Serological testing for immunity to vaccine-preventable diseases and TB screening: Ready reference guide

The SA Health 'Addressing vaccine preventable disease: Occupational assessment, screening, and vaccination Policy', provides requirements for:

- the assessment, screening and vaccination to protect against specified vaccine preventable diseases (VPDs) and;
- assessment and screening of tuberculosis (TB).

The intent of the Policy is to minimise the risk of transmission of these infections.

General practitioners and other immunisation providers may see health care workers (current or prospective SA Health employees, student, locum, contract or volunteer health care workers) requesting an assessment of their immune status or baseline TB screening to comply with the Policy. This document is a guide for medical officers and immunisation providers.

Information on serology testing for immunity to selected vaccine preventable diseases (VPDs) is summarised below as a ready reference with links to detailed sections in the Australian Immunisation Handbook.

VPD	Screening and serology recommendation
Hepatitis A	> Documented evidence of two-doses of Hepatitis A vaccine at least 6 months apart; OR > Documented Hepatitis A IgG is acceptable evidence of immunity. > In unvaccinated persons, consider serology in those born before 1950, those who spent their early childhood in an endemic area, and those with an unexplained previous episode of hepatitis or jaundice, all of whom may have immunity from previous infection. > An alternative is to give Hepatitis A vaccine (unless contraindicated). > Post vaccination serology is not required.
Hepatitis B	> Documented serology is essential. > Documented level of hepatitis B surface antibody (≥10mIU/ml) following completion of a course of Hepatitis B vaccine; OR > Documented level of Hepatitis B surface antibody (≥10mIU/ml) following a booster dose of Hepatitis B vaccine; OR > Documented evidence of previous resolved Hepatitis B infection (core antibody positive, surface antigen negative). > If acute or chronic hepatitis B infection is documented (surface antigen positive) the health care worker cannot be considered immune. > Health care workers who have lived in a Hepatitis B endemic country for at least 3 months should have serology to assess their immune status prior to vaccination: request Hepatitis B surface antigen, Hepatitis B surface antibody and Hepatitis B core antibody.
Measles, Mumps and Rubella	> Consider serology only if there is no documented evidence of two-doses of MMR vaccine or other acceptable evidence of immunity (born before 1966, previous laboratory evidence of immunity). > An alternative to serology is to give MMR vaccine (unless contraindicated). > Post vaccination serology is not required.

VPD	Screening and serology recommendation
Varicella (chickenpox)	> Consider serology only if there is no documented evidence of age-appropriate vaccination and no history of varicella infection. > An alternative to serology is to give varicella vaccine (unless contraindicated). > Post vaccination serology is not required.
Pertussis dTpa	> Serology is of no value as there is no commercially available serological test which can detect immunity to the disease. > Documented evidence of pertussis containing booster vaccine in the previous 10 years (the only available pertussis vaccine includes diphtheria and tetanus vaccines). > Confirmation of immunity post-vaccination is not required.
COVID-19	> Serology is of no value as there is no commercially available serological test which can detect immunity to the disease. > Documented evidence of receipt of one dose of COVID-19 vaccine which the Therapeutic Goods Administration has classified as either approved or recognised in Australia. Confirmation of immunity post-vaccination is not required.
Polio	> Serology is of no value as there is no commercially available serological test which can detect immunity to the disease. > A history of a completed course of polio vaccine provides acceptable evidence of immunity.

TB baseline screening

The objective of pre-employment Tuberculosis (TB) screening is to use a risk management approach to identify individuals with active TB, individuals at highest risk of infection with M. tuberculosis complex, and individuals most at risk for progression from TB infection to active TB disease.

Baseline screening including questionnaire as well as IGRA or TST is required for all prospective employees who may have individual risks or will be working in a high-risk work environment within a SA Health Service (see Table 1).

Table 1: Risk assessment of health service (work environment)

Risk	Work environment	Individual
High risk	> Bronchoscopy suites > Other work areas where staff undertake sputum induction for suspected TB or other procedures in which aerosol possibly containing TB is created > Laboratories where clinical specimens which may contain *M. tuberculosis* complex are manipulated > Post-mortem suites	> Individual born in a high prevalence TB country* > Individual who trained or worked for 3 months or more in a high prevalence TB country* > Previous history of TB disease > Evidence of TB infection as indicated by a history of positive TB screening test (e.g. TST or IGRA) result > Previous or current contact with an active TB disease case > Immune suppression – as defined by Table 2 > * High prevalence TB countries are those where TB is endemic (World Health Organization estimated TB rate >40/100,000, see http://www.who.int/tb/publications/global_report/en/)

Risk	Work environment	Individual
Low risk	> Laboratories where clinical specimens that may contain *M. tuberculosis* complex are not manipulated > All other work areas	> No TB exposure risk factors or other evidence of TB infection identified with the TB screening questionnaire > Individuals who do not have any patient contact

Table 2: Conditions defining immune suppression

Conditions defining significant immune suppression for the purposes of potential TB transmission:
> HIV > Organ transplant recipients and other immunosuppressed persons (e.g., persons receiving ≥15 mg/day of prednisone for ≥1 month) > Persons with any of the following clinical conditions or immunocompromising conditions that place them at high risk for TB disease: o diabetes mellitus o Silicosis o chronic renal failure o certain hematologic disorders (e.g., leukaemia and lymphomas) o other specific malignancies (e.g., carcinoma of the head, neck, or lung) o unexplained weight loss of ≥10% of ideal body o weight o gastrectomy o jejunoileal bypass o immune suppressive conditions e.g. Crohn's disease/SLE/psoriatic arthritis - on anti-TNF blockers/immune modulating agents.

Individuals with an abnormal TB screening result must have a medical evaluation by, or in consultation with, a medical practitioner experienced in TB management to determine the likelihood that the abnormal screening result represents TB infection, and to ensure that the estimated disease risk and appropriate management are undertaken.