

Infection Control measures

Airborne Infection Control

Acute respiratory infections (ARIs) are the leading cause of morbidity and mortality from infectious disease worldwide, particularly affecting the youngest and oldest people in low and middle-income nations. These infections, typically caused by viruses or mixed viral– bacterial infections, can be contagious and spread rapidly. Although knowledge of transmission modes is ever-evolving, current evidence indicates that the primary mode of transmission of most acute respiratory diseases is through droplets, but transmission through contact (including hand contamination followed by self-inoculation) or infectious respiratory aerosols at short range can also happen for some pathogens in particular circumstances.

In modern medicine, infection prevention and control (IPC) measures in health-care settings are of central importance to the safety of patients, health-care workers and the environment, and to the management of communicable disease threats to the global and local community. Application of basic IPC precautions, such as Standard Precautions, is a cornerstone for providing safe health care. In an era of emerging and re-emerging infectious diseases, IPC in health care is as important now as ever.

TB infection control is a combination of measures aimed at minimizing the risk of TB transmission within populations. The foundation of such infection control is early and rapid diagnosis, and proper management of TB patients. National guidelines on airborne infection control in all health settings including HIV care settings were developed that included a combination of simple managerial, administrative, environmental and personal protection measures. Operational feasibility and effectiveness of the guidelines have been conducted in the states of West Bengal, Gujarat and Andhra Pradesh.

The programme envisages integrating the airborne infection control guidelines of the programme with the general health system guidelines. Activities such as advocacy, guideline awareness and capacity building would be initiated at the state level and subsequently overseen by the general health system. NAIC guideline will be implemented at high risk centers at DR-TB Centers, ART Centers, C& DST Laboratory. The Implementation of National Airborne Infection Control policy includes following:

- Airborne infection control committee and plan
- Baseline assessment
- Resource planning and budgetary provisions
- Training of health care workers
- Implementation of administrative, environmental and personal protection measures.
- Prospective establishment health care centres should be in accordance with NAIC policy.

For detailed information on airborne infection control measures in health care settings, refer to Guidelines on Airborne infection control, 2010 at TBC India official web site tbcindia.gov.in

Healthcare worker surveillance

Successful AIC implementation is also important in preventing HCWs from becoming infected with drug-susceptible and drug-resistant TB, and thus preventing occupationally acquired TB disease. Screening HCWs at high risk of TB is likely to reduce transmission and with earlier diagnosis and treatment, prevent serious illness and disability. In an era of inadequate human resources for health, introducing the screening of HCWs for TB is crucial.

All HCW should be classified as Key populations due to their higher risk of acquiring TB and those who are symptomatic or/and with any signs of TB or Chest XRay abnormality will be offered a upfront CBNAAT testing upfront to rule in or rule out TB at the first instance and during periodic screening also.

For details, refer to Healthcare Worker (HCW) surveillance for tuberculosis (TB) in India- A handbook for health facilities.

Bio-Medical Waste Management

The Bio-medical waste generated from various sources has become a problem and much attention is being given worldwide to find out solution of this problem. The main concern lies with the hospital waste generated from large hospitals/nursing homes as it may pose deleterious effects due to its hazardous nature. Bio-medical wastes, if not handled in a proper way, is a potent source of infections, like HIV, Tuberculosis, Hepatitis, MRSA and other bacterial infections causing serious threats to human health. Owing to the discussed potential threats this waste needs prime attention for its safe and proper disposal.

The Government of India (GoI) under its Environment Protection Act (1986), passed the Biomedical Waste (Management and Handling) Rules in 1998 and a subsequent amendment followed in 2000. The rules form the legal framework for the collection, segregation, transportation, treatment and disposal of biomedical waste throughout the country. The State Pollution Control Boards (SPCBs) in the states and the Pollution Control Committees (PCCs) in the Union Territories are monitoring the compliance to the rules in the respective states.

According to these rules, Bio-medical wastes have been categorized under [10 categories](#) and are required to be managed and handled as per prescribed procedures (**Annexure 21**). Bio-medical waste should not be mixed with other wastes but segregated into containers/bags at the point of generation in accordance with prescribed norms for its storage, transportation, treatment and disposal.

Bio-medical waste "means any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining thereto or in the production or testing of biologicals, and including categories mentioned in Schedule I;

It is the duty of every hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank etc which generates biomedical waste to take all steps to ensure that such waste is handled without any adverse effect to human health and the environment.

The RNTCP is integrated into the general health system of the states. Waste management is a component of overall facility management of the respective state health system institutions where RNTCP centres are located. Accordingly, **the waste generated by RNTCP should not be viewed in isolation, but is to be integrated in the broad framework of the peripheral institutions' waste management practices.** The peripheral health institutions would be responsible for disposal of the wastes and reporting to their respective PCBs.

Types of wastes generated by the RNTCP

- Human/biological waste (sputum);
- Sharp waste (needles, glass slides etc.);
- Used blister packs, drug packaging material;
- Plastic waste (waste generated from disposable syringes, cups and cartridges);
- Laboratory and general waste such as liquid waste, broomsticks, and paper waste; and
- Construction waste (waste generated from civil work activities).

Waste Management for RNTCP

Waste generated under RNTCP will be discarded with the overall waste of the health facility in which services under RNTCP are provided. The staff carrying out RNTCP activities like LTs and treatment supporter in PHIs will adopt infection control techniques as detailed in these guidelines and will take action to integrate waste generated under RNTCP into the waste management activities of the concerned PHI. The activities by the PHIs will include organized waste collection, information dissemination, reporting and monitoring of disposal of the waste

Disposal of sputum container with specimen and wooden sticks

Step 1: After the smears are examined, remove the lids from all the sputum cups.

Step 2: Put the sputum cups, left over specimen, lids and wooden sticks in foot operated plastic bucket/bin with 5% phenol or phenolic compound diluted to 5%. The cups and lids should be fully immersed in the solution. Keep it overnight/ for about 12 hours.

Step 3: Next day/ at the end of the day, drain off the phenol solution in to the drain.

Step 4: Take out the sputum cup/lid/wooden sticks and put into a reusable metal or autoclave-able plastic container or red bag. The red bag should have biohazard symbol and adequate strength so that it can withstand the load of waste and be made of non-PVC plastic material.

Step 5: Put this container/bag into the autoclave with other auto clavable BMW and the contents should be autoclaved at 121°C at 15 psi pressure for 15 – 20 minutes. The autoclave shall comply with the standards stipulated in the rules. Under certain circumstances, if autoclaving is not possible, boil such waste in a pressure cooker of approximately 7 litre capacity containing adequate amount of water to submerge the contents and boiled for at least 20 minutes using any heating source, electrical or non-electrical. However the District Hospital/CHC/PHC etc. shall ultimately be expected to make the necessary arrangements to impart autoclaving treatment on regular basis.

Step 6: After adequate cooling, the material can be safely transported to a common waste treatment facility for mutilation/shredding/disposal. If a common waste treatment facility is not available in the area, the sputum cups/lids/wooden sticks after autoclaving, can be buried in a deep burial pit. LTs and support staff handling biological waste should wear gloves.

Disposal of stained slides

Step 1: The slides should be put into a puncture proof container and red bag. The red bag should have a biohazard symbol and should be made of non-PVC plastic material. This bag/sharp container should then be put in to an autoclave or pressure cooker for autoclaving/boiling.

Step 2 : Dispose off the autoclaved/ pressure boiled slides into a pit for sharps

Under no circumstances should the slides should be broken.

For detailed information on the Biomedical waste management refer to the documents-

1. Ministry of Environment, forest and climate change – Gazette Notification
2. Revised draft Guidelines for Common Biomedical Waste Management Treatment Facilities, Central Pollution Control Board, Delhi, February, 2014 and as updated by Ministry of Environment Forest and Climate or Central Pollution Control change from time to time.