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Better Diagnostics Could Save More Lives Than the Next Breakthrough Antifungal

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At BIO International Convention 2026, Dr Tom Chiller, Chief Medical Officer and Vice President of Strategic Innovations at IMMY, discusses why fungal diseases remain one of the world's most overlooked health threats, and how rapid diagnostics, point-of-care testing and stronger surveillance can dramatically improve patient outcomes across both developed and resource-limited healthcare settings.



Despite causing millions of serious infections and hundreds of thousands of deaths each year, fungal diseases continue to receive far less attention than many other infectious threats. **Speaking with BioSpectrum Asia during BIO 2026 in San Diego, Dr Tom Chiller, Chief Medical Officer and Vice President of Strategic Innovations at IMMY,** explains how rapid diagnostic innovations, expanded clinical awareness and improved access to point-of-care testing are transforming the global response to fungal infections while paving the way for earlier diagnosis, more effective treatment and stronger public health preparedness.

Fungal diseases remain significantly underdiagnosed worldwide. Why does this continue to be a major healthcare challenge?

There are several factors contributing to the underdiagnosis. First, fungi are genuinely difficult to diagnose. Symptoms of fungal infection — fever, cough, fatigue, neurological changes — mimic bacterial infections, tuberculosis, and cancer. Without diagnostic testing specifically designed to detect fungal pathogens, clinicians often chase the wrong diagnosis, sometimes for weeks or months. Patients are treated empirically for conditions they don't have, while the underlying fungal infection progresses.

Second, there is still lack of awareness in the medical community. Outside of specialized infectious disease training, most clinicians receive very little education about fungal diseases. Many simply don't think to test for fungi. This isn't a failure of intelligence — it's a failure of the system to train clinicians about a genuinely underappreciated threat.

Third, in many of the regions where fungal diseases are most prevalent — sub-Saharan Africa, Latin America, Southeast Asia — diagnostic infrastructure is limited. Without access to laboratory testing, even the best-trained clinician is guessing.

Lastly, fungal cells are the most similar to human cells of any pathogen, and therefore making diagnostics specific for fungi that don't react to human cells is challenging.

The result is a diagnostic void that claims millions of lives annually. At IMMY, we think about this every day, because the solution to underdiagnosis is not just better medicines — it's better diagnostics, deployed where they're actually needed.

How are advances in diagnostics transforming the detection and management of fungal infections?

For much of medical history, diagnosing fungal infection required culture — growing the organism in a laboratory, which takes days, even weeks, requires technical expertise, and often lacks sensitivity in clinical samples. Today, antigen-based and molecular diagnostics are changing that calculus fundamentally.

Lateral flow assays, for instance, allow clinicians in a rural clinic in Uganda to test for cryptococcal meningitis in 10 minutes with a fingerstick of blood — no laboratory required. That's not an incremental improvement; it's a paradigm shift. When we demonstrated that systematic screening with the CrAg LFA could identify patients with cryptococcal antigenemia before they developed meningitis, and treat them preemptively, we showed that diagnostics aren't just a means to a name — they are an intervention that saves lives.

Similarly, advances in pan-fungal molecular detection, serum biomarkers like beta-D-glucan and galactomannan, and multiplexed PCR platforms are enabling broader and faster detection across the spectrum of fungal pathogens.

The critical frontier now is not just innovation in the technology itself, but ensuring that these tools are validated, accessible, and integrated into clinical workflows — particularly in low- and middle-income countries where the burden is greatest and the infrastructure is thinnest.

What innovations is IMMY pursuing to improve outcomes for patients affected by fungal diseases?

At IMMY, our mission is simple to state and difficult to execute: get the right diagnosis to the right patient at the right time, wherever they are in the world. We want to bring the diagnostic test as close to the patient as possible and have it available in under an hour.

We are best known for the Cryptococcal Antigen Lateral Flow Assay, which has become the global standard for cryptococcal antigen detection and is now incorporated into WHO screening guidelines. But we haven't stopped there. We are actively expanding our portfolio to address other major fungal killers — including Histoplasma, Aspergillus, and the endemic mycoses that are chronically underdiagnosed even in high-income settings. Many of these conditions are mistaken for other conditions, and patients die while waiting for a diagnosis that never comes. A rapid, accurate, point-of-care test changes that.

We are also thinking carefully about how diagnostic results translate into clinical action. A positive test is only as valuable as the treatment pathway connected to it. That means working with health systems, ministries of health, and global health partners not just to deploy tests but to build the algorithms and protocols around them.

Innovation at IMMY isn't only about novel assay chemistry — it's about the entire diagnostic ecosystem: access, affordability, training, and integration into care.

How should healthcare systems strengthen preparedness against emerging fungal threats?

Strengthening preparedness requires action on several fronts simultaneously.

Surveillance is foundational. We cannot respond to threats we cannot see. Health systems need robust, laboratory-confirmed surveillance for fungal infections — not just reporting of suspected cases, but systematic diagnostic testing that tells us what pathogens are circulating, where, and in whom. Right now, fungal disease surveillance is woefully inadequate compared to what we have for bacterial and viral threats.

Clinical education is equally critical. Physicians, nurses, and pharmacists need to understand that fungi are a growing threat, that clinical presentation is often nonspecific, and that diagnostic testing must be a reflex rather than an afterthought in immunocompromised and severely ill patients.

Health systems also need antifungal stewardship programs analogous to antibacterial stewardship — ensuring that antifungals are used appropriately, that resistance is monitored, and that empiric treatment is backed by diagnostic

confirmation wherever possible.

Finally, we need investment in the diagnostic and therapeutic pipeline. New tools — both diagnostic and therapeutic — require sustained funding, political will, and public-private partnership.

Looking ahead, what developments do you expect to have the greatest impact on fungal disease diagnostics and treatment?

On the diagnostic side, I expect multiplexed point-of-care platforms to be transformative — assays that can simultaneously test for multiple fungal pathogens, or distinguish fungal from bacterial from viral causes of a syndrome, in a single rapid test. The technology is moving in this direction, and the clinical need is enormous.

Advances in proteomics and metabolomics are opening new windows into host-pathogen interactions that may yield novel biomarkers — signatures that tell us not just whether a patient is infected, but how serious the infection is, how they are likely to respond to treatment, and whether therapy is working.

On the treatment side, I'm encouraged by the pipeline of novel antifungals now in clinical development — agents with new mechanisms of action that can overcome existing resistance. For decades, we've had essentially three classes of antifungals. The expansion of that armamentarium is overdue and desperately needed.

But the development I'm most excited about — because I think it has the most immediate potential to save the most lives — is the continued scale-up of diagnostic testing in low- and middle-income countries. The tools we have already developed, deployed systematically with the right clinical protocols, could prevent hundreds of thousands of deaths annually. At IMMY, that is the work we wake up for every day.