

## Burden of Serious Fungal Infections in Singapore

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### INTRODUCTION/ PURPOSE

Singapore is a cosmopolitan South East Asian country with a Gross Domestic Product of USD 240 billion and a population of 5.35 million. However, the fungal burden is poorly recognized and documented in Singapore. We aim to estimate the burden of fungal infections in the country as part of a multi-national effort to quantify worldwide fungal infections

### METHODS

Estimation of fungal disease burden was extrapolated from available epidemiological documents. Population statistics and respective disease distributions pertaining to HIV, malignancies, tuberculosis, chronic obstructive pulmonary disease (COPD) and asthma were extracted from Singapore Demographics Profile 2012 and Ministry of Health (MOH) releases. The total number with HIV/AIDS was estimated to be 5306 from the MOH statistics in 2011. The number of new AIDS patients per year was 183, with 47.7% presenting with Pneumocystis pneumonia and 9.2% presenting with cryptococcal meningitis ( taken from the Communicable Disease Surveillance Report in 1997). The number of AML patients per year was estimated to be 161 per year, extrapolated from the data from ICD-10 C92.0. The annual incidence of pulmonary tuberculosis was 39.2 per 100000 as estimated from MOH statistics. The prevalence of moderate to severe COPD and asthma were obtained from World COPD day- The Singapore perspective from The College Mirror :Dec 2003: Vol 29(4) and The Health Promotion Board Singapore respectively. Transplant cases were estimated from Heart Lung Registry, and from the Renal and Liver Transplant Lists in Singapore hospitals. The number of critical care beds was obtained via a manual count of the hospitals countrywide. In cases whereby local incidence of specific diseases was not known, this was reasonably extrapolated from that of neighbouring Asian countries with similar population demographics.

### RESULTS

13% of the population are younger than 15 years old, and 2.12 million are women older than 15 years of age, of which 106000 (5% of adult women) are estimated to have recurrent *Candida* vaginitis<sup>1</sup>. The incidence of invasive aspergillosis in immunocompromised hosts is at least 33 cases annually (10% of AML, equal number of non AML hematological patients, 0.5% of renal transplant patients, 4% of lung and liver transplant patients and 6% of heart transplant patients), but many more in COPD admissions and ICU patients. On the other hand, the prevalence of chronic pulmonary aspergillosis (CPA) can, at best, be extrapolated from data in Taiwan and China. While asthma is relatively common in adults (250,000 - 5% of population), ABPA and SAFS are rarely diagnosed. Based on 183 annual new AIDS patients in Singapore in 2011, 9.2% (17) of those with AIDS have cryptococcal meningitis, 47.7% (87) have Pneumocystis pneumonia, 460 patients per year have oral candidiasis, and 265 have esophageal candidiasis. The annual incidence of candidemia is 268 per year ( 5 per 100000)<sup>2-3</sup>, with two thirds of the patients being in critical care or surgical care, and one thirds being cancer or immunocompromised patients.

Infection	Number of infections per underlying disorder per year					Total burden	Rate /100K
	None	HIV/AIDS	Respirator y	Cancer/Tx	ICU		
Oesophageal candidiasis	-	265	-	-	-	265	4.95
Candidaemia	-	-	-	80	187	267	5
Candida peritonitis	-	-	-	-	37	37	0.7
Recurrent vaginal candidiasis (4x/year +)	106,000	-	-	-	-	106,000	1,981
ABPA	-	-	unknown	-	-		unknown
SAFS	-	-	unknown				unknown
Chronic pulmonary aspergillosis	-	-	unknown	-	-		
Invasive aspergillosis	-	-	-	33	unknown	33	0.6
Mucormycosis	-	-	-	10	-	10	0.2
Cryptococcal meningitis	-	17	-	unknown	-	17	0.3
Pneumocystis pneumonia	-	87	unknown	unknown	-	87	1.6
Histoplasmosis	2	2	-	2	-	6	0.1
Fungal keratitis	6	-	-	-	-	6	0.1
Tinea capitis	unknown	-	-	-	-	unknown	unknown
<b>Total burden estimated</b>	<b>106,008</b>	<b>371</b>	<b>unknown</b>	<b>125</b>	<b>224</b>	<b>106,728</b>	<b>1.1</b>

Table : Summary of fungal burden in Singapore

### CONCLUSIONS

The prevalence of medically-significant fungal infections in the population is under-recognised in Singapore. Increased awareness and surveillance will serve to enhance appropriate allocation of healthcare resources in this disease spectrum.

#### References

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