

# Genotyping helps identify source of clinic infection outbreak

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Researchers from East Carolina University used a new technique of genotyping to identify the source of a hematology clinic outbreak of *Mycobacterium mucogenicum*, a gram-positive, acid-fast bacteria found in tap water. This is the first outbreak of *M. mucogenicum* in an ambulatory care setting; five other outbreaks have been reported in hospital settings since 1995. The study was published in the November issue of *Infection Control and Hospital Epidemiology*, the journal of the Society for Healthcare Epidemiology of America.

Using repetitive sequence-based [polymerase chain reaction](#) (Diversilab system), the first time this [genotyping](#) method was used in an *M. mucogenicum* outbreak, researchers determined that a water sample from an exam room faucet with an aerator had the same bacteria as the infected patients, and all were genetically similar to control strain of *M. mucogenicum*. Aerators have been found to be reservoirs for bacteria in previous outbreaks.

The use of new technology to match the genetic material in the bacteria established the source of the outbreak; however, since *M. mucogenicum* is commonly found in [tap water](#) in the U.S. and worldwide, researchers needed to continue their investigation to determine how the bacteria was being transmitted to the patients.

The outbreak involved four young sickle cell patients. Since all four patients had long-term lines implanted (i.e., ports used to deliver medication into the bloodstream), they were probably exposed to *M. mucogenicum* during outpatient visits when the lines were accessed. As part of the outbreak investigation, researchers collected [water samples](#) from two faucets in the exam rooms and performed an audit of infection control practices, including [hand hygiene](#) compliance, use of appropriate techniques for injections, and other procedures.

While reviewing the infection control practices of

the unit, preparation of intravenous medications by one nurse, who was involved in the care of all four patients, was found to be the only breach in safe practices. During the period of infection, this healthcare worker prepared injections at the sink counter. It's likely that the fluid bag being used to prepare injections became contaminated when the worker washed her hands.

As a result of the investigation, all of the water aerators were removed from the faucets and educational information stressing that sinks were not to be used as work spaces were distributed to staff. Since the changes, no new cases of *M. mucogenicum* bloodstream infection have been identified. All four patients had their implanted lines removed and recovered from the infection after antibiotics.

"This study demonstrates the efficacy of using genotyping technology in identifying the source of the [outbreak](#)," said Muhammad Salman Ashraf, MD, assistant professor at The Brody School of Medicine at East Carolina University. "But it also points to the need for proper [infection control](#) practice in clinic settings, and that faucet aerators should be avoided in all healthcare facilities, especially those caring for immunosuppressed patients."

**More information:** Muhammad Salman Ashraf, MD, Marian Swinker, MD, Kerri L. Augustino, MS, Delores Nobles, MT, MPH, CIC; Charles Knupp, MD, Darla Liles, MD, John Christie, MD, Ph.D., Keith M. Ramsey, MD "Outbreak of *Mycobacterium mucogenicum* Bloodstream Infections among Patients with Sickle Cell Disease in an Outpatient Setting." *Infection Control and Hospital Epidemiology* 33:11 (November 2012).

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