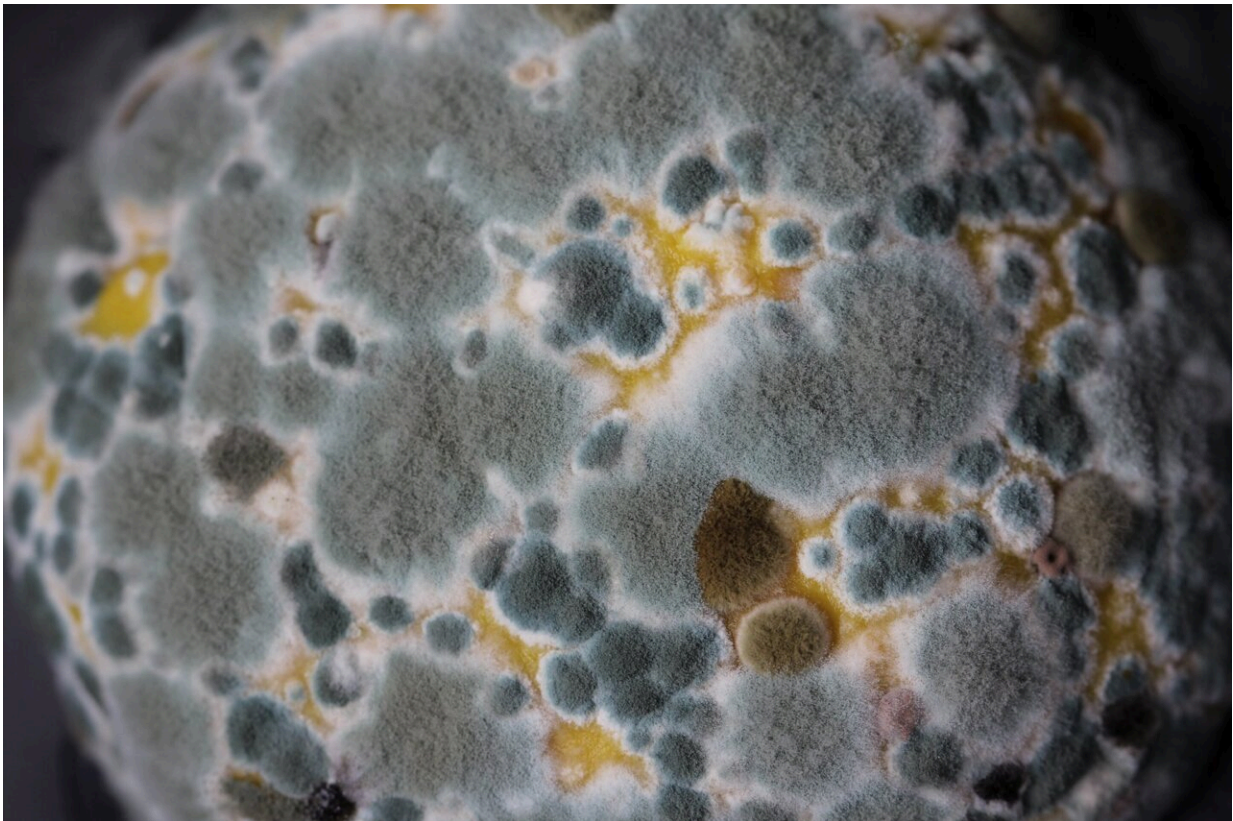


# First WHO 'watch list' of health-threatening fungi released

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The World Health Organization (WHO) is placing fungi that cause diseases (fungal pathogens) in the spotlight, with a global report calling for the public and researchers to pay more attention to this overlooked

group.

The WHO Fungal Priority Pathogens List ranks 19 species of highest concern, which require the greatest research and funding investment. The area of fungal diseases receives less than 1.5 percent of all infectious disease research funding. As a result, the true burden of disease caused by fungus is unknown, and there is limited evidence behind current treatment guidelines in healthcare.

At the top of the list are [fungal species](#) threatening health care that are already or have increasing resistance to antifungal agents, such as *Aspergillus fumigatus* and *Candida Auris*.

During the COVID-19 pandemic, the incidence of at least three deadly [fungal pathogens](#) increased—comorbid aspergillosis, mucormycosis and candidemia. Evidence is also starting to suggest that the incidence and geographic range of fungal diseases are increasing worldwide due to [climate change](#).

The list calls for coordinated investment in laboratory-based and clinical surveillance to manage the increase of antimicrobial resistance. It also highlights that more data is needed on all 19 pathogens, especially relating to morbidity.

Action is needed to protect severely ill patients and those with significant underlying conditions. This includes people with HIV/AIDS, transplants, chronic respiratory diseases, and people recovering from tuberculosis.

"From COVID-19 to climate change, global crises are turning fungi against humans," said Dr. Haileyesus Getahun, WHO Director, Antimicrobial Resistance (AMR) Global Coordination.

Australian researchers played a key role. The University of Sydney and

the Australasian Society for Infectious Disease were commissioned by the WHO to compile the report, which involved consulting an international group of leading infectious disease and public health researchers.

"Emerging from the shadows of the bacterial antimicrobial resistance pandemic, invasive fungal diseases are growing ever more resistant to treatments, becoming an ever more pressing public health concern worldwide," said Dr. Hanan Balkhy, WHO Assistant Director-General, AMR.

There are only four classes of anti-fungal medicines currently available, with only a few drugs currently undergoing clinical trials. In addition, methods to diagnose [fungal infection](#) or detect drug resistance are not widely available globally.

Dr. Justin Beardsley from the University of Sydney Infectious Diseases Institute led the WHO Fungal Priority Pathogens List's study group. He hopes it will provide a roadmap for a global effort to tackle current and emerging fungal pathogens.

"Fungi are the 'forgotten' infectious disease. They cause devastating illnesses but have been neglected so long that we barely understand the size of the problem," said Dr. Beardsley.

"For this project, our team of 30 researchers from across Australia and New Zealand screened over 6,000 papers and recruited more than 400 international mycology experts. It was a comprehensive effort to describe current knowledge, understand what drives priorities, and allow the WHO to set an objective research agenda."

## **Fungi of greatest concern**

The fungi of greatest concern on the list are the four critical priority pathogens, ranked highest due to their public health impact and/or risk of antifungal resistance.

- *Aspergillus fumigatus*, which mainly affects the lungs, is becoming increasingly resistant to azole medicines (a group of antifungals). Infections caused by azole resistant strains kill between 47 percent and 88 percent of affected patients.
- *Candida albicans* can cause invasive infections, typically in vulnerable patients, and kills 20 percent to 50 percent of people it affects. It and *Aspergillus fumigatus* are the two most common fungal pathogens globally.
- *Cryptococcus neoformans* has a propensity to infect the brain, especially in immunocompromised individuals. The main risk factor globally is HIV infection, and it is a leading killer in this population.
- *Candida Auris* is a newly emerged pathogen. It is resistant to most antifungal medications and presents a huge treatment challenge for hospitals. It is so environmentally tenacious that affected wards may have to be closed for prolonged periods to avoid transmission between patients.

## **Report is the result of a careful review of the literature by global experts**

Professor Jan-Willem Alffenaar led the analysis of infectious disease literature that formed a key part of the pathogen ranking.

"The ranking of the fungal pathogens was supported by a careful, systematic review of medical and scientific research. This was done by collating all relevant information from mortality risk to antifungal resistance," said Alffenaar from the Sydney Institute for Infectious

Diseases and School of Pharmacy.

Professor Kirsten Howard, Co-Director, Menzies Centre for Health Policy and Economics, University of Sydney, led work that consulted international infectious experts to ensure their voices were included in the report.

"We conducted a preference survey of international experts to understand how the different pieces of evidence contribute to the overall priority of a pathogen."

"The value of this approach is that by including this expertise, decision-makers can be objective about which factors are most important in determining priorities of fungal pathogens."

Professor Orla Morrissey from the Australia and New Zealand Mycology Interest Group led work on determining the diagnostic tests' ability and the levels of evidence that underpin treatment guidelines.

"This project has really focused the global mycology community on the task ahead. It is in addition to continuous laboratory surveillance correlated with clinical data to understand the epidemiology of the invasive fungal disease," said Professor Morrissey.

"We also need strong investment into basic science research so we can discover the mechanisms by which these priority fungi cause infection. This is the key to developing new drugs and diagnostic tests.

"Critical to reducing the burden of invasive fungal disease is the development of novel strategies to increase access to sensitive diagnostic tests and effective treatments."

Provided by University of Sydney

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