

# Antifungal stewardship: consensus on the diagnosis, treatment, and prevention of *Candida* spp. disease is a fundamental step in the road map to achieve it

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Antimicrobial resistance is a major public health problem and a principal threat to contemporary medicine. A fundamental principle of controlling antimicrobial resistance are antimicrobial drug stewardship programs, which seeks to preserve the future effectiveness of antimicrobials and improve patient outcome; thus, the selection of the optimal antimicrobial drug regimen, dose, route of administration, and duration of therapy are key to limit inappropriate antimicrobial usage and avoiding unnecessary prescribing, including discontinuing antibiotic therapy if it is not required. However, within the context of stewardship programs, insufficient attention has been given to fungal infections. Furthermore, the importance of the accurate and timely diagnosis of fungal infections in overwhelming antimicrobial resistance has been absent from policy discussions<sup>1</sup>. On the other hand, all serious fungal infections need appropriate antifungal therapy for successful patient outcome. Only a few classes of antifungal drugs are available, so the emergence of resistance to single drug classes and now multidrug resistance threatens the appropriate patient management. Azole resistance among *Candida* and *Aspergillus* species is one of the greatest challenges to clinical success, followed by echinocandin and multidrug resistance among some *Candida* species, especially *Candida glabrata*. Recently, *Candida auris*, a cryptic species uncommon in most hospitals around the world, including Colombia, has appeared as an emerging species and a global threat capable of developing resistance to multiple antifungals and with great potential for nosocomial transmission<sup>2</sup>.

The epidemiology of *Candida* spp. infections has significantly changed over the last years. Despite the availability of new and effective antifungal agents, invasive fungal diseases, still carries a high mortality rate including invasive candidiasis. Early diagnosis and treatment remain the cornerstones of better prognosis. Unfortunately, early diagnosis of fungal infections is a challenge due to non-specific clinical manifestations and the low sensitivity and specificity of classical microbiology cultures and diagnostic images, which are the most common diagnostic techniques used and hospitalized patients, especially those in intensive care units (ICUs), are often inappropriately placed on broad-spectrum antibiotic drugs because fungal diseases involving *Candida* spp. are not routinely diagnosed. Although many diagnostic tests are not sensitive or fast enough to reduce empirical antifungal use, they might be useful for signaling early cessation of therapy when the result is negative. New serological or molecular diagnostic methods will probably be an essential part of future antifungal stewardship programmes. Although there are already new technologies for a better diagnosis for *Candida* infections in middle-income countries, these must be included in the health systems and be available to use. In many centres, antimicrobial stewardship tools are not readily available because of poor access to diagnostic tests with long turn-around times. One way to do this is to include these diagnostic tools into clinical practice guidelines and ideally perform cost / effectiveness studies that demonstrate once again that correctly diagnosing not only better clinical outcomes but also is more efficient for health systems.

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The main tools in antimicrobial stewardship are guidelines for empirical therapy and diagnostic tests that reliably and safely guide therapy. Guidelines that only cover the most common fungal infections and patient settings, combined with a generally poor understanding of fungal infections outside of specialist clinical teams, adds to the challenge of successful antimicrobial stewardship. Newer drugs with lower toxicities than drugs such as amphotericin B have increased empirical and prophylactic use of antifungals in many patient groups, which affects antifungal resistance and is also financially unsustainable. In general, antifungal stewardship programmes are multifaceted and should be tailored for each institution and health-care system<sup>3,4</sup>. The key elements of an antifungal stewardship plan typically include: provision of local guidelines and diagnostic tests that guide when therapy should start and stop; development of multidisciplinary care bundles; provision of bedside advice from infectious disease specialists, microbiology specialists, and the pharmacy team on dose, route of administration, and cessation of treatment; identification of prescriber knowledge gaps and education; and implementation of prescribing restrictions when close infectious diseases support is available<sup>4</sup>.

In this issue, Oñate J, et al<sup>5</sup>. describe the main recommendations for the diagnosis, treatment and prevention of infections caused by *Candida spp.* In children and adults, adapted to the context of Colombia, a middle-income country, which may be useful not only for Colombia but for other countries in the region with similar resources. Particularly in countries with limited resources, the development of guidelines and recommendations is a very useful tool for orientation and better use of available resources. This clinical guideline involves 238 recommendations of which at least 40 are related

to the diagnostic approach. Now typically these documents are the result of the hard job of many professionals, but unfortunately this is the easiest component, because the real challenge comes now and is the implementation and especially to achieve adherence to it by the health professionals in each of their institutions. An antifungal stewardship plan builds on the joint commitment of medical professionals involved in patient care to adhere to the guidelines and follow a self-directed educated approach, by including a multidisciplinary antimicrobial stewardship team to oversee the program<sup>4</sup>. Finally I would like to invite you in those institutions in those that already work the antimicrobial stewardships are included several of these recommendations that will surely allow not only a better use of antifungals but also will have an impact on the antimicrobial resistance.

## Referencias

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