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EXCLUSIVE

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Rapid Detection and Diagnostic Surveillance of *Candida auris* is Key as U.S. Rates Rise

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Candida auris (C. auris) is a public health risk that has been classified by the CDC as an urgent threat.[1] The fungal species that was initially reported in Japan in 2009 has now been reported on all continents except Antarctica, and a high number of related hospital outbreaks have been reported worldwide.[2] This serious fungal infection has been found in U.S. hospitals, and CDC data indicates that rates of *C. auris* are on the rise.[3]

Using blood culture identification PCR panels and a cloud-based surveillance network, Brooklyn Noble, PhD, Tristan Timbrook, PharmD, BCIDP, and their team studied the increase in rates of C. auris across the U.S. from 2020 to March 2023. Their findings echo earlier CDC data that showed a 95% increase in the number of isolates found from 2020 to 2021.[4] In this exclusive editorial, they discuss how building up surveillance networks, infection prevention measures, and blood culture identification testing capabilities can help healthcare providers identify and isolate the presence of C. auris.

The Risk, Rise, and Spread of *C. auris*

Although *C. auris* does not typically pose a threat to healthy people, it can be deadly among hospitalized patients who may be at higher risk for a life-threatening infection due to a compromised immune system or an invasive medical device such as a catheter. *C. auris* is resistant to common antifungal medications, with some strains resistant to all three classes of antifungal drugs. This often leaves healthcare providers with few options for treatment.

U.S. cases of *C. auris* currently number in the thousands per year, but this pathogen has a relatively high mortality rate. The CDC has estimated that the mortality rate among hospitalized patients was about 34% and increased to 47% if the infection entered the bloodstream.[5] Bloodstream infections of any kind should be regarded as a serious medical condition, but fungal bloodstream infections can be even more difficult to treat compared to bacterial or viral infections due to the toxicities of agents for these organisms.

In the U.S., *C. auris* was initially limited to a few metropolitan areas in the Northeast several years ago. However, the research conducted in this study showed that the Southeast region of the U.S. is experiencing the highest volume of *C. auris* cases in the past year. The CDC has also published high rates of the fungus in the Southeast, as well as in California. Instead of spreading outward from one regional epicenter like most emerging pathogens, *C. auris* seems to emerge independently and spread within different localized regions.

Researchers are still studying what drove the recent uptick in U.S. cases, but the timing could suggest a connection with the COVID-19 pandemic. The pandemic strained the healthcare system and altered typical patient movement patterns, which may have allowed *C. auris* to spread more easily. Additionally, limitations in personal protective equipment (PPE) meant that some healthcare facilities had to stretch PPE beyond their normal practice. Although infection prevention and control measures generally increased during the pandemic, these measures largely focused on limiting the spread of COVID-19. The management of *C. auris* requires specialized techniques for identification and specific disinfectants for environmental cleaning.

Pairing Surveillance and Diagnostics to Combat *C. auris*

This pathogen has spread unpredictably, and it might feel like a *C. auris* outbreak could suddenly appear anywhere without warning. Near real-time surveillance provides healthcare facilities with specific knowledge about where the pathogen is presenting at any given time, allowing these facilities to prepare and take steps to help prevent further spreading.

Correctly identifying the source of any disease is the first step toward appropriate treatment. *C. auris* can cause rapid outbreaks in healthcare facilities, so it is especially important to quickly identify the pathogen in a patient and take precautions to mitigate transmission. However, diagnosis and detection of this particular pathogen presents unique challenges.

C. auris can be difficult to culture due to a low concentration of yeast cells in the blood specimen. Both culture and traditional biochemical methods of identification have been known to misidentify *C. auris* as other yeasts. In addition, it is also common for healthcare providers to test for a more common source of infection initially, before considering *C. auris*.

Rapid diagnostics have a short turnaround time (TAT) and provide accurate results, which makes them a very useful tool for healthcare facilities to stave off potential outbreaks. In this study, the team utilized the multiplex BioFire® Blood Culture Identification 2 (BCID2) Panel, which simultaneously tests for 43 targets in a relatively short TAT. Molecular PCR identification is sensitive and specific, which help make it the diagnostic of choice for identification of *C. auris* and other bloodstream infections.

The *C. auris* pathogen can live on surfaces and skin for weeks or even colonize patients for several months, persisting after the use of some common disinfectants. Rapid diagnostic tools can support patient care by guiding antifungal use while informing infection prevention and control efforts to help stop further transmission. Diagnostic surveillance paired with advanced analytics to map infectious trends ensures healthcare facilities can respond quickly and confidently to *C. auris* cases.

Brooklyn Noble, PhD, *is a Data Scientist at bioMérieux. Her background includes work in molecular dynamics computational methods. More recently, she has focused on applying data science techniques to detect emerging pathogen outbreaks, track spatiotemporal trends of infectious diseases, and analyze the effectiveness of PCR molecular diagnostic tests compared to traditional culture.*

Tristan Timbrook, PharmD, BCIDP, *is an Antimicrobial Stewardship Pharmacist, Adjunct Assistant Professor at University of Utah College of Pharmacy, and serves as the Director of Health Economics Outcomes Research at bioMérieux. His work focuses on comparative effectiveness and safety research, antimicrobial stewardship initiatives, big data, evidence synthesis, and understanding the complex relationship between microbiology diagnostics and clinical outcomes.*

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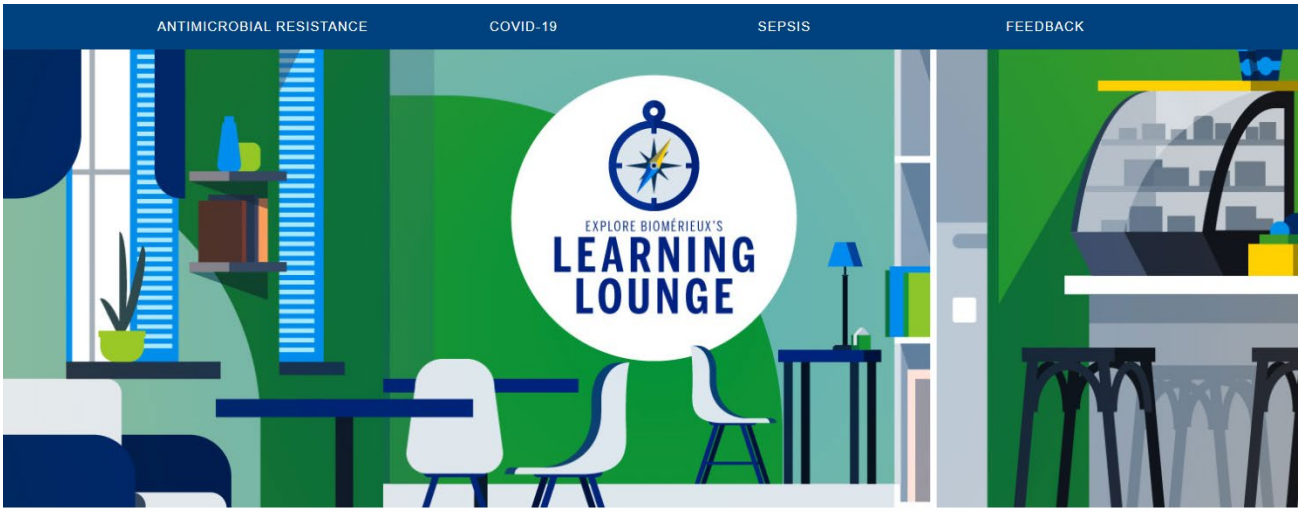

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