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Infection Control at Primary Health Care Facilities

URC

Learning Objectives

By the end of the session, participants should be able to:

- Discuss the roles and responsibilities of the infection control team
- Name & describe the major components of work practice & administrative controls
- Describe five ways to improve natural ventilation

Infection Control at Primary Care Facilities

- Overall objective is to minimize microbial contamination in areas where patient care & instrument processing occur
- Broader infection control program should include components for specific diseases such as TB
- Sufficient resources need to be available for a good infection control program

Components of Infection Prevention & Control Programs

- Infection Control Team or Committee
- Work and administrative controls
- Environmental controls
- Surveillance and outbreak investigation
- Routine monitoring and evaluation of standards of care

Infection Control Team

- May include everyone on staff at smaller facilities
- Develop annual plan for infection control & prevention
- Assess standards of care & promote performance improvement
- To review epidemiological data & look for areas of improvement & intervention
- Assess training / education needs for staff, patients, & the community

Work Practice & Administrative Controls

Major components of good work practice & administrative controls:

- Infection control plan
- Administrative support for procedures in IC plan, including quality assurance
- Staff training
- Risk assessment
- Policies and procedures designed to minimize risk of infectious disease exposure to staff and patients

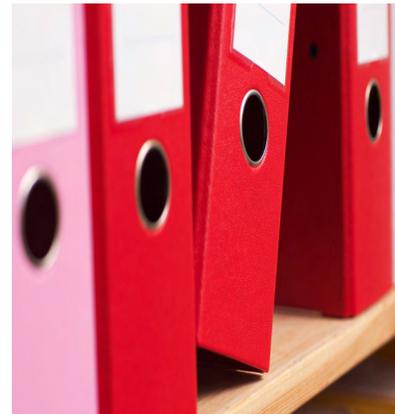
Source: CDC, WHO, & The Union, 2006

Infection Control Plan

- Designate responsibility
- Assess infection control risks
- Written policies and treatment protocols
- Training for health care workers
- Needs to be evaluated annually (minimum)

Administrative & Support Procedures

- To reduce risk of exposure, infection and disease through policy and practice
- One person designated as infection control officer who
 - Leads the infection control team
 - Oversees the monitoring of items within the infection control plan
 - Organizes and/or trains staff as needed
 - Communicates needs to facility management



TB Infection Control

- Each facility must have written infection control procedures specific to TB, which should include:
 - Training on Cough etiquette – patients, HCWs
 - Prompt screening and recognition of TB
 - Providing face masks / tissues to TB suspects or cases
 - Immediate isolation of TB suspects or cases
 - Triage

Staff Training

- Each staff person should understand the importance of infection control & their role in following standards of care
- Job descriptions should include specific infection control duties
- Infection control should be part of pre-service and in-service training for all staff, including non-clinicians and volunteers



Assessing Facility Infection Control Risk

- This is the first step in developing an infection control plan
- Risk varies from facility to facility depending on:
 - Profile of TB in the community
 - Number of infectious TB patients seen or admitted at facility
 - Type of building
 - Procedures performed in an area
- It informs the level of TB control interventions required
- Should be conducted annually

Conducting a Risk Assessment

- Gather incidence data (e.g. TB disease) in community and health facility
- Identify areas outside the norm – higher or lower levels of incidence
- Investigate source (e.g. in community, at work, at health facility, etc.) of infection
- Identify reasons for incidence level & determine possible reasons

	Low	Medium	High
# of infectious TB patients treated in last 12 months	0-5	6 or more	6 or more
Patient population risk factors	Patients rarely have risk factors for TB < 5%	Patients sometimes have risk factors for TB 5-20%	Patients often have risk factors for TB >20%
Patient with HIV infection	None to rare <1%	Sometimes 1-5%	Often >5%
Drug resistant TB patients	None to rare <1%	Sometimes 1-5%	Often >5%
Sputum induction or bronchoscopy for diagnosis	None	High risk procedures performed in facility or area	High risk procedures performed in facility of area

Risk of TB transmission

- Given our high incidence of tuberculosis
- Our facilities are generally regarded as high risk for TB transmission especially outpatients departments, medical wards
- This does not mean that other parts of our health care facilities are necessarily safer
- Several epidemiologic studies based on the use of DNA fingerprinting or secondary genotyping have provided the evidence of TB transmission taking place in various health care facilities around the world

Risk of TB transmission among HCWs

- Provided by epidemiologic studies based on the use of DNA fingerprinting or secondary genotyping
- TB incidence rate among HCWs is higher than general population
- A study in Mexico showed an incidence rate of 439.56 per 100,000 (this was ten times higher than the general population)

**Source: Rafael Laniado-Laborin, Noemi Cabrales-Vargan.
Tuberculosis in health care workers at a General Hospital
In Mexico. Infect Control Hosp Epidemiol 2006; 27: 449-452**

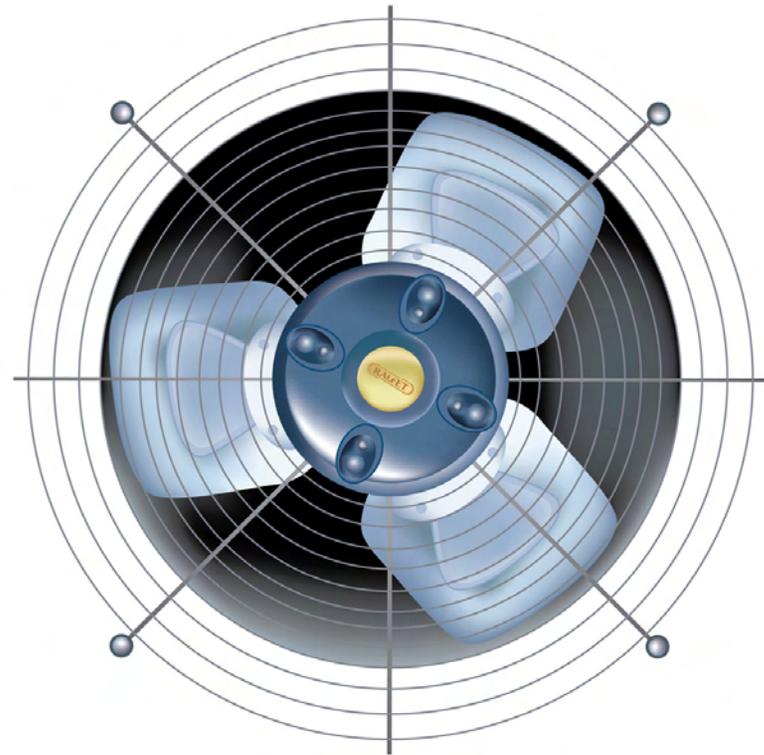
Risk Minimization Policies

- Early screening after arrival at facility
- Patient instruction on good respiratory hygiene
- Isolation of high-risk patients
- Placement of patients in well-ventilated areas
- Streamlining patient management

Environmental controls

Environmental Controls

- Environmental controls “refers to the use of engineering technologies to help prevent the spread and reduce the concentration of infectious droplet nuclei in the air.”
- To prevent spread and reduce the concentration of droplet nuclei in the air in high risk areas
- Most effective when combined with work practice & administrative controls



Source: Francis J. Curry National TB Center, 2007

Factors that Impact Environmental Controls

- Facility design
- Climate
- Type of patients served
- Number of TB patients served
- Available resources

Ventilation

- Good ventilation can help reduce the risk of infection by diluting and/or removing infectious particles in the air
- A well-ventilated space has air constantly entering and leaving, allowing an effective mixture of air
- This effective mixture increases the dilution of infectious particles

Natural Ventilation

- Natural ventilation
 - Air enters and leaves building through doors and windows.
 - Needs to be effective in settings without centralized air system, particularly in areas where people congregate (e.g. waiting rooms)
 - If weather permits, important to have doors and windows open as much as possible
 - Propeller fans are an inexpensive way to increase natural ventilation

How to Improve Natural Ventilation

- Ensure all occupied rooms have access to fresh outside air
- Keep doors, windows, and skylights open as much as possible
- Use fans and keep them running in occupied spaces
- Fans should be placed where air movement can be felt by all room occupants

How to Improve Natural Ventilation (continued)

- If possible, fans should be placed in areas where they add to natural air currents and flow from clean to less clean areas
- If fans or open doors/windows cause excess noise, consider increasing ventilation during unoccupied periods

Natural Ventilation & Cold Temperatures

Alternatives during cold weather:

- Leave windows partially open
- Encourage patients, visitors, and staff to wear extra layers of clothing & increase the level of natural ventilation
- Place TB patients as far away as possible from other patients
- Use localized exhaust fans

Mechanical Ventilation

- Systems that circulate air in a building mechanically
- Provide new diluted air, which helps prevent the spread of airborne diseases, such as TB
- System may also inadvertently spread TB through recirculating air to another room (risk reduced with air filtration)

Source: Francis J. Curry National TB Center, 2007

Mechanical Ventilation

- Three general ways mechanical ventilation can prevent the spread of airborne disease:
 - Use filters to remove infectious particles
 - Replacing room air with fresh outside air
 - Use ultraviolet germicidal irradiation (UVGI) lamps to disinfect recirculated air
- These measures are often too expensive and complex for use at many facilities

Source: Francis J. Curry National TB Center, 2007



Air Filtration

- Filters can be used to clean the air
- Appropriate filters can remove many airborne particles (including TB bacilli) from the air
- Pleated filters fit in most central ventilation systems and remove approximately half of all TB droplet nuclei from the air
- Lint filters will generally not remove TB droplet nuclei, but are less expensive than pleated filters



Air Recirculation

- Mechanical system supplies air to room
- Air mixes with room air and then is drawn back to the central unit
- Air is filtered, heated, and/or cooled before returning to the room
- UVGI lamps can be used along with pleated filters to further clean the air

Source: Francis J. Curry National TB Center, 2007

Monitoring of Environmental Controls

- Designate one person to monitor environmental control measures & keep a log of progress
- Check windows and doors daily
- Fans checked on monthly basis
- Filters should be checked monthly and replaced when evenly coated with dust

Monitoring of Environmental Controls (continued)

- Air ducts of central ventilation system should be cleaned every year with vacuum cleaner
- Ventilation units and thermostats should be checked every year
- Keep written records of routine maintenance activities





Respiratory Controls

- Use of personal respiratory equipment (facepiece respirators) in high-risk areas
- Further reduces the risk of health worker and visitor exposure to infectious airborne bacteria
- Health workers need training to know when the respirator fits properly
- Periodic fit testing should be completed to ensure respirator continues to fit properly



3M 1860S

**HEALTH CARE PARTICULATE RESPIRATOR
AND SURGICAL MASK**

NIOSH N95

LOT # 19A

Must be trained and supervised by a

Laboratory Safety

Four most common ways to be exposed to infection in the lab:

1. Inhalation:

- Any manipulation of infectious agent that generates inhalable substance

2. Ingestion:

- Inadvertent hand-to-mouth actions

- Placing contaminated items such as pens or fingers in the mouth

- Eating or drinking in the lab without using proper hand hygiene

- Pipetting

Laboratory Safety (continued)

3. Puncture wound:

- Accidental injury from sharps

4. Contamination of skin or mucous membranes

- Splashes or sprays of contaminated fluids on skin, mouth, eyes, or nose

- Touching contaminated hand to face

Guidelines for Laboratory Safety

- Wear new examination gloves when handling any lab specimens
- Do not eat, drink, or smoke in the lab
- No mouth pipetting
- Cover the end of blood collection tubes with cloth or paper towel & open away from anyone's face
- All work surfaces should be de-contaminated daily and directly after any spills

Guidelines for Laboratory Safety (continued)

- Wear personal protective equipment when working with any infectious agent
- Dispose of sharps in leakproof, puncture-resistant containers
- Infectious waste materials should be placed in appropriate plastic bags or containers

Promotion of Cough Etiquette

To minimize spread of germs and potentially infectious bacilli, all persons with signs and symptoms of any type of respiratory infection, should be asked to:

- Cover the nose and mouth when coughing or sneezing
- Avoid coughing directly into hands – use tissue or other cloth
- Use sleeve if no tissue or cloth available

Promotion of Cough Etiquette (continued)

- Dispose of tissues in the nearest waste container immediately after use
- Wash hands with soap & water or antiseptic handrub after contact with respiratory secretions and contaminated objects/materials.

Promotion of Cough Etiquette – Health Facility Responsibility

Healthcare facilities should ensure the availability of materials for adhering to respiratory hygiene/cough etiquette in waiting areas for patients and visitors:

- Provide tissues and no-touch waste containers to dispose of used tissue
- Provide facial masks to TB suspects and visitors

Promotion of Cough Etiquette – Health Facility Responsibility (continued)

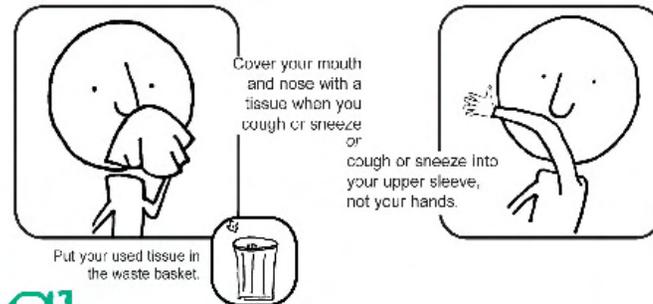
- Provide conveniently located dispensers of alcohol-based hand rub or antiseptic wipes
- Provide clean water, soap and disposable towels for handwashing

Cough Etiquette Posters

Place locally appropriate posters that promote cough etiquette and handwashing in high traffic & high-risk areas

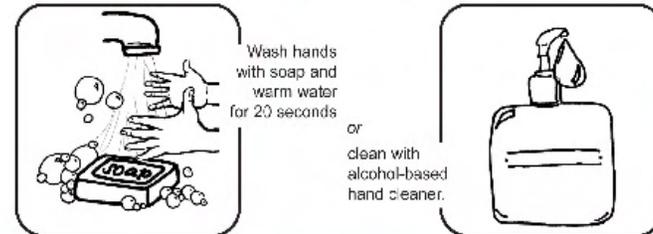
Stop the spread of germs that make you and others sick!

Cover your Cough



Clean your Hands

after coughing or sneezing.



Key Indicators

Administrative:

- Presence of infection control team (Y/N)
- Current annual plan for infection control (Y/N)
- Risk assessment completed in past year (Y/N)
- Is the infection control plan known by staff (Y/N)
- Incidence of staff TB exposure and positive TB test (especially sputum smear / X-ray)

Key Indicators

Environmental:

- Are the environmental controls in place appropriate for the health facility? (Y/N)
- Is routine maintenance completed regularly? (Y/N)
- Is the maintenance log for environmental controls correct and up-to-date? (Y/N)
- Are routine assessments of air quality completed? (Y/N)

Key Indicators

Respiratory:

- Annual assessment of respiratory protection use completed? (Y/N)
- Are patients taught about cough etiquette (Y/N)
- Frequency of respiratory protection training and percentage of at-risk staff trained (Y/N)

Key Interventions

- Designation of IC Committee & IC Control Nurse/Officer
- Initial & Annual IC Risk Assessment
- Assessment & Inventory of Essential IC Equipment & Supplies
- System of Monitoring & Supervision (including clear measurable indicators)

Checklist – How is Your Facility Doing?

Intervention/ Control Measure	Yes	No	Comments
IC Team & Nurse			
Annual IC Risk Assessment			
IC Plan			
Regular IC Staff Training			
Measures To Improve Natural Ventilation			

Checklist – How is Your Facility Doing? (continued)

Intervention/Control Measure	Yes	No	Comments
System of Monitoring Environmental Controls			
Respiratory Control Measures			
Guidelines for Laboratory Safety			

Discussion Session

- Break into groups
- Select one spokesperson for your group
- List the administrative control measures in place at your facility
- Name five administrative controls that should be implemented
- Identify potential threats to implementation
- Choose three of these administrative controls and discuss how you would implement & evaluate them

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