



## C. auris in the ICU - a global challenge



*Candida auris* (*C. auris*) is a type of fungus first isolated in 2009; since then there have been numerous infection episodes and outbreaks in different regions of the world. In the U.S. alone, 560 cases of *C. auris* infections have been reported as at 31 January 2019. Overall, most of those affected were critically ill adults, with risk factors for invasive fungal infections, such as immunosuppression, surgery, or indwelling catheters.

Notably, *C. auris* has the ability to persist in clinical environment, facilitating its transmission within critical care setting. This is why cases of infections continue to be reported despite adoption of various measures to control colonisation and infections in intensive care units (ICUs).

Given the progressive spread of *C. auris*, as well as treatment concerns (i.e., multidrug-resistant [MDR] pattern), governments, health authorities and the scientific community should focus their attention on A.U.R.I.S. major issues:

### 1. Worldwide Alert

After the first isolation of *C. auris* in Japan, there have been a number of cases reported in several countries across five continents. There is ongoing debate whether *C. auris* emerged in one region and then spread to others, or if it emerged separately across different countries. Data obtained from genomic sequencing show different clades of *C. auris* with strong geographic structure, suggesting independent emergence in South and East Asia, South America, and Africa.

### 2. Antifungal treatment resistance

To date, the minimum inhibitory concentrations (MICs) breakpoints for susceptibility testing of *C. auris* have yet to be established. Antifungal susceptibility data gathered from three continents showed that nearly 40% of *C. auris* were MDR, with strains having resistance to fluconazole (90%), amphotericin B (30-40%) and echinocandins (5-10%). A small percentage of these strains was also found to be resistant to all antifungals currently available. While new antifungals – including SCY-078, APX001A/APX001, and rezafungin – have

been tested with success, these are not yet recommended for clinical use.

### **3. Resilience and mechanisms of transmission**

*C. auris* can colonise different anatomical sites (e.g., skin, rectum, stool, axilla) and contaminate hospital surfaces and equipment, resulting in a vicious cycle of acquisition, spreading, and infection, particularly in ICUs. For instance, bed, chairs, and monitoring tools (e.g., pulse oximeters, temperature probes) were contaminated during outbreaks. Also, as shown in recent studies, *C. auris* can form biofilms, with a high variation of capacity of production depending on the *C. auris* strain. Biofilm may present diminished susceptibility to chlorhexidine and hydrogen peroxide.

### **4. Implementation of infection prevention and control measures**

The U.S. Centers for Disease Control and Prevention (CDC) and the European CDC (ECDC) released recommendations for *C. auris* case and outbreak management. It is mandatory to trace contacts in order to achieve early identification and screening of possible colonised patients that might be responsible for persistence of *C. auris*. Patients potentially or already colonised are required to be placed in single rooms with contact isolation precautions. Implementation of other preventive measures, such as hand hygiene (with alcohol or chlorhexidine hand rubs), use of protective clothing, and skin and equipment/environmental decontamination, is necessary to contain transmission.

### **5. Global Surveillance**

In 2016 the World Health Organization launched the Global Resistance Surveillance System (GLASS), which aims to support implementation measures on global surveillance on antimicrobial resistances. The emergence of *C. auris* and progressive spread of infections caused by other resistant pathogens only serve to highlight the importance of a global surveillance network for antimicrobial resistance for the safety of critically ill patients.

It is difficult to predict future *C. auris* diffusion; for now, improving knowledge and taking care of the A.U.R.I.S. major issues described above may be the best ways to face *C. auris* challenge.

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