

Investigating *Mycobacterium chelonae-abscessus* Complex

[Announcer] This program is brought to you by the Centers for Disease Control and Prevention.

[Kathy Harben] Hi, I'm Kathy Harben and today I'm talking with Keith Simmon, scientist at Isentio US, discussing research that was done while he was at ARUP laboratories. Our conversation is based on a paper about *Mycobacterium chelonae-abscessus* complex, which appears in CDC's journal, Emerging Infectious Diseases. Welcome, Keith.

[Keith Simmon] Thank you for inviting me.

[Kathy Harben] Keith, what is *Mycobacterium chelonae-abscessus* complex?

[Keith Simmon] The *Mycobacterium chelonae-abscessus* complex is a clinically important group and it's usually involved in infections of immune-compromised patients. The members of this group represent a large portion of mycobacterium identified in laboratories. The number of species named in this group has expanded in the last few years, from three to six, and it's always been challenging to distinguish between species in this group by diagnostic tests.

[Kathy Harben] Why is it important to get an exact classification for a pathogen?

[Keith Simmon] One reason is the ability to predict antibiotic susceptibility. By getting an accurate identification, patients can be given the correct antibiotics more quickly. If we don't identify which species it is by our rapid diagnostic test, we may have to wait days to weeks longer to determine the drugs that the organism is susceptible to. Essentially, the sooner we know the species we're dealing with, the better we can treat the patient.

[Kathy Harben] Why did you do this investigation?

[Keith Simmon] This is a case where our diagnostics were initially fooled by a new organism that we later decided to name *Mycobacterium franklinii*. In our laboratory tests, we identified it incorrectly as *Mycobacterium chelonae*. A week later, after antibiotic susceptibilities were determined, we noticed it was not an antibiotic pattern we connect with *Mycobacterium chelonae*. One unusual organism is not a concern, but weeks after the first isolate, we had another, and then another. What was really interesting is that all the isolates were just from a few institutions in the northeastern United States. Since then, we have identified greater than 20 isolates from different areas of the United States, with the main region still being the Northeast.

[Kathy Harben] What distinguishes *Mycobacterium franklinii* from other *Mycobacterium chelonae-abscessus* members?

[Keith Simmon] It is similar to other members in its clinical spectrum, in that it infects immunocompromised patients. However, the antibiotics that it's resistant to are quite different. For example, *Mycobacterium chelonae* is almost always resistant to cefoxitin. And remember, this is the organism we confused it with. But *Mycobacterium franklinii* does not exhibit this high level of cefoxitin resistance. The good news is that it seems to be resistant to fewer antibiotics. It

is also important diagnostically because it does confound some of our established diagnostic tests. However, we outlined a number of different genetic markers that can be used to identify it from other members of this group.

[Kathy Harben] Your paper suggests that *Mycobacterium franklinii* can survive in public water systems. I thought tap water had enough chemicals to kill all germs. How is this possible?

[Keith Simmon] This is an area where we begin to speculate. While it's certainly true that drinking water is treated, the treatment is not something that will inhibit the survival of all microorganisms outside the treatment facility. We live in a world where microorganisms are everywhere. Now, one of the reasons we do speculate on tap water as a source was a separate study that occurred in the Netherlands where they identified DNA sequences that indicated the same species as *Mycobacterium franklinii* from tap and shower water.

[Kathy Harben] This seems like a pretty serious public health threat. Is there anything people can do to protect themselves?

[Keith Simmon] It is important to remember that this complex of mycobacterium infect the immune-compromised population. It's not something that the general public should be concerned with. It's more of an issue in the health care setting for the immunosuppressed patients. Care should be taken to reduce possible exposure to these and other microorganisms in this setting.

[Kathy Harben] Thanks, Keith. I've been talking with Keith Simmon about his paper, *Mycobacterium chelonae-abscessus Complex Associated with Sinopulmonary Disease, Northeastern USA*, which appears in the September 2011 issue of CDC's journal, Emerging Infectious Diseases. You can see the entire article online at www.cdc.gov/eid.

If you'd like to comment on this podcast, send an email to eideditor@cdc.gov. That's e-i-d-editor - one word - at c-d-c-dot-gov. I'm Kathy Harben, for Emerging Infectious Diseases.