

SESLHD PROCEDURE COVER SHEET



Health
South Eastern Sydney
Local Health District

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FUNCTIONAL GROUP(S)	Infection Control
KEY TERMS	Tuberculosis; Infection control; Patient management
SUMMARY	To outline the infection control principles for the management of a patient admitted with confirmed tuberculosis (TB) or being evaluated for TB.

COMPLIANCE WITH THIS DOCUMENT IS MANDATORY

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1. POLICY STATEMENT

Patients with tuberculosis (TB) are cared for in inpatient, outpatient and domiciliary settings. Diagnosis may occur subsequent to presentation and/or discharge from care. A high index of suspicion for TB or progression to TB disease should be held for persons in the following at risk groups:

- Persons with known TB disease or exposure to TB (with or without treatment)
- Persons born or residing in countries with a high incidence of TB (see [NSW Health website](#))
- Persons with immune suppressive conditions or undergoing immune suppressive treatments
- Persons with diabetes, renal disease, malnutrition, gastrectomy silicosis, malignancy, history of tobacco or alcohol use
- Health care workers, residents of institutions, homeless persons.

Emergency departments, bronchoscopy suites, respiratory wards and respiratory outpatient facilities, intensive care units and infectious disease units require vigilance for undiagnosed disease.

The TB coordinator must be notified (via the switchboard) by the treating medical team and/or the nursing unit manager (NUM) of any patient presenting or admitted with confirmed or suspected TB. For efficiency and safety this should occur as early as possible.

Facilities must have processes in place to notify Infection Prevention Control (IPC) team of any confirmed or suspect TB case. At SSEH, POWH, RHW and TSH the treating team and or NUM will directly notify IPC at the time the case presents or is admitted. At SGH, IPC do not need to be notified, follow local processes and notify the Chest Clinic team via switch.

In accordance with NSW Work Health and Safety Regulations, SESLHD employers, managers and employees are responsible for the maintenance of safe environments in the delivery of care. These responsibilities include (but are not limited to):

- Early identification of persons with possible TB
- Use of appropriate infection control measures to prevent TB transmission, particularly in relation to high TB risk procedures
- Referral of all TB patients to TB Services
- Adherence to occupational TB screening for new and existing employees
- Reporting of workplace TB exposures and the provision of post TB exposure screening and care.

All patients presenting/admitted with TB or who are suspected of having TB or identified as high risk for TB (see dot points above), should be managed using airborne precautions, in addition to standard precautions in a single room until the risk for transmission has been assessed and documented as safe for de-isolation. The risk of transmission is to be assessed by the treating physician in consultation with the TB

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coordinator. All patients presenting with extra-pulmonary TB should have coexistent pulmonary TB excluded with sputum testing and appropriate imaging.

Extra-pulmonary TB is not considered a significant transmission risk except under the following conditions:

- Pulmonary TB has not been excluded (with sputum testing and imaging)
- There is an open discharging TB lesion
- During invasive procedures on closed TB lesions such as wound irrigation, biopsy or surgical intervention.

Extra-pulmonary TB, meeting the above criteria, require standard precautions only, as advised and documented by the treating medical team, in communication with the TB Coordinator and IPC Team.

Triaging of patients being evaluated for possible transmissible infection or disease should occur in a manner that prevents contamination of the environment and transmission in waiting rooms. Patients being evaluated for TB should be provided with and asked to wear a well-fitting surgical face mask and accommodated in single patient accommodation or area while awaiting treatment.

The risk of TB transmission is increased with poor respiratory hygiene / cough etiquette. SESLHD promotes respiratory hygiene by communicating appropriate cough etiquette with posters and education to patients, visitors and staff. Areas within the hospital where people congregate such as waiting rooms (e.g. Emergency Department, Chest Clinic, Outpatients Departments, Ambulatory Care, Medical Imaging, Pathology) should provide access to respiratory hygiene information and equipment e.g. instructional poster, surgical masks, tissues and hand-rub to support respiratory hygiene.

Certain procedures conducted within health care facilities are associated with an increased risk for transmission of TB to patients, visitors and staff. These include aerosol-generating procedures (AGPs), bronchoscopy, sputum induction, spontaneous sputum, nebulisation, oxygen therapy, wound irrigation and invasive procedures. These procedures should be undertaken in accordance with airborne precautions when a risk or potential risk for TB transmission has been identified.

Identification and contact screening of patients, staff and others potentially exposed to a person with infectious TB is managed and conducted by the TB Coordinator/TB Service in consultation with the TB specialist and if required, with the NSW TB Programme.

All health care workers (including employees, students, contractors and volunteers) are required to undergo screening for TB in accordance with [NSW Health Policy Directive PD2020_017 – Occupational, Assessment, Screening and Vaccination Against Specified Infectious Diseases](#).

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This Procedure should be read in conjunction with the following documents:

- [NSW Health Policy Directive PD2017 013 - Infection Prevention and Control Policy](#)
- [Clinical Excellence Commission: Respiratory Protection in Healthcare \(December 2021\)](#)

2. BACKGROUND

- This document outlines the management of patients with confirmed TB or suspected TB in a healthcare facility.

3. RESPONSIBILITIES

3.1 Health Care Workers will:

- Comply with the management procedures for all patients with confirmed or suspected TB
- Ensure the patient and their visitors understand the need for additional precautions
- Provide education to the patient and visitors on how they must comply with the management procedures
- Document the care given to the patient
- Complete any training associated with this Procedure.

3.2 Line Managers will:

- Ensure all patients with confirmed or suspected TB are managed as outlined in this procedure
- Ensure staff comply with this procedure
- Ensure staff receive appropriate education regarding the management of patients with confirmed TB or who are being evaluated for TB
- Ensure the nursing team understands their responsibility to educate patients and visitors regarding the need for appropriate precautions.
- Ensure staff members involved in patient management or cleaning of patient environments have completed training in the correct use of personal protective equipment (PPE), including mask fit checking.

3.3 Infection Prevention and Control (IPC) Staff will:

- Provide education to staff to ensure they understand the rationale for this procedure
- Assist with ensuring the patient and their visitors understand the need for these additional precautions
- Document education provided to staff, patients and visitors
- Liaise with TB coordinator/clinicians of the TB Service.

3.4 TB Coordinator / Designated TB Service (Chest Clinic) clinicians will:

- Notify the TB case to the Public Health Unit as per NSW Tuberculosis guidelines
- Assess the risk of TB transmission

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- Identify and screen persons potentially exposed to infectious TB
- Coordinate ongoing outpatient treatment and care of patients with TB prior to discharge
- Coordinate contact screening of confirmed TB patients
- Provide relevant education to health care workers, patients and their immediate family or carers.

3.5 Network Managers/Service Managers will:

- Distribute information to line managers
- Ensure resources are available for the appropriate management of patients with confirmed TB or who are being evaluated for TB
- Facilitate staff to participate in screening.

3.6 Medical staff will:

- Comply with the management procedures for all patients with confirmed TB or who are being evaluated for TB
- Arrange for vaccination or follow up of at risk neonates or children < 5 years, (see 5.16)
- Ensure the patient understands the need for additional precautions
- Provide information and explanation to the patient regarding their condition
- Document care given to patient.

4. DEFINITIONS

Active TB: disease state where transmission of tuberculosis is possible.

Additional (transmission based) precautions: are designed for patients confirmed or suspected, to be infected with pathogens for which additional precautions beyond standard precautions are needed to interrupt transmission in health organisations. Additional precautions are also designed to protect immunocompromised patients from acquiring healthcare associated infections whilst in protective isolation.

Airborne precautions: precautions (applied to patients confirmed, or suspected, to be infected with pathogens that can be transmitted by the airborne route, to reduce the risk of transmission of infectious agents).

Airborne transmission: occurs by dissemination of either airborne droplet nuclei (small-particle residue 5µm or smaller in size) of evaporated droplets that may remain suspended in the air for long periods of time or dust particles containing the infectious agent.

Alcohol-based hand rub/gel: an alcohol-containing preparation designed for reducing the number of viable micro-organisms on the hands.

Extra-pulmonary TB: refers to disease outside the lungs.

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Fit Checking: or “seal check” is a process to ensure that the P2/N95 respirator **fits** the wearer.

(Qualitative) Fit test: a facial fit test conducted to assess the fit of a P2 mask giving pass/fail results and relying on the subject’s response to a test agent.

Health care settings: any place where health care is provided to patients on a commercial or public health basis.

Health care workers (HCWs): persons, including students and trainees, whose activities involve contact with patients or with blood or body substances from patients.

Laryngeal TB: tuberculosis of the larynx.

Particulate mask (P2, N95 or PFR95): a mask which provides a tight facial seal with a face-seal leakage of < 10% and ability to filter particles 1 micron in size in the unloaded state with a filter efficiency of greater than/equal to 95% given flow rates of up to 50 litres per minute.

Personal protective equipment (PPE): equipment designed to prevent contamination of the health care worker and/or their clothing, for example gloves, goggles, face shield, gown, mask.

Pulmonary TB: tuberculosis of the lung.

Respiratory hygiene/cough etiquette comprises of:

- covering the nose/mouth with a tissue when coughing or sneezing
- using tissues to contain respiratory secretions
- spitting into a tissue, if spitting is necessary
- disposing of tissues into the nearest rubbish bin after use
- performing hand hygiene after contact with respiratory secretions and contaminated objects/materials e.g. tissue.

Standard Precautions: precautions designed to reduce the risk of transmission of microorganisms from both recognised and unrecognised sources of infections in health care settings.

Tuberculosis (TB): Tuberculosis is a disease caused by infection with the bacteria *Mycobacterium tuberculosis*. It is generally transmitted by the inhalation or ingestion of infected droplets and usually affects the lungs, although infection of multiple organ systems may occur.

5. PROCEDURE**5.1 Patient accommodation**

- Accommodate patient in a negative pressure isolation room with ensuite (and anteroom where available)
- Door to remain closed
- Airborne precautions sign to be placed prominently on entrance to room
- Negative pressure air-conditioning to be used. Ensure settings are correctly set to negative.
- If negative pressure isolation room is not available, the patient must be accommodated in a single room with door closed and airborne precautions maintained.
- If the patient needs to leave the single room for investigations, ensure the patient wears a well-fitting surgical mask. If this is not possible, consult with TB cocordinator or IPC coordinator.

5.2 Hand hygiene

- Hand hygiene to be performed prior to donning P2/N95 mask, upon leaving the room and after removal of PPE.

5.3 Masks

- A particulate filter mask or P2/N95 mask is to be worn by all HCWs entering the room of a patient with diagnosed or suspected TB
- Donning and doffing of the mask is in accordance with Infection Control Principles

5.3.1 Fit Checking of P2 or N95 masks

- Staff will fit check every time they don a P2 (N95 equivalent) mask to check a good facial seal is achieved
- A fit check ensures the mask is sealed over the bridge of the nose, mouth and chin and there are no gaps between the mask and face
- No activity should be undertaken until a satisfactory fit has been achieved
- Staff and visitors who have facial hair must be made aware that an adequate seal cannot be guaranteed between the mask and the wearers face, potentially increasing the risk of transmission
- The manufacturer's instructions for fit checking of individual brands and types of P2/N95 masks should be referred to at all times.

Clinical Excellence Commission – [Fit Checking Guide](#)

Donning and fit checking of P2/N95 respirators in NSW healthcare settings
HETI My Health Learning (Course code 319438161)

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5.3.2 Patients who are permitted to leave isolation room

- Patients must wear a surgical mask when leaving the isolation room for any reason
- Patients on oxygen therapy must be changed to nasal prongs and wear a surgical mask over the top of the nasal prongs if condition allows
- Patients must be provided with instructions for donning and removal of mask
- Patients are not required to wear a mask when staff or visitors are entering their room
- If patient is unable to wear a surgical mask staff should consult the TB coordinator (via switch).

5.3.3 Health Care Workers

- Particulate mask (P2 or N95) to be worn by all HCWs entering the room of patients diagnosed or with a provisional diagnosis of TB and removed **after** leaving the room
- Perform hand hygiene before and after discarding mask.

5.3.4 Visitors/Family

- Must wear a particulate mask (P2 or N95) on entering the room and remove it after leaving the room
- Must perform hand hygiene before and after discarding mask.

5.4 Catering

- Catering staff to leave meal trays outside patient’s room and inform nursing staff
- Nursing staff are to deliver and remove meals from the patient room.

5.5 Linen

- As per standard precautions.

5.6 Excreta

- As per standard precautions.

5.7 Waste

- No additional precautions necessary **except** for dressings from open TB wounds or TB discharging lesions. These dressings are to be discarded as general waste unless significant blood or body fluid involved.

5.8 Cleaning

- Room to be cleaned daily with neutral detergent solution
- Cleaning staff must observe the same airborne precautions as other staff when entering the room.
- After the room has been vacated by an infectious patient, the room is to be left vacant and in negative pressure air conditioning for a period of time (refer to the [Clinical Excellence Commission Infection Prevention and Control Clinical Practice Handbook, Table 15, page 97](#)) to allow for removal of at least 99% of airborne contaminants prior to terminal cleaning.

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Note:

As each room perform differently the Infection Prevention Control practitioner/lead will advise the time requirement in accordance with the Infection prevention and control clinical practice handbook.

Rooms should be tested and evaluated annually to ensure they have the appropriate number of air changes per hour.

5.9 Patient Equipment

- Use single use equipment where possible
- Other equipment must be cleaned between patients.

5.10 Patient Education

- Patients should be educated on:
 - requirements for isolation
 - the need for transmission based precautions
 - how and when to wear a surgical mask
 - respiratory hygiene and cough etiquette
 - the correct handling and disposal of sputum
- TB Coordinators will provide full counselling and education on disease, transmission, treatment, TB care and support, contact screening for relatives and friends and likely clinical outcome.

5.11 Specimen Collection

- Specimen collection from TB/potential TB disease sites represent opportunities for aerosol generation and transmission of TB. This includes sputum, urine, wound swabs, bronchial washings, biopsies, aspirates from persons with TB or being evaluated for TB. Therefore these procedures should be conducted using airborne precautions when a risk or potential risk for TB transmission has been identified
- All specimens must be collected in a container with a lid which can be secured
- For sputum induction refer to [NSW Ministry of Health Guidelines](#)
- Urine collection for examination for tuberculosis is collected in large *urine AFB jars* (NOT yellow screw top containers) which can be obtained from the pathology department.

5.12 Visitors

- Should be limited during infectious period e.g. 2 visitors at a time
- To consult with nursing staff before entering room
- Other than household contacts to be discouraged
- To be given clear instructions regarding necessary precautions to be followed
- Must wear and be educated on how to put on a particulate mask (P2 or N95) on entering the room, including “fit check”
- Children should be discouraged from visiting.

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5.13 Transport/transfer of patient

- Limit transfer of patient to other wards/facilities
- Where possible tests/investigations/procedures to be conducted in patient's room
- Receiving department/facility and transport services **must** be notified **prior** to patient transfer
- Patient to wear a surgical mask when leaving the room for any reason. If this is not possible, consult with TB coordinator or IPC coordinator
- Patients on oxygen therapy must be changed to nasal prongs and a surgical mask placed over the top of the nasal prongs if condition allows.

5.14 Bronchoscopy for Inpatients

- Health care workers must comply with airborne precautions
- Negative pressure rooms are preferable however, if negative pressure is not available in the room where the bronchoscopy is to be performed:
 - Ensure the room is set up prior to patients arrival
 - Limit staff movement in and out of the room
 - Limit number of staff in the room for procedure
 - Surgical mask to remain on patient until procedure commences
 - Preferably recover patient in the room
 - Ensure patient has surgical mark on prior to leaving the room
 - The bronchoscopy room should be left vacant for an adequate time after patient exits room to allow for removal of at least 99% of airborne contaminants. This time period will vary; depending on the amount of air exhausted from the room, room air mixing, and the size of the room (see [Clinical Excellence Commission, 2020. Infection Prevention and Control Practice Handbook see table 15, page 97](#))
 - Whenever possible, patients with confirmed or suspected TB should be scheduled at the end of the bronchoscopy list.

5.15 Other settings

In certain situations, patients with infectious tuberculosis who meet the following criteria, may be cared for under home isolation conditions:

- Are under the care of SESLHD TB Services and
- Have been assessed as clinically stable and
- Have domiciliary support to access food and care and
- Do not present a public health risk to the community

5.16 Duration of Isolation

- Airborne precautions are required for a minimum of two weeks after effective tuberculosis treatment is established, the patient demonstrates clinical improvement and produces three consecutive sputum samples that are smear negative for acid fast bacilli (AFB)
- Do not remove the patient from isolation without approval from the medical team (treating physician) and the TB Coordinator
- Three consecutive AFB smear negative sputum samples indicates a lower level of infectious status than positive results, but does not equate to non-infections status.

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- Consult with TB Consultant and communicate with TB coordinator regarding isolation decisions for patients with drug resistant TB.

5.17 Contacts of Infectious TB

- If TB diagnosis is made after the patient’s presentation to a health care facility, the patient is to be isolated as outlined in this document. The name and medical record number of all patients in the room and the contact details (phone number and email) of staff who have cared for the patient are to be provided to the TB coordinator during normal business hours.

6. DOCUMENTATION

Patient Clinical Notes on eMR.

7. AUDIT

Review of any breaches in relation to: infection control, delayed diagnosis leading to potential transmission to patients, visitors and staff.

8. REFERENCES

- [NSW Health Policy Directive PD2017_013 – Infection Prevention and Control Policy](#)
- [NSW Health Policy Guideline GL2019_003 - Tuberculosis Contact Investigations](#)
- <https://www.health.nsw.gov.au/Infectious/tuberculosis/Pages/tb-sputum-induction-guidelines.aspx>
- [NSW Health Policy Directive PD2022_007 – Principals for the Management of Tuberculosis Management in New South Wales](#)
- [NSW Health Policy Directive PD2020_017 - Occupational Assessment, screening and Vaccination against specified Infectious Diseases](#)
- [Clinical Excellence Commission. 2020. Infection Prevention and Control Practice Handbook](#)
- [COVID 19 Guidelines ANZICS Version 4 September 2021](#)

9. REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
August 2008	0	Contact H Newman. Former Illawarra Health Infection Control Policy reviewed and merged for SESIAHS in consultation/collaboration with SESIAHS Infection Control Manual Working Party.
April 2011	1	Amendment to reflect change to Local Health Network
March 2016	2	Updated to inpatient care only and to Local Health District
April 2016	2	Changes endorsed by Executive Sponsor
May 2021	3	Updates by TB services and Infection Prevention and Control Policy Working Party
December 2021	3	Approved by TB Governance Committee and the Infection Prevention Control Committee. Additional links to Fit Checking Resources included. Endorsed by Executive Sponsor.

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April 2022	4	Minor review. Document governance transferred from Infection Control Working Party to Tuberculosis Governance Committee. Inclusion of Appendix. Endorsed by Executive Sponsor.
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APPENDIX

IPC Practice Handbook January 2020
INFECTION PREVENTION AND CONTROL PRACTICE HANDBOOK

Clinical Excellence Commission, 2020, Infection Prevention and Control Practice Handbook. Clinical Excellence Commission, Sydney, Australia.

[Infection Prevention and Control Practice Handbook \(nsw.gov.au\)](http://nsw.gov.au)

Table 15. Reference guide - Air changes per hour (ACH) and time required for removal efficiencies of airborne contaminants

ACH §	Time (mins.) required for 99% efficiency	Time (mins.) required for 99.9% efficiency
2	138	207
4	69	104
6+	46	69
8	35	52
10+	28	41
12+	23	35
15+	18	28
20	14	21
50	6	8

Note: + Denotes frequently cited ACH for patient-care areas

§ Values were derived from the formula: $t_2 - t_1 = - [\ln (C_2 / C_1) / (Q / V)] \times 60$, with $t_1 = 0$

t1 = initial time point in minutes

t2 = final time point in minutes

C1 = initial concentration of contaminant

C2 = final concentration of contaminant

$C_2 / C_1 = 1 - (\text{removal efficiency} / 100)$

Q = air flow rate in cubic feet/hour

V = room volume in cubic feet

$Q / V = \text{ACH}$

[Adapted from CDC Guidelines for Environmental Infection Control in Health-Care Facilities \(2003\)](#)

5.3.1