

## Evaluating the current status of laboratory diagnosis of fungal infections in the Philippines: Future needs

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### Abstract:

Fungal infections represent the invasion of tissues by one or more species of fungi which can range from superficial infections to cutaneous and subcutaneous infections, to serious deep tissue, blood, lung or systemic diseases. For almost five decades, the worldwide incidence of fungal infections has increased dramatically. Several factors have contributed significantly to this increase which includes indiscriminate and widespread use of broad-spectrum antibiotics to suppress or kill bacteria, use of corticosteroids, anti-cancer drugs and invasive surgical procedures, among others. The complex interplay between host and microbe is especially evident in the pathogenesis of fungal diseases. In the ecology of organisms as well as host-microbe interactions, fungi which were once classified as saprobic organisms or commensals in their respective ecological niches have now been recognized as opportunistic pathogens or disease-causing agents which possess latent capabilities to cause life-threatening infections in immune-deficient hosts, particularly Acquired Immune Deficiency Syndrome (AIDS) patients. There are also great similarities between fungal cells and animal cells since they are both eukaryotes, which significantly complicate therapeutic approaches to fight fungal diseases which frequently occur in hosts with compromised immunity. Certain fungi, like *Candida albicans* are particularly commensals, forming part of the normal flora while others like *Cryptococcus neoformans*, are environmental opportunists that take advantage of the abrogated host's system. Some fungi are dimorphic in nature occurring as mold forms in the environment transforming into yeast phase in tissues which are able to produce infections even in healthy hosts. They cause diseases called endemic mycoses, which are group of diseases caused by diverse fungi that share common characteristics. In the Asia-Pacific region, the epidemiology of fungal infections is not well described and the information regarding incidence is lacking. There were several researchers who conducted reviews of fungal infections in the region. Surveys conducted showed rising incidence of fungal diseases. The occurrences of such fungal infections in the Asia-Pacific region do exist and pose significant impact or threat on public health. Although the means of diagnosing and treating fungal infections have greatly improved over the last decade, fungi still represent a serious threat to the health of immunocompromised and immunodeficient patients. In addition to the more commonly encountered fungi, recent years have also seen the emergence of life-threatening infections that

had been previously seen in clinical practice. Many of these fungi are difficult to detect and treat and their emergence as serious agents of disease among specific patient cohorts presents new challenges to the delivery of safe and effective antifungal therapy. As an offshoot of the Fulbright Visiting Scholar Program where several diagnostic methods were studied and done at Duke University Medical Center, this study will discuss more on the growing concern about opportunistic fungal infections, epidemiology and diagnostic procedures applicable in the Philippines. Mycological methods would include sample/specimen collection, use of appropriate culture media, diagnostic methods, virulence tests using animal models and histopathologic techniques.

### Biography:

Alice Alma C. Bungay is a Doctor of Veterinary Medicine (DVM) graduate from the University of the Philippines Diliman and currently an Associate Professor in the Department of Medical Microbiology, College of Public Health, UP Manila. She was formerly the Officer-in-Charge of the department. Dr. Bungay obtained her Master of Veterinary Studies (Public Health) from Massey University in Palmerston North, New Zealand under the New Zealand Overseas Development Assistance-Postgraduate Scholarships (NZODA-PGS). She was conferred as Fellow in Veterinary Public Health of the Philippine College of Veterinary Public Health (PCVPH).

This work is partly presented at  
14th International Conference on  
Allergy and Clinical Immunology

November 21-22, 2019 Courtyard by Marriot Bali Seminyak Resort | Bali, Indonesia