fusarium* spp. also varies by region, from 25% to 62% (1,2,5). First-line treatment includes topical and oral antifungal medications; patients who do not respond to medical treatment usually require surgical intervention, including corneal transplantation (3). *Fusarium* keratitis is not transmitted from person to person.

As of April 9, 2006, a total of 109 patients with suspected *Fusarium* keratitis were under investigation in multiple states. Case finding was conducted through postings on the *Epidemic Information Exchange (Epi-X)* and ophthalmology listservs and through queries of clinical microbiology laboratories. CDC is coordinating an investigation with public health authorities in California, Connecticut, Florida, Georgia, Iowa, Maryland, Massachusetts, Michigan, Missouri, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Tennessee, Texas, and Vermont. The majority of patients have yet to be interviewed; however, of 30 patients for whom complete data were available, the median age was 48 years (range: 13--83 years), and 21 (70%) were female; infection onset occurred during June 15, 2005--March 18, 2006.

Twenty-eight patients (93%) wore soft contact lenses, and two (7%) reported no contact lens use. Among contact lens users, 26 (93%) remembered which solution they used during the

month before infection onset or had retained the actual bottle. Of these, 26 (100%) reported using a Bausch & Lomb (Rochester, New York) ReNu[®] brand contact lens solution or a generic-brand solution manufactured by Bausch & Lomb. Patients reported using various ReNu product types from multiple product lots. Five (18%) patients reported using other solutions in addition to the ReNu solution, including solutions made by Advanced Medical Optics, Inc. (Santa Ana, California) and Alcon (Fort Worth, Texas). Nine (32%) patients reported wearing contact lenses overnight, a known risk factor for microbial keratitis. Eight (29%) required corneal transplantation. Laboratory testing to evaluate product contamination, including typing of *Fusarium* spp. isolates, is ongoing.

Clusters of *Fusarium* keratitis were reported among contact lens users in Asia beginning in February 2006. At that time, Bausch & Lomb voluntarily suspended sales of its ReNu multi-purpose solutions in Singapore and Hong Kong, pending investigation, after multiple reports of *Fusarium* keratitis among contact lens users there (7).

An ongoing investigation by CDC, state and local health departments, and the Food and Drug Administration is under way to determine whether this cluster represents an increase of *Fusarium* keratitis infections and to determine the association, if any, of these cases with any product. Epidemiologic and laboratory studies will help define specific activities, hygiene practices, or products that place persons at increased risk for *Fusarium* keratitis.

Measures to reduce the risk for microbial keratitis can be instituted immediately by contact lens users and include the safe handling, storage, and cleaning of contact lenses. Specifically, contact lens users should wash their hands with soap and water and dry them before handling lenses, wear lenses according to the schedule prescribed by eye-care practitioners and solution manufacturers, and follow guidelines for cleaning and storing lenses provided by eye-care practitioners and solution manufacturers. Contact lens users with questions about which solutions are best for them should consult their eye-care professionals and carefully weigh risks and benefits.

Clinicians evaluating contact lens users with signs or symptoms of keratitis, such as unusual redness, eye pain, tearing, discharge, or sensitivity to light, should consider fungal keratitis and refer the patient to an ophthalmologist, if appropriate. Clinicians should consider obtaining clinical specimens (e.g., corneal scrapings) for culture before initiating treatment. Clinicians or microbiology laboratories should report cases of *Fusarium* keratitis to state and local health departments or directly to CDC at telephone, 800-893-0485. *Fusarium* isolates should be submitted to state laboratories according to instructions provided by local and state public health laboratories.

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