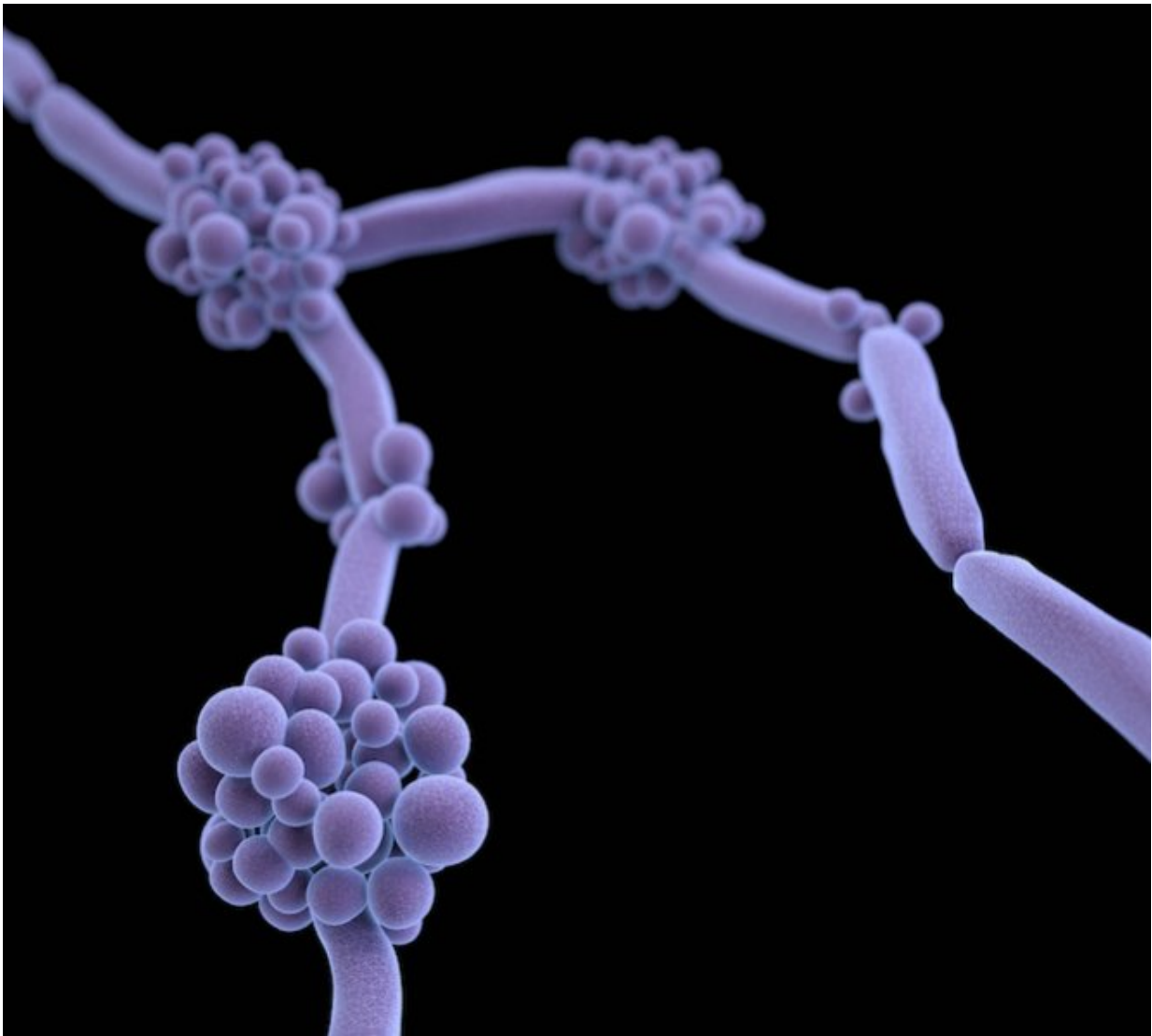


Q&A: What to know about superfungus *Candida auris*

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Candida albicans, which is related to *Candida auris*. Credit: CDC

The multidrug-resistant fungus *Candida auris* has disproportionately affected New York health care facilities, raising questions about its origins, whether it's here to stay and which health care facilities have been impacted by it.

There have been 319 confirmed cases and four probable ones statewide since the fungus, known as *C. auris*, was identified in New York two years ago. The four probable cases are undergoing further testing at Wadsworth Center, the state laboratory in Albany. More than 600 instances of the infection have been diagnosed nationwide.

The microbe can be carried on the bottom of shoes, clings to surfaces in hospital rooms, flourishes on floors, and adheres to patients' skin, phones and food trays, health officials said. It also is odorless and invisible.

Q: Can hospitals be identified that have had cases of the fungal infection?

A: Not without extraordinary difficulty. Although the state Department of Health indicated that nine cases and two deaths involving *C. auris* occurred in Nassau County, representatives for the majority of the acute care hospitals in Nassau told Newsday they have had no cases of the fungus from 2017 through this month. South Nassau Communities Hospital did not respond to Newsday's query. The state Health Department will not disclose the names of the institution or institutions where the cases were confirmed.

Q: What is [drug resistance](#)?

A: Drug resistance is one of the biggest health threats facing communities worldwide today. It means that infections can no longer be easily treated with available drugs. In some instances, infections can't be treated at all. Drug resistance occurs when organisms are overexposed to

the medications used to destroy them. Overexposure forces pathogens to develop mechanisms to thwart the drugs. An example of overexposure is the use of human antifungal drugs in floriculture. The medications are used on flowers, particularly tulips, with the aim of preventing fungal damage on the plant. But overexposure causes fungi to develop mechanisms to repel the medications and pass along that ability to its offspring.

Q: Is the misuse of antifungal drugs the only problem doctors have in treating *C. auris* infections?

A: No. Big Pharma largely has abandoned research and development on new antimicrobial agents, drugs that treat both fungi and bacteria. Some doctors fear we are on a path in which pathogens have become impervious to many existing medications. This is called multidrug resistance.

Q: Sen. Chuck Schumer (D-N.Y.) has called on the Centers for Disease Control and Prevention to declare *C. auris* a public health emergency in New York because more than 300 cases have been confirmed here, the majority of those diagnosed nationwide. Will this help?

A: If the CDC makes the declaration, New York becomes eligible for millions of dollars in federal emergency funds. The senator hopes such funding might be used to develop a diagnostic that improves doctors' ability to rapidly diagnose *C. auris* infections. Current diagnostics can confuse *C. auris* with other *Candida* subspecies. Funding also can be used to develop public health campaigns to raise awareness about the fungus, Schumer said.

Q: Why is *C. auris* considered a threat? Is it more serious than other pathogens that affect medical facilities?

A: Dr. Tom Chiller, who heads the CDC's fungal diseases division, defines *C. auris* as an emerging multidrug-resistant pathogen, which means it has been recently identified in human populations and repels most—and on rare occasions—all drugs used against it. The pathogen affects the sickest of the sick. *C. auris* was first diagnosed a decade ago in Japan. Within that time, it has been diagnosed worldwide. The pathogen joins other emerging, multidrug-resistant infectious agents, the majority of which are bacterial. Multidrug-resistant infections of all kinds are difficult and sometimes impossible to treat.

Q: Is *C. auris* untreatable?

A: Dr. Matt McCarthy, a specialist in fungal diseases at Weill Cornell Medicine in Manhattan, said combinations of current antifungal drugs can cure the infection in patients. However, the death rate is high—about 35 percent—studies have shown. Two patients died in New York City last month because their infections were "pan resistant," which means the fungi repelled every drug that doctors used.

Q: Is anyone working on a cure?

A: Numerous efforts are underway to address *C. auris*. For example, fungal expert Dr. Maurizio Del Poeta, of Stony Brook Renaissance School of Medicine, is working on a treatment, which is being tested in animal models. In New Jersey, a biotech company, Scynexis, is sponsoring clinical testing of a *C. auris*-specific treatment.

Q: Have other pathogens spread around the world like *C. auris*?

A: Yes, many. The pattern has been most frequently associated with bacteria. *C. auris* is the first fungus to exhibit this tendency. MRSA, which is a bacterium, was the first to show it, emerging in the early 1960s in multiple sites worldwide. MRSA stands for Methicillin-

Resistant *Staphylococcus Aureus*. The bacteria bear the name "methicillin-resistant," which signifies the first antibiotic it repelled. But MRSA thwarts numerous antibiotics. Another threat, so-called "nightmare bacteria," or carbapenem-resistant Enterobacteriaceae, emerged in the early 2000s and has become a significant multidrug-resistant infection worldwide.

Q: How do pathogens spread?

A: Pathogens are moved around the world through human travel, the transport of infected animals and contaminated crops. But this is exacerbated by biological mechanisms within the organisms themselves. For example, *C. auris* has developed biological pumps that allow it to force out antifungal drugs that flow into it. Bacteria, on the other hand, have multiple methods of resistance, but also are transported globally by human travel and the transport of infected animals.

Q: Why did major pharmaceutical companies abandon antimicrobial [drug](#) development?

A: Most major pharmaceutical companies left research and development for these drugs years ago because the return on investment is low. The drugs, which cost pennies per dose, are not moneymakers for pharmaceutical companies as are cancer medications. For example, cancer drugs can run hundreds of thousands of dollars for a year of treatment, even though they do not improve the condition or significantly extend life. They do, however, attract investors and bolster Big Pharma's profits.

ABOUT CANDIDA AURIS—*C. auris*, as it is known, became entrenched in New York about eight years after its initial detection in Japan in 2009. Doctors there isolated the microbe from a patient who had an ear infection. However, studies in South Korea of archived

biological specimens suggest *C. auris* may have been evident in that country as early as 1995. "Auris means ear in Latin," said Dr. Maurizio Del Poeta of Stony Brook University, noting how the fungus got its name. How it became the source of a New York outbreak is still a matter of debate.

- Some scientists posit that *C. auris* spread around the world after its discovery in Japan. Others, such as Del Poeta, suggest simultaneous infections that began globally, all around the same time.
- The microbe clings to surfaces in hospital rooms, flourishes on floors, and adheres to patients' skin, phones and food trays. It is odorless and invisible.
- *C. auris* can cause lethal bloodstream infections in people with weakened immunity, which include organ transplant recipients, anyone with cancer, HIV/AIDS or other forms of immune suppression.

SOURCE: Centers For Disease Control And Prevention/Newsday Research

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