

Short Communication

Prioritizing Indian States for Implementation of Air Borne Infection Control Measures at HIV Care Settings

Dr. Suchit V Kamble¹, Dr. Noopur Goel², Dr. R. R. Gangakhedkar³

¹Scientist D, Department of Epidemiology, National AIDS Research Institute, Pune, India

²Senior Research Scientist, Department of Epidemiology, National AIDS Research Institute, Pune, India

³Scientist G, Head of Epidemiology & Communicable Diseases, ICMR, Delhi, India

Corresponding Author: Dr. Suchit V Kamble

ABSTRACT

Implementation of fast track targets (90–90–90) and ‘test and treat all’ strategy is going to increase the life expectancy of People Living with HIV/AIDS (PLHIV). However there is assumed burden in management of co-infections and co morbidities among them which will continue for longer time. Numbers of ARTC, Link ART centers, and Integrated Counselling and Testing Centers are increasing in India and most of free ARTC are overburdened and overcrowded. HIV-infected clients with undiagnosed TB are expected to seek care in ARTC posing the risk of TB exposure to other patients as well as HCWs. Implementation of Airborne Infection Control (AIC) measures is one of the strategy for prevention of transmission of Tuberculosis. Though AIC measures implementation is being initiated under RNTCP programme, there is urgent need to assess its implementation under National AIDS Control Programme which is a vertical program being implemented by National AIDS Control Organization (NACO)

Considering varied TB epidemiology and concentrated HIV epidemic in a wide geographical and resource constrain settings like India, Indian states should be prioritized in order to assess AIC status and its improvement in terms of capacity building and infrastructure. To prioritize states for AIC implementation, HIV prevalence at ANC sites, annual new smear positive case notification and proportion of TB patients known to be HIV infected among tested should be considered for individual state. Based on scoring system of these indicators, out of 37 states and Union Territories, NACO should priorities Mizoram and Nagaland urgently for AIC measures implementation.

Key Words: People Living with HIV/AIDS (PLHIV), Airborne Infection Control (AIC), National Strategic Plan (NSP), National AIC (NAIC) guidelines, “Detect – Treat – Prevent – Build” (DTPB).

INTRODUCTION

Implementation of fast track targets under Sustainable Development Goals (SDG) and WHO’s ‘Test and Treat All’ strategy is going to increase the life expectancy of People Living with HIV/AIDS (PLHIV) in India. The Fast-Track targets include the 90–90–90 target: under which 90% PLHIV will know their HIV status, among known HIV status, 90%

will access the HIV treatment, and among treated patients 90% will have suppressed viral load. Under Treat All approach, WHO has estimated that 21 million PLHIV will be prevented from dying by 20130. It will lead to increase people on ART from an estimated 18.2 million (2016) to 30 million (2020).^[1] This will lead to increase in number of people attending HIV care settings in a short period.^[2] Numbers of

ART centers, Link ART centers (LAC), and Integrated Counselling and Testing Centers are also increasing in India and the program has grown to a network of 512 ART centres and 1080 LAC in 2015.

However there is assumed burden in management of co-infections and co morbidities among PLHIV which will continue for longer time. Most of free ART centers are overburdened and overcrowded. HIV-infected clients with undiagnosed TB are expected to seek care in ART centers posing the risk of TB exposure to other patients as well as HCWs. [3] Between 2-6% of ART patients develop TB per annum. [4] In high HIV prevalent districts, positivity among TB patients is more than 10% and is as high as 40% in selected districts. [5] With such a high burden of TB cases in close proximity to large numbers of vulnerable patients, often very frequently visiting the ART center, the opportunities for TB transmission are very common.

India has varied TB epidemiology from very high TB prevalence to very low TB prevalence and high to low TB/HIV coinfection in states/regions. The diversity of TB epidemiology in the country necessitates different approaches to be adopted for addressing the problem.

“Detect – Treat – Prevent – Build” (DTPB) are the four strategic pillars under National Strategic Plan (NSP) for TB elimination. ‘Prevent’ component focuses on prevention of the emergence of TB in susceptible populations. [6] For the same, scaling up of air-borne infection control measures at health care facilities are recommended.

WHO & National Framework for HIV/TB have also recommended implementation of AIC measures under three ‘I’ strategy. [4,7] HIV care settings are high risk sites for transmission of airborne infection. Implementation of National AIC (NAIC) guidelines in HIV care settings has been prioritized, as recommended by National Technical Working Group (NTWG) for HIV/TB [8] and these focus on:

- i. Developing time bound AIC measures action plan
- ii. HCWs Training.
- iii. Risk assessment at all centres for AIC.
- iv. HCWs surveillance for TB

There are certain requirements for high risk settings like ART centers in respect of location, ventilation, health education, general hygiene facilities, fast tracking of Pulmonary TB patients and training of HCWs. [8]

Considering the varied TB epidemiology and concentrated HIV epidemic in a wide geographical and resource constrain settings like India, the Indian states should prioritize in order to assess AIC status and its improvement in terms of capacity building and infrastructure development. Though AIC measures implementation is being initiated under RNTCP programme, there is urgent need to assess its implementation at HIV care settings under National AIDS Control Program which is a vertical program being implemented by National AIDS Control Organization (NACO). The current AIC status at ART centers in India is not adequate enough (Unpublished data).

In order to implement AIC measures in HIV care settings in different states following HIV TB indicators should be considered:

1. HIV prevalence at ANC sites. [9]
2. Annual new smear positive case notification (ANSPCN) rate per 100000 populations. [10]
3. Proportion of TB patients known to be HIV infected among tested. [10]

The first step of prioritization should consider the states which show more than national average in any of the above indicators. Out of 37 states and UT in India, 28 are having more than national average in any of the three indicators (2015). These states should be scored for each of the three indicators as per the ascending rank order from the national average (Table 1). Unit score is derived ranging from 0 to 1 for each of indicators considering the rank, 0 score

will be for the state having nearby national average and 1 being the highest burden in the country (Table 1). The states showing unit score above the mean unit score should

be prioritized for AIC assessment and implementation at HIV TB care settings (Table 2).

Table no 1: State wise HIV TB indicators with Rank unit scores

TB burden		HIV burden		HIV TB burden	
State (ANSPCN rate)	Rank (RUS)	State HIV Prevalence % (ANC)	Rank (RUS)	State (P TB among PLHIV)	Rank (RUS)
Chandigarh 101	14 (1)	Nagaland 1.29	10(1)	Karnataka 11	5(1)
Delhi 80	13 (0.9)	Mizoram 0.81	9(0.9)	Mizoram 11	5(1)
Tripura 75	12 (0.9)	Manipur 0.6	8(0.8)	AP10	4 (0.8)
Himachal Pradesh 73	11 (0.8)	Gujrat 0.56	7(0.7)	Maharashtra 7	3 (0.6)
Sikkim 69	10 (0.7)	Chhattisgarh 0.41	6(0.6)	Manipur 7	3 (0.6)
Nagaland 62	9 (0.6)	Telangana 0.39	5(0.5)	Nagaland 7	3 (0.6)
Gujrat 61	8 (0.6)	Bihar 0.37	4(0.4)	Tamil Nadu 6	2 (0.4)
AP 57	7 (0.5)	Karnataka 0.36	3(0.3)	Goa 5	1 (0.2)
Ar. Pradesh 56	6 (0.4)	AP 0.33	2(0.2)	Telangana 5	1(0.2)
Haryana 55	5 (0.4)	Punjab 0.32	1(0.1)	India 3	
Madhya Pradesh 55	5 (0.4)	Rajasthan 0.32	1(0.1)		
Uttar Pradesh 54	4 (0.3)	Maharashtra 0.32	1(0.1)		
D & Haveli 51	3 (0.2)	India 0.29			
Meghalaya 51	3 (0.2)	RUS= Rank unit score=Rank order of the concern state/ rank of the state with highest burden P TB among PLHIV =proportion of TB patients known to be HIV infected AP: Andhra Pradesh Ar. Pradesh: Arunachal Pradesh A & N: Andaman & Nicobar			
Punjab 51	3 (0.2)				
Telangana 49	2 (0.1)				
Uttarakhand 49	2(0.1)				
A & N 49	2 (0.1)				
Assam 48	1 (0.1)				
India 47					

Table no 2: Prioritized states for AIC implementation:

State	Rank Unit score for Indicators			Aggregate RUS
	P TB among PLHIV	ANSPCN rate	ANC HIV Prevalence	
1. Nagaland	0.6	0.6	1	2.2
2. Mizoram	1	-	0.9	1.9
3. AP	0.8	0.5	0.2	1.5
4. Manipur	0.6	-	0.8	1.4
5. Karnataka	1	-	0.3	1.3
6. Gujarat	-	0.6	0.7	1.3
7. Chandigarh	--	1	-	1
8. Delhi	--	0.9	-	0.9
9. Tripura	-	0.9	-	0.9
10. Telangana	0.2	0.1	0.5	0.8
11. Himachal Pradesh	--	0.8	-	0.8
12. Sikkim	-	0.7	-	0.7
13. Maharashtra	0.6	-	0.1	0.7
14. Chhattisgarh	-	-	0.6	0.6

Out of 37 states and UT, following 14 states are of importance to focus AIC measures: Nagaland, Mizoram, Manipur, Tripura, Sikkim, Gujarat, Maharashtra, Andhra Pradesh, Karnataka, Telangana, Chandigarh, Delhi, Himachal Pradesh and Chhattisgarh. These 14 states cover more than half of ART centers (297/528) and more than one third of total notified TB cases (641538/1754957). Out of total no of patients on ART, two third (65.4%, 530215/810339) are from these 14 states. Focusing AIC implementation in these states will prevent transmission of TB to other susceptible population. [2,5]

Among these 14 states, Mizoram and Nagaland should be urgently focused for AIC measure implementation. Mizoram is having second highest HIV burden state (HIV Prevalence at ANC sites 0.81) along with highest proportion of TB patients known to be HIV infected (11%). Nagaland, the highest HIV Prevalent state in India (HIV Prevalence at ANC sites-1.29%) is also reporting proportion of 7% for TB patients known to be HIV infected and annual new smear positive case notification (ANSPCN) rate of 62 per 100000 populations.

Andhra Pradesh, Manipur and Karnataka also need attention for AIC implementation. In Andhra Pradesh though HIV prevalence at ANC site is 0.33%, proportion for TB patients known to be HIV infected is up to 10% and ANSPCN rate is of 57 per 100000 population. Manipur, being the one of highest HIV prevalent state (HIV ANC prevalence- 0.6%) along with the substantial burden of HIV TB co infection (Proportion of TB patients known to be HIV infected- 7%) and Karnataka having highest HIV TB burden (proportion of TB patients known to be HIV infected- 11%) are also of importance. One fourth of ART centers (25%), 9% overall notified TB patients and more than one third of patients on ART (38.3%) are from these five states.

We recommend the AIC implementation in HIV care settings in Indian states in phased manner considering the scoring system based on these three indicators. In each state, HIV care facility having high case load should be prioritized first. Concerted effort to implement AIC guidelines can effectively improve facility infection control standards and limit the risk of nosocomial airborne infection transmission. AIC implementation is fundamentally feasible, even in low-resource settings. [11]

In order to strengthen the AIC implementation, the current AIC practices, its awareness among HCWs, current system and personal level barriers should be studied in each state. The feasibility of improving AIC implementation especially for need of any structural changes in the facility, purchase of any new major equipment should be assessed. The alternative cost effective approaches for AIC measures improvement should be studied at high

burden facilities and implemented accordingly.

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