

THE UNITED REPUBLIC OF TANZANIA  
MINISTRY OF HEALTH AND SOCIAL WELFARE



STANDARD OPERATING PROCEDURES  
FOR THE PREVENTION OF TUBERCULOSIS  
IN HEALTH CARE FACILITIES

NATIONAL AIDS CONTROL PROGRAMME  
NATIONAL TUBERCULOSIS AND LEPROSY PROGRAMME  
MINISTRY OF HEALTH AND SOCIAL WELFARE

TANZANIA  
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*Version for field testing*

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**ABBREVIATIONS**

<b>ACH:</b>	Air changes per hour
<b>AFB:</b>	Acid-fast bacilli
<b>AIDS:</b>	Acquired immunodeficiency syndrome
<b>All:</b>	Airborne infection isolation
<b>ART:</b>	Antiretroviral therapy
<b>BCG:</b>	Bacille Calmette-Guérin
<b>BSC:</b>	Biological safety cabinet
<b>CTC:</b>	Care and treatment clinic
<b>CPT:</b>	Cotrimoxazole preventative therapy
<b>DAC:</b>	District AIDS Coordinator
<b>DMO:</b>	District medical officer
<b>DTBHIVC:</b>	District TBHIV Coordinator
<b>DTLC:</b>	District TB and leprosy Coordinator
<b>DOT:</b>	Directly observed therapy
<b>DST:</b>	Drug susceptibility test
<b>HCW:</b>	Health-care worker
<b>HEPA:</b>	High-efficiency particulate air
<b>HFS:</b>	Health facilities staff (medical and non-medical)
<b>HIV:</b>	Human immunodeficiency virus
<b>ICU:</b>	Intensive care unit
<b>IPT:</b>	Isoniazid preventative therapy
<b>LTBI:</b>	Latent tuberculosis infection
<b>MDR TB:</b>	Multidrug-resistant tuberculosis
<b>NACP:</b>	National AIDS control programme
<b>NTLP:</b>	National tuberculosis and leprosy programme

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<b>OPD:</b>	Out-patient department
<b>PEP:</b>	Post-exposure prophylaxis
<b>PICT:</b>	Provider-initiated counselling and testing
<b>PLHIV:</b>	People living with HIV/AIDS
<b>PPE:</b>	Personal protective equipment
<b>RCH:</b>	Reproductive & Child Health clinic
<b>TB:</b>	Tuberculosis
<b>UVGI:</b>	Ultraviolet germicidal irradiation
<b>XDR TB:</b>	Extensively drug-resistant tuberculosis

## **ACKNOWLEDGEMENTS**

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The draft manual is under field testing and it is currently under review by MOHSW Tanzania.

## **1. INTRODUCTION**

The standard operating procedures described in this pocket manual should guide health care workers in the implementation of TB infection control measures to reduce the risk of *M. tuberculosis* transmission in the health care setting.

In particular, this manual is targeted to health facility staff involved in providing care and treatment to persons with TB and HIV/AIDS in different health care units.

The standard operating procedures are based on simple administrative, environmental, and respiratory protection measures.

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## **2. INFECTION CONTROL STRATEGIES IN HEALTH CARE FACILITIES**

### **2.1 Administrative control measures**

Administrative measures aim to significantly reduce the risk of exposure of patients and HFS to infectious TB cases through early diagnosis, prompt isolation or separation of infectious TB patients, and prompt initiation of appropriate anti-tuberculosis treatment. They also include performing an infection control assessment of the health facility, developing a written TB infection control plan, and screening and evaluating HFS for TB.

#### **2.1.1 Development of a TB Infection control Plan**

- Regional and District TB/HIV Committees should be responsible to develop and oversee the implementation of a TB infection control plan
- The plan should be based on the findings of a baseline TB infection control

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assessment, which should be conducted using the standardized national checklist

- The TB infection control plan should be developed using the standardized national framework; the plan should address administrative, environmental and respiratory protection measures in the health facility

***Tasks of the team***

- Develop a written TB infection control plan tailored to the specific health facility setting
- Supervise the implementation of the TB infection control plan
- Evaluate the plan implementation on quarterly basis and revise it on annual basis
- Assign a *designated TB infection control officer* responsible for quarterly monitoring of the implementation of the plan in the health facility (e.g. Public Health officer as Bwana Afia and Bibi Afia) and reporting to the facility's team on a quarterly basis

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- Assign designated health workers responsible for daily monitoring of the proper implementation of the plan in each unit (e.g. MO/AMO/CO working in the CTC, TB clinic, RCH, OPD, ward or nurse/CO working in a dispensary etc)

***TB Infection control monitoring and reporting at facility level***

- The quarterly monitoring of the health facility by the *designated TB infection control officer* should be conducted using the standardized national checklist.
- The Regional and District TB and Leprosy Coordinators are responsible to report on the number of health facilities having a written TB infection control plan; the report should be sent to the NTLP using the standardized TB quarterly report updated with the TB infection control component.

**Formation of regional/district TB/HIV committees should not prevent the implementation of infection control measures at the facility level. The health facility could implement infection control activities independently, as long as they are in strict compliance with the procedures described in this manual**

**2.1.2 Early identification of TB suspects: use of poster on cough hygiene and patient's education, intensified TB case finding**

- Display respiratory hygiene posters at the entrance of the unit within the HF (e.g. registration area at the entrance of hospitals, OPD, TB clinic, CTC, RCH, ward etc)
- Instruct patients in the waiting area on cough hygiene (cover nose and mouth using hand/tissues when coughing or sneezing, wash hands, dispose of used

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tissues, do not spit indiscriminately), TB and TB/HIV co-infection, importance of HIV testing among TB patients, and continuous TB screening among PLHIV. Deliver short and frequent education sessions.

**Few minutes education sessions should be delivered every hour**  
**The education messages should be clear, focused and short.**  
**Repeated education sessions should be conducted during the morning in all registration/waiting area/ward**

- Actively ask all patients and family members with an unknown HIV status about a cough for more than 2 weeks or administer the TB screening questionnaire to PLHIV when they present to the registration desk

**TB screening questionnaire:**

*Cough ≥ 2 weeks or fever ≥ 2 weeks, or excessive night sweat ≥ 2 weeks or haemoptysis or weight loss ≥ 3 kg*

- If a patient with an unknown HIV status reports a cough for more than two weeks or a PLHIV reports any one of the five signs/symptoms on the TB screening questionnaire, refer immediately to the laboratory for a sputum test; fill in the sputum request form
- Advise those patients who are coughing for more than 2 weeks to avoid close contact with other clients/patients, instruct them on cough hygiene and provide tissues/napkins if available
- Ensure that patients returning after sputum collection, are re-entered in the queue as per the number they received at registration
- Ensure the time a coughing patient spends in the waiting area until he/she is evaluated in the examination room, is minimized as

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much as possible (e.g. < 15 minutes from patient's registration)

- If a laboratory is not available within the health facility, the TB suspect (cough  $\geq$  2 weeks) should be first evaluated in the examination room and then referred to the nearest laboratory for a sputum test

**The TB suspect should never be referred to the TB clinic for screening, to avoid the risk of exposing a person with known/unknown HIV infection to infectious TB cases queuing at the TB clinic**

***In the general wards***

After admission, inpatients should be actively and regularly asked about cough, and once identified as a TB suspect, rapidly channelled for diagnosis. In the wards, sputum samples should not be collected at the bedside; inpatients should be instructed on sputum collection methodology and transported to an

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isolated open area to produce the specimen. The HCW should not remain close to the patient during the sputum collection.

### **2.1.3 Separation of TB cases**

For the management of confirmed TB/HIV co-infected patients, the following options are recommended:

- To channel PTB/HIV co-infected patients to the TB clinic, where they should receive TB and HIV care, treatment (anti-TB treatment/CPT/ART) and adherence counselling (referral to CTC after at least 3 weeks of TB treatment or at the end of the TB treatment)
- To evaluate PTB/HIV co-infected patients at CTC on separate days, so they do not have to share the same waiting area with PLHIV

***Any HIV-infected TB suspect or case attending CTC and in need of referral to any other unit (e.g. laboratory, radiology, TB clinic, etc.) should not be escorted by other PLHIV volunteers.***

Any confirmed MDR TB case identified at any HF must be immediately referred to the reference MDR TB hospital. At any point in time before admission, the MDR TB case must be properly instructed on cough hygiene at the community level and should be provided with a napkin to cover mouth/nose when coughing/sneezing.

***In the general ward***

- In hospital wards, all pulmonary TB cases should be kept in a separated area of the ward, ensuring at least three metres distance between the TB case and the other patients, if feasible.

- These TB patients should also be placed in beds which are kept far away from any other HIV positive in-patient.
- All pulmonary TB patients should be instructed on cough hygiene and provide with napkin to cover mouth/nose when coughing/sneezing. The napkin can be removed after three weeks of directly supervised treatment.

***In the TB wards***

TB patients admitted to a special isolated TB ward should be instructed on cough hygiene and provide with napkin to cover mouth/nose when coughing/sneezing when HFS or visitors are entering the TB ward and when the patient is outside of the room for any reasons. The napkin can be removed after three weeks of directly supervised treatment.

**Surgical mask do not provide protection to the health staff, therefore health facility staff and visitors are not requested to wear a mask for close contact with a masked TB patient in general wards or TB wards.**

**Except for MDR TB patients, prolonged hospitalization is not recommended to minimize the risk of nosocomial infection**

***In the MDR TB ward***

All confirmed MDR TB patients should be referred and treated at the MDR TB hospital Kibongoto Hospital, Hai District, Kilimanjaro Region. At any point in time before admission, the MDR-TB case should be properly instructed on cough hygiene and on use of N95 respirator when leaving the MDR-TB ward. HCWs taking care of a patient with confirmed MDR-TB case should wear an N95 respirator.

**Visitors' precautions**

- Preventive measures directed at visitors are important for high risk patient wards, such as isolated TB and MDR TB wards. Visitor access to the TB and MDR TB wards can be restricted passively through the use of a sign to alert family members and visitors not to enter the ward
- Family and household members visiting TB patients should be forbidden to enter TB and MDR TB wards. However, exceptions can be considered for the TB ward only if the TB patient is bedridden and cannot move to an outside area.

**2.2 Environmental Control Measures**

Environmental control measures aim to reduce the concentration of droplet nuclei in the air by maximizing natural ventilation or controlling the direction and rate of airflow.

**2.2.1 Ventilation patterns**

- Waiting areas should be in an open space, otherwise maximum cross-

ventilation should be ensured in closed waiting areas

- Cross ventilation is recommended and can be ensured by keeping windows on opposite sides of the room open at all times
- Windows should be kept open all the time in every room/ward
- Fans must be kept clean and working properly; their functioning must be checked on a weekly basis
- Ventilation produced by fans should direct air flow outside the room through the windows and doors. The flow should be from the HCW to the patient to the outside of the room

**Keep fans running as much as possible during clinic examination, when there is a patient in the room/ward**

- Clean fans once a month with a damp cloth or vacuum cleaner

- Fans should not be cleaned when patients are in the room

**Central ventilation systems (e.g. filtration mechanisms) are not generally recommended, however, selected health facilities, such as specialized MDR-TB hospitals or referral hospitals, are recommended to install this level of environmental measures.**

## **2.3 PROTECTION OF HEALTH FACILITY STAFF**

### ***2.3.1 Personal Respiratory Protection***

- HFS should wear N-95 respirator when entering the MDR TB ward. Respirators must closely fit to the face to prevent leakage around the edges

- Respirators are disposable, but can be re-used repeatedly for several months if they are properly stored
- Respirators should be labelled with the wearer's name and hung on a peg in a clean dry location

### **2.3.2 TB screening**

Staff should be instructed that if signs/symptoms of TB occur (*cough  $\geq$  2 weeks if the HCW is HIV negative; cough  $\geq$  2 weeks or fever  $\geq$  2 weeks, or excessive night sweat  $\geq$  2 weeks or haemoptysis or weight loss  $\geq$  3 kg if the HCW is HIV positive*) he/she should undergo the TB diagnostic screening (2 sputum samples and CXR as needed).

### **2.3.3 Provider initiated counselling and testing (PICT)**

- Encouraging and enabling health care workers and all staff to know their HIV status should be a priority of all health

care services including CTC and TB clinics in particular.

- However, there is no role for mandatory HIV testing of health care workers.
- Health care workers have the same rights as all individuals to confidential HIV testing with counselling conducted only if there is informed consent.

#### **2.3.4 Workplace restrictions**

- HFS identified as having active PTB disease should be removed from the unit where they are providing service, regardless of the type of department.
- Anti-TB treatment should be initiated within 24 hours of the diagnosis.
- The HFS with TB disease should be allowed to return to work when they have received 3 weeks of proper TB treatment with a good clinical response
- HCWs with extrapulmonary TB disease only do not need to be excluded from the workplace. They may be confirmed as non-

infectious and may continue to work based on evidence that concurrent pulmonary TB disease has been excluded.

- HFS under PEP does not need to be moved during the prophylaxis intake.
- HFS living with HIV and working at the TB clinic/MDR TB hospital/TB wards should have the option of an assignment in an area or activity that has a low risk for exposure to *M. tuberculosis*. However, this choice is a personal decision for the HFS.

HIV infection control measures are described in the *National HIV guidelines and HIV Workplace intervention guidelines, NACP MOH 2008*.

### **3. CONSIDERATIONS FOR SPECIAL CIRCUMSTANCES AND SETTINGS**

#### **3.1 infection control measures in specific departments**

##### **3.1.1 Radiology**

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- Schedule chest radiographs on infectious and suspect TB patients for non-busy times, such as the end of the afternoon
- Provide suspect or known pulmonary TB patients with a surgical mask to wear; alternatively provide tissues or cloth for covering their mouths during coughing
- Technicians/HCWs should wear N95 respirators when a MDR TB patient accesses the service
- Provide expedited priority service to potentially infectious TB patients to minimize the length of time spent in the department
- Use the room with the best ventilation for taking images of potentially infectious TB patients

### **3.1.2 Intensive-care units (ICU)**

. If patients with infectious TB disease require admission to the ICU:

- All HCWs should use disposable surgical mask

- Use disposable ventilator or endotracheal tube
- Discard all other tubes used for resuscitation after being sterilized with Glutaraldehydes 2%
- Once the patient is stable, discharge or transfer him/her to the general or TB ward immediately

### **3.1.3 Bronchoscope suites**

- This type of diagnostic test should be scheduled for non-busy times, such as the end of the afternoon.
- Glutaraldehydes 2% is the disinfectant of choice; after using the instrument regardless of whether the patient is a TB suspect or confirmed TB/TBHIV patient, it should be cleaned and rinsed carefully before soaking it in Glutaraldehydes 2% for 10 minutes.
- All HCWs involved should use a surgical mask

### **3.1.4 Laboratory**

- At peripheral health facilities, the use of a safety cabinet is not recommended to perform direct sputum examination.
- The laboratory should have at least two rooms, one for reception and the other one for performing the test.
- The preparations should be performed in a well ventilated room with sunlight.
- Laboratory safety precautions including wearing gloves and laboratory coats while handling specimens should be followed.
- The use of a mask is not recommended.
- The room should have a container with plastic bags for proper disposal of sputum containers and there should be good water drainage during staining the smears.
- Used sputum containers and slides should be autoclaved or burned in the incinerator prior to disposal.
- In case of accidental spillage of a specimen on the floor or bench, pour 5%

phenol solution on the specimen, cover with paper or cotton wool, and leave for 30 minutes before cleaning the area.

- At Zonal TB Laboratories (e.g. KCMC in Moshi and Bugando in Mwanza), smears should be prepared in a safety cabinet class II.
- At the Reference TB Lab (e.g. Muhimbili National Hospital), smear, culture and Drug Susceptibility testing (DST) should be performed in a safety cabinet class II with a double/single filter.
- Culture media, sputum containers and glass slides should be autoclaved or burned in the incinerator prior to disposal.

### **3.1.5 Autopsy and surgery suites and dental-care settings**

If a TB suspect or confirmed TB case require a post-mortem, surgical operation or dental care, the HCW should wear the cool, non-fogging face mask with the following characteristics:

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- Polypropylene filter
- Bacteria filtration efficiency exceeds 99%
- After being used, all of the instruments should be cleaned and rinsed carefully before soaking them in Glutaraldehydes 2% for 10 minutes and then autoclaving them if available.
- General safety precautions of wearing gloves, coats or special boots should be followed. The post-mortem table/surgery table/dentist chair should be cleaned using Glutaraldehydes 2%

### **3.2 Infection control measures in congregate settings**

#### **3.2.1 Schools**

- Any student with unexplained chronic cough of duration greater than two weeks, should be referred to appropriate medical treatment
- Students, teachers or other school workers who are suspected or confirmed

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to have infectious TB disease should not be allowed to continue their normal activities until they have been successfully treated and deemed to be non-infectious

- Students should be receiving general routine instructions on cough hygiene
- Classrooms should be kept well ventilated to prevent transmission of TB, windows should be kept open all the time and if fans available, they should run at maximum speed during school hours.

Public Health officers are responsible to ensure the TB infection control measures described above.

### **3.2.2 Refugee camps and prisons**

All the TB infection control measures described in this SOP applies also to medical services in refugee camps and prisons and it has to be implemented according to the level of the health service (e.g. hospital, health centre or dispensary).

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### **3.2.3 TB Infection control measures at community level**

Community based organizations should conduct education sessions targeted to TB patients, PLHIV and their families and community at large. The sessions should include information on cough hygiene, TB screening among PLHIV and HIV testing for TB patients, TB-HIV co-infection. The education sessions should be based on the *TB infection control training package developed by NACP/NTLP MOHSW 2008*.

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