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AIRBORNE INFECTION CONTROL: MUCH NEEDED COMPANION FOR TB PREVENTION

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Abstract

BACKGROUND : Tuberculosis (TB) transmission prevention is one of the four pillars of TB elimination strategy. Airborne infection control (AIC) is of the preventive strategies. Though international and international AIC guidelines are in place for more than a decade, implementation is very minimal and given least priority. TB transmission is airborne and evidences show that nosocomial transmission of TB is common in congested hospital settings with poor infection control. Evidences show that simple interventions like improvement in natural ventilation, identification, fast tracking and segregation of respiratory symptomatic minimizes the air bone pathogen transmission risk. Strong political will, health care providers training, patient education, facility specific recommendations improve the implementation. There are substantial lessons to be learnt from simple infection control measures such as appropriate mask usage, hand hygiene etc. practiced on a larger scale during Covid19 pandemic. All stones including AIC practices should be turned to achieve the goal of TB elimination.

KEYWORDS : Airborne infection control, Tuberculosis, Prevention, Implementation

INTRODUCTION

Airborne infection control (AIC) is one of the key identified strategies for tuberculosis (TB) prevention. Nosocomial transmission of drug resistant tuberculosis (DRTB) has already been documented.[1] Prolonged hospital stay, poor infection control practices, crowded inpatient wards are some of the factors favouring transmission of drug resistant strains of M. tuberculosis.[1] Guidelines on AIC in healthcare and other settings in context to TB and other airborne diseases was released by Government of India in 2010.[2] The three hierarchical levels of AIC include administrative/managerial control with focus on identification, fast tracking, segregation of respiratory symptomatic, environmental control for improving the ventilation and use of personal protective equipment's. The implementation of these guidelines in health care settings in a larger way is yet to be achieved even after a decade. Some of the challenges observed in implementation include non-functioning/non availability of infection control committees, lack of awareness of the health care staff and patient education, inappropriate infrastructure, inadequate funds, non-availability of personal protective equipments (PPE), its improper usage and lack of political will. [3]

Evaluations of health care facilities in three Indian states between 2009 and 2011 showed that administrative control measures such as segregation, fast tracking and provision of masks to respiratory symptomatics were followed in none of the centres. However, interventions to improve the awareness of the guidelines and provision of facility specific recommendations were shown to improve the implementation of the AIC policy and practices.4 Comprehensive interventions at different levels including facility assessments and specific recommendations, training of the health care staff and patient education were found be effective in improving the AIC practices in primary health care centres in a study done in Chennai, Tamil Nadu.[5] Health care staff awareness of AIC practices tend to improve the overall AIC practices in the health care centres as well as improve awareness of TB patients and their practices.[5] These studies show that implementation of AIC practices at different levels of health care settings is feasible. Gimenne Zwama et al in their systematic review suggested a whole system approach including health system pillars such as policy decisions, guidelines, socio political context, funds, organizational structure, human resources, health centre infrastructure, information, technology and human relationships for the successful implementation of infection control for TB prevention in low and middle income countries.[6]

Simple interventions such as identification and fast tracking of respiratory symptomatic, provision of masks to them, respiratory hygiene education to patients, keeping the

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windows open are some of the easily implementable and effective practices to begin with. Usage of masks by patients has shown to reduce the risk of TB infection and disease.[7] Environmental control interventions such as opening of the windows for cross ventilation, well ventilated waiting rooms for respiratory symptomatic etc. reduces the risk of airborne pathogen transmission. Simpler interventions in the existing infrastructure done for improving the natural ventilation could almost facilitate almost three fourth reduction in the risk of TB transmission.[8] There are lessons to be learnt from the successful implementation of various infection control practices such as mask usage, hand hygiene, social distancing etc. during Covid19 pandemic and adaptation by the community at large for prevention of its transmission. Continuous mass media communication regarding the mechanism of transmission of Covid19, importance of mask usage and appropriate method of its wearing and hand hygiene practices facilitated the adaption by the population. Similarly, strengthening the knowledge of the health care providers and the community regarding TB and its infection control by using the latest electronic communication methods continuously for a behaviour change may favour the awareness and adaption of practices. Strong political will, inclusion of TB-IPC in the health policy and programme implementation plan, allocation of resources including funds, necessary manpower and supplies are essential for sustainability of AIC practices implementation. Supportive supervision and monitoring and evaluation are some of the health system factors which need to be focussed for successful implementation for TB and other airborne pathogen transmission prevention and epidemic preparedness. Research priorities include innovative strategies to improve the implementation of various AIC components, simple cost effective technologies in health settings for disinfection etc.

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