

Addressing Antifungal Resistance

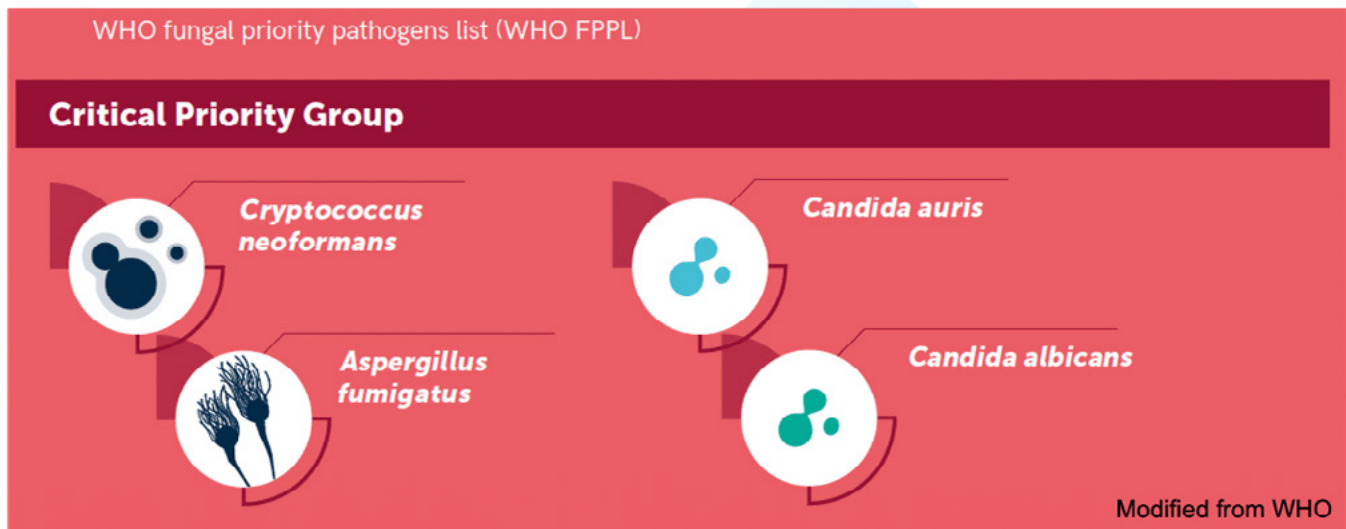
Antifungal resistance is an underrecognized component of antimicrobial resistance. Fungal infections cause an estimated 2 million deaths per year and are becoming increasingly widespread due to environmental changes and expanding at-risk populations. Clinical resistance to every class of antifungal drug has emerged, and multidrug-resistant pathogens are now spreading around the globe.

The direct threat posed by fungi to human health, alarming as it is, is compounded by the indirect effect of fungal diseases of plants that jeopardize food security and biodiversity worldwide. In addition to killing crops, fungi produce toxins that contaminate food supplies, including toxins that lead to the development of cancers.

The top fungal threats in the U.S. include the following, as listed in the 2019 CDC AR Threats Report:



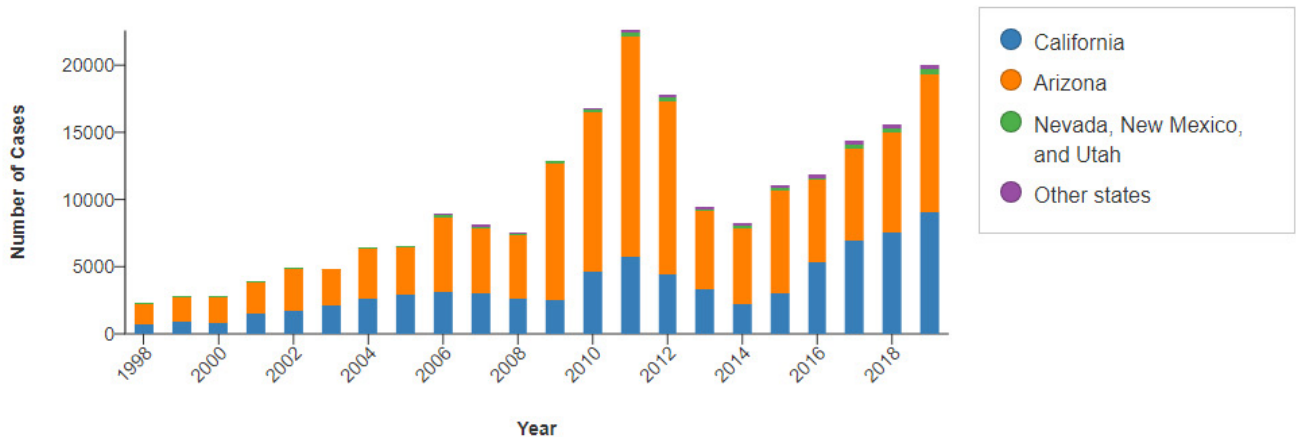
Globally, the WHO recently released the first-ever fungal priority pathogen list, naming 19 fungal pathogens.



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The resistant fungus causing Valley Fever (*Coccidioides immitis*) is another emerging concern, having spread beyond its usual range in the southwestern United States into southern Washington State.

Number of reported Valley fever cases



Antifungal resistance is driven by limited discovery of new antifungal agents, fungicide overuse in agriculture, overuse and overprescription of antifungals in health care and failure of patients to finish the entire course of antifungal treatments when administered. In addition, the incomplete removal of pharmaceutical antifungals in wastewater treatment systems compounds environmental factors that drive fungal evolution and contribute to geographic expansion.

Researchers are developing new and innovative strategies to thwart fungal pathogens, but it is a race against time and regulatory hurdles because fungi can rapidly evolve resistance. With continued global warming, ecosystem perturbation, and global movement and trade, it is likely that novel fungi will continue to emerge as disease agents. Continued diligence is necessary to identify new and emerging pathogens and then to study these organisms to provide insights relevant to prevention, diagnosis and treatment.

Support is urgently needed to address antifungal resistance.

- Policymakers should direct federal science agencies to include antifungal research and development in key AMR funding streams.
- CDC should track key fungal diseases in AMR surveillance systems.
- Support the development of new laboratory tests and increase laboratory capacity to perform testing for both infections and emergence of resistance.
- Incentivize novel antifungal drug development.

For more information, see:

<https://asm.org/Articles/2022/November/Combating-Antifungal-Resistance>

<https://www.who.int/publications/i/item/9789240060241>

<https://www.cdc.gov/drugresistance/pdf/threats-report/2019-ar-threats-report-508.pdf>