

A study on the effectiveness of a pharmacist led Antifungal stewardship program, in immunocompromised patients of a tertiary care teaching hospital in South-India.



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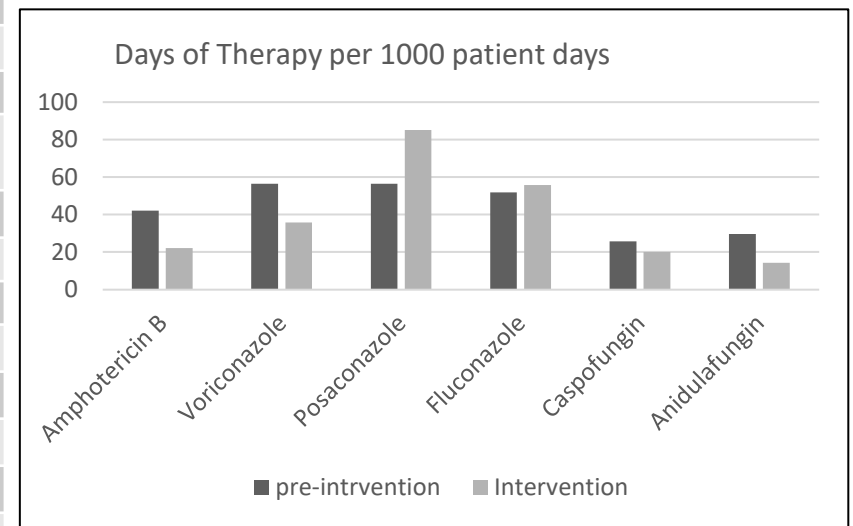
Background : Anti-fungal stewardship (AFS) is a less explored area of an anti-microbial stewardship (AMS) program as the patients prone to fungal infections are mostly immunocompromised, post-chemotherapy or post-transplant. In a Low-and- Middle income country (LMIC) like India, there is a dearth of Infectious Disease (ID) trained physicians and pharmacists. We aimed to study the effectiveness of a pharmacist led AFS program to ensure rational prescribing of antifungals via a post-prescription review and feedback method.

Methods : In this prospective interrupted time series analysis from June 2021 to November 2021, AFS was done on adult in-patients in the department of Hematology in a tertiary care teaching hospital in South India. The study had a pre-intervention phase and intervention phase of 3 months each. In the pre-intervention phase, patients on anti-fungal therapy > 48 hours were identified and base line data were collected, and no recommendations were given. In the intervention phase, in those on antifungals >48 hours, appropriate recommendations were made with regard to modification and discontinuation of the anti-fungals based on patients' clinical condition under the supervision of an ID physician. Acceptance and impact of the intervention were monitored and recorded.

Results : A total of 193 patients were analyzed over 6 months, of which 107 patients with a mean age of 42.1 ± 14.2 belonged to the pre-intervention phase and 86 patients aged 40.2 ± 12.6 years were in the intervention phase. There was no statistically significant difference in the in-hospital mortality [26.16% vs 23.25% (p = 0.64)] between the two groups. In the intervention phase, 15 (17.44%) prescriptions were found to be inappropriate. Among these 66% of the recommendations were accepted by the treating physician. The days of therapy per 100 patient days were calculated for each individual anti-fungal drug and there was a significant reduction in consumption of Anidulafungin [29.648 Vs 14.28 (p < 0.0007)], Amphotericin B [42.05 Vs 22.18 (p < 0.0001)] and Voriconazole [56.41 Vs 35.77 (p < 0.00001)] in the intervention phase.

Table : Baseline Characteristics			
	pre- intervention (n=107)	intervention (n=86)	P - value
Male, (%)	69 (64.48)	56 (65.11)	0.93
Female, (%)	38 (35.51)	30 (34.88)	
Age, mean (sd)	42.1 (±14.2)	40.2 (±12.6)	
Primary Disease, N (%)			
AML	38 (35.51)	27 (31.39)	0.55
ALL	15 (14.01)	14 (16.27)	0.66
CML	6 (5.60)	0	0.1
CLL	0	2 (2.32)	0.23
Multiple Myeloma	11 (10.28)	16 (18.60)	0.1
Aplastic Anemia	14 (13.08)	5 (5.81)	0.1
Lymphoma	11 (10.28)	12 (13.95)	0.44
MDS	3 (2.80)	4 (4.65)	0.5
Others	9 (8.41)	6 (6.97)	0.71
CO-MORBIDITIES, N (%)			
Diabetes	8 (7.47)	24 (27.90)	0.0004
Hypertension	7 (6.54)	15 (17.44)	0.02
Dyslipidemia	0 ()	6 (6.9767)	0.05
Asthma/COPD	2 (1.869)	4 (4.65)	0.28
MI/CHF	1 (0.93)	2 (2.32)	0.45
CKD	4 (3.73)	2 (2.32)	0.58
Stroke	1 (0.93)	3 (3.48)	0.25
Transplantation, N (%)			
HSCT	45 (42.05)	48 (55.81)	0.06

Table : Primary Outcome of the Study			
	Pre-intervention (n=107)	Intervention (n=86)	P-value
All-cause Mortality (%)	28 (26.16)	20 (23.25)	0.64
Days of Therapy	1334	1196	0.98
Patient Days	2773	2488	
DOT per 100 patient days	48.1	48.07	



Conclusion : Clinical pharmacists are key in reducing antifungal consumption in India, given the dearth of doctors trained in Infectious Diseases and those who would have a time to do this in the long term.

Abbreviation : AML – Acute Myeloid Leukemia, ALL – Acute Lymphoid Leukemia, CML - Chronic Myeloid Leukemia, CLL – Chronic Lymphoid Leukemia, COPD – Chronic Obstructive Pulmonary Disease, MI – Myocardial Infarction, CHF - Congestive Heart Failure, CKD – Chronic Kidney Disease, HSCT - Hematopoietic Stem Cell Transplant