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IS IT FEASIBLE TO IMPLEMENT AIRBORNE INFECTION CONTROL (AIC) MEASURES FOR PREVENTION OF TUBERCULOSIS CROSS TRANSMISSION AT ART CENTRES?

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EXECUTIVE SUMMARY

People living with HIV (PLHIV), either diagnosed or undiagnosed and untreated Tuberculosis (TB) seek care at ART centres posing the risk of transmission of TB infection to other PLHIV who are immunosuppressed and health care staff. In order to prevent tuberculosis cross transmission within health care settings, Government of India in 2010 drafted the airborne infection guidelines. ART centres are determined as one of the high-risk settings per the AIC guidelines.

We conducted a mixed method, multicentre study to evaluate the implementation of AIC measures in HIV care facilities with focus on ART centres across India. The high burdened ART centres in each state were arranged in descending order based on number of TB cases diagnosed in the last three years. From these high burdened ART centres, the centres with high case load of Tuberculosis were sequentially selected depending upon the state specific sample size. Hence, the 37 ART centres and 58 affiliated Link ART centres (LAC) were selected from the 14 states across the country in the sample.

We developed a pre-tested checklist to assess the AIC practices in selected facilities. The developed checklist contained the domains like managerial, administrative, environmental and use of PPE. Infection control plans and gap analysis were yet to implement by the individual facilities for air born infection control measures. AIC subcommittees were not formed at many facilities (91/95). The study also identified shortcomings in training (82/95), fast-tracking and segregation practices (68/95) at the surveyed sites. On a positive note, civil work concerns were relatively minor at most of the sites.

We recommend formation of AIC subcommittees and inclusion of ART MO and the Nodal officer in the existing Hospital Infection Control Committee (HICC) and AIC subcommittees. HICC may consider training of the HCW using a standard AIC curriculum. NACO may consider integrating the AIC elements as part of the routine supportive supervision checklist with an annual self-assessment by the HICC.

THE ISSUE

Tuberculosis (TB) is commonest opportunistic infection among people living with HIV (PLHIV). PLHIV are at increased risk of acquiring airborne TB infection due to low immunity. With crowding and inadequate AIC practises at ARTC, the risk of transmission is further attenuated to PLHIV and HCPs. To prevent airborne infections among PLHIV, GOI has drafted AIC guidelines for high-risk settings that included ART centres. These guidelines recommend AIC measures such as administrative measures, environmental measures for improving ventilation and personal protective measures for health care workers. Therefore, there is a need to assess these AIC measures implemented at HIV care settings in India.

OBJECTIVES

1. To assess adherence to airborne infection control (AIC) practices at select ART and Link ART centres in India

2. Propose recommendations to each site and assess for compliance

THE STUDY

A mix method study was conducted with the help of pretested checklist, observation tools, hospital record review to assess the AIC practices at selected HIV care settings in India.

METHODOLOGY

Study Sites:
Study was conducted at the selected 37 ART centres and 58 attached Link ART centres from the 14 states across the country from January – October 2021.

Adherence to AIC measures were assessed per the following standard domains:

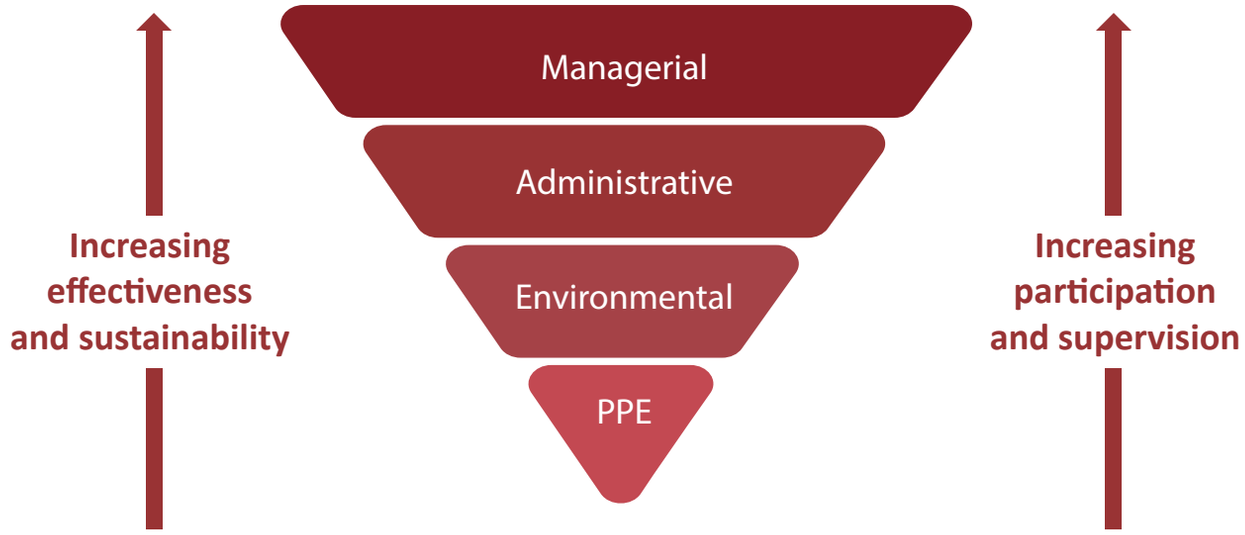


Figure 1: Domains to assess the AIC Measures

A. Administrative Measures:

Record review of administrative measures pertaining to availability and functional of airborne infection control committees, AIC training status of the staff and availability of infection control plan.

B. Environmental measures:

We observed for adequacy of natural ventilation, assessed for cross ventilation in each room, calculated Air changes per Hour (ACH)using Anemometer (Air changes >12 ACH was considered as adequate), assessed for need of artificial ventilation such as exhaust fans, UVGI and HEPA.

C. Personal Protective Measures:

We observed for availability and use of personal protective measures such as face mask.

D. Seating Arrangement:

The seating arrangement of patient and health care workers was assessed in association with the airflow direction in that room.

Figure 2: Conceptual Framework of the study

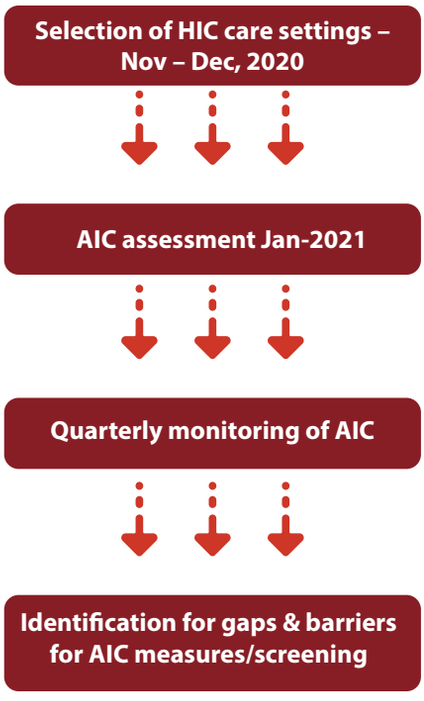
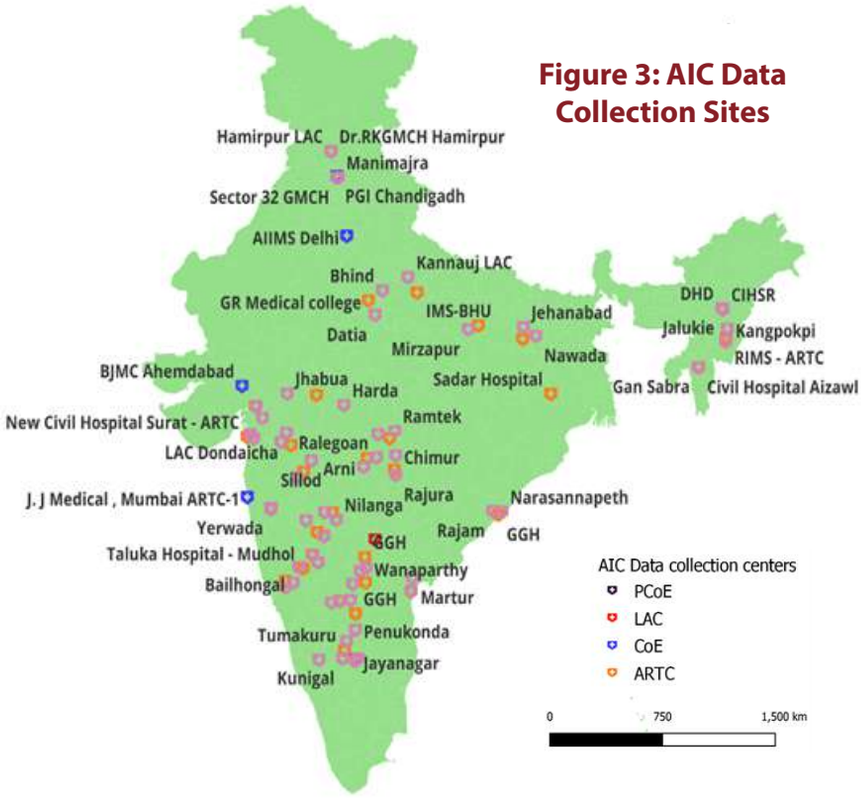


Figure 3: AIC Data Collection Sites



FINDINGS

Administrative and Managerial Controls

- Lack of fast tracking and segregation of cough symptomatic patients across 71.6% (ART – 54.1% % LAC – 82.8%) facilities
- AIC subcommittee and subsequent Infection control plan were not available at (91/95) facilities
- Non engagement of ART centre medical officer in Hospital Infection Control Committee at 87.4% facilities
- Inadequate training on AIC measures for HCWs. AIC training was done only across 13 facilities (8 ART centres and 5 LACs)

Environmental Control Measures

- Co-location of ART centres and Designated Microscopic Centres at 24.3 % (n=37%) centres favouring the mixing of TB patients and PLHIV
- Inappropriate seating arrangement of patients in accordance with the airflow direction (46%)
- UVGI installation was not needed in >95% of sites assessed
- Overall, 205/374 rooms (54.8%) in ART centre and 124/221 rooms (56.1%) in LAC were having inadequate ACH

Key Highlights

- Non engagement of ART centre medical officer in Hospital Infection Control Committee by 87.4%
- Obstruction by furniture in ill ventilated rooms
- Civil work was not a major concern to improve the ventilation in most of the facilities
- Inappropriate cross ventilation was observed in 36.8% facility rooms

RECOMMENDATIONS

Incorporate the NACP staff and Nodal officer into the existing HICC committee with a mandate for AIC

Incorporate AIC training into the existing ART centre curriculum (blended training module)

Development of facility infection control plan

Self-assessment of the AIC Practices (check list) by the ART staff nurses Annually

Disseminate the operational guidelines to the State including NHM

Consider AIC monitoring as part of the existing supportive supervision plan of ART operational guidelines

Grading of sites based on supportive supervision of the self-administered tool

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