

Surveillance

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Introduction

Purpose

Use this chapter to:

- Understand the importance of surveillance in tuberculosis (TB) control and prevention;
- Report suspected and confirmed TB cases;
- Ensure you are using the required data collection forms;
- Understand how the TB registry works; and
- Understand how genotyping can assist TB control efforts.

Surveillance—the ongoing systematic collection, analysis, interpretation, and dissemination of data about a health-related event—is a critical component of successful TB control, providing essential information needed to:

1. Determine TB patterns and trends of the disease;
2. Identify sentinel events, such as potential outbreaks, recent transmission, multidrug resistance, and deaths;
3. Identify high-risk populations and settings;
4. Establish priorities for control and prevention activities; and
5. Strategically plan use of limited resources.¹

Surveillance data are also essential for quality-assurance purposes, program evaluation, and measurement of progress toward TB elimination.

State and local TB control programs should have the capability to monitor trends in TB disease and latent TB infection (LTBI) in populations at high risk in order to detect new patterns of disease and possible outbreaks. Populations at high risk should be identified and targeted for active surveillance and prevention, including targeted testing and treatment of LTBI.

In addition to providing the epidemiologic profile of TB in a given jurisdiction, state and local surveillance are essential to national TB surveillance.² Data for the national TB surveillance system is reported by state health departments in accordance with standard TB case definition and case-report formats. The Report of Verified Case of Tuberculosis (RVCT) forms are designed to collect information on cases of TB. The Centers for Disease Control and Prevention's (CDC's) national TB surveillance system publishes epidemiologic analyses of reported TB cases in the U.S.³

Reporting of new cases is essential for surveillance purposes.⁴

Surveillance in TB Control Activities

Case detection: Case reporting to the jurisdictional public health agency is done for surveillance purposes and for facilitating a treatment plan and case management services.⁵



For more information on case reporting, see the “Reporting Tuberculosis” section in this chapter.

Outbreak detection: Surveillance data should be routinely reviewed to determine if there is an increase in the expected number of TB cases, one of the criteria for determining if an outbreak is occurring. For an increase in the expected number of TB cases to be identified, the local epidemiology of TB should be understood. Detection of a TB outbreak in an area in which prevalence is low might depend on a combination of factors, including recognition of sentinel events, routine genotype cluster analysis of surveillance data, and analysis of *Mycobacterium tuberculosis* drug-resistance and genotyping patterns.⁶ Genotyping data (see Chapter 11, “Specimen Collection and Laboratory Services”) should routinely be reviewed because genotype clusters also may indicate an outbreak. Prompt identification of potential outbreaks and rapid responses are necessary to limit further TB transmission. When an outbreak is identified, short-term investigation activities should follow the same principles as those for the epidemiologic part of the contact investigation (i.e., defining the infectious period, settings, risk groups, mode of transmission, contact identification, and follow-up). However, long-term activities require continued active surveillance.



For more information on outbreak investigations, see the “Outbreak Investigation” section in Chapter 10, “Contact Investigation.”

Contact investigation: Collecting, analyzing, interpreting, and disseminating data on contacts and contact investigations is necessary for prioritizing the highest-risk contacts, resulting in focused use of resources in accordance with national guidelines. Although surveillance of individual contacts to TB cases is not conducted in the U.S., the CDC collects aggregate data from state and local TB programs through the Aggregate Report for Program Evaluation (ARPE). Routine collection and review of this data can provide the basis for evaluation of contact investigations for TB control programs.⁷



For more information on surveillance in contact investigations, see Chapter 10, “Contact Investigation.”

Targeted testing: Review and interpretation of surveillance data informs targeted testing policies and strategies. Targeted testing is intended to identify persons other than TB contacts who have an increased risk for acquiring TB and to offer such persons diagnostic testing for *M. tuberculosis* infection and treatment, if indicated, to prevent subsequent progression to TB disease. Targeted testing and treatment of LTBI is best accomplished through cost-effective programs aimed at patients and populations identified on the basis of local surveillance data as being at increased risk for TB.⁸



For more information on surveillance and targeted testing, see Chapter 3, “Targeted Testing for LTBI.”

Treatment of LTBI: Surveillance of persons with LTBI does not routinely occur in the U.S. However, the CDC collects reports of all severe adverse events leading to the hospitalization or death of a person under treatment for LTBI. Healthcare providers are encouraged to report such events to the CDC’s Division of Tuberculosis Elimination by sending an email to LTBIdrugevents@cdc.gov. Surveillance of these events will provide data to evaluate the safety of treatment regimens recommended in current guidelines.⁹



For more information on surveillance and targeted testing, see Chapter 3, “Targeted Testing for LTBI.” For more information on updated LTBI treatment recommendations, see the CDC’s “Latent Tuberculosis Infection: A Guide for Primary Health Care Providers” at <https://www.cdc.gov/tb/publications/ltni/default.htm>.

Guidance

Data collection and reporting on TB should be done in accordance with Idaho laws and regulations. Reporting and recordkeeping requirements are covered in this chapter.



For roles and responsibilities, refer to the “Roles, Responsibilities, and Contact Information” section in Chapter 1, “Introduction.”



For more information on confidentiality and the Health Insurance Portability and Accountability Act (HIPAA), see Chapter 13, “Confidentiality.”

Reporting Tuberculosis

Detecting and reporting suspected cases of tuberculosis (TB) is the key step in stopping transmission of *Mycobacterium tuberculosis* because it leads to prompt initiation of effective multiple-drug treatment, which rapidly reduces infectiousness. The Centers for Disease Control and Prevention (CDC) reports that delays in reporting cases of pulmonary TB are one of the major challenges to successful control of TB.¹⁰ As one of the strategies to achieve the goal of reduction of TB morbidity and mortality, the CDC recommends immediate reporting of a suspected or confirmed case of TB to the jurisdictional health agency.¹¹ Also, by Idaho administrative rule, a case of TB disease in the state must be reported to the local public health district or the state's Bureau of Communicable Disease Prevention, Epidemiology Program within three business days.

When reporting TB, keep the following definitions in mind:

- **Case:** An episode of TB disease in a person meeting the laboratory or clinical criteria for TB, as defined in the document "Case Definitions for Infectious Conditions Under Public Health Surveillance."¹² These criteria are listed below in Table 1.¹³
- **Suspect:** A person for whom there is a high index of suspicion for active TB (e.g., a known contact to an active TB case or a person with signs or symptoms consistent with TB) who is currently under evaluation for TB disease.¹⁴
- **Confirmed:** A case that meets the clinical case definition or is laboratory confirmed, as described below in Table 1.¹⁵

TABLE 1: CASE DEFINITIONS¹⁶

Clinical Case Definition	Laboratory Criteria for Diagnosis
<p>A case that meets all of the following criteria:</p> <ul style="list-style-type: none"> ▪ A positive tuberculin skin test or interferon gamma release assay (IGRA)[^] ▪ Other signs and symptoms compatible with tuberculosis (e.g., an abnormal, unstable [i.e., worsening or improving] chest radiograph, or clinical evidence of current disease) ▪ Treatment with 2 or more antituberculosis medications ▪ Completed diagnostic evaluation 	<p>A case is laboratory confirmed when it meets one of the following criteria:</p> <ul style="list-style-type: none"> ▪ Isolation of <i>Mycobacterium tuberculosis</i> from a clinical specimen[*] ▪ Demonstration of <i>M. tuberculosis</i> from a clinical specimen by nucleic acid amplification test (NAAT)[†] ▪ Demonstration of acid-fast bacilli (AFB) in a clinical specimen when a culture has not been or cannot be obtained
<p>[^] In practice, this is not always the case. A person can have active disease and not have a positive skin test or IGRA.</p> <p>[*] Use of rapid identification techniques for <i>M. tuberculosis</i> (e.g., deoxyribonucleic acid [DNA] probes and mycolic acids high-pressure liquid chromatography performed on a culture from a clinical specimen) is acceptable under this criterion.</p> <p>[†] NAATs must be accompanied by culture for mycobacteria species. However, for surveillance purposes, the CDC will accept results obtained from NAA tests approved by the Food and Drug Administration and used according to the approved product labeling on the package insert.</p>	

Source: Adapted from: CDC. Case definitions for infectious conditions under public health surveillance. MMWR 1997;46(No.RR-10):40–41.

Mandatory and timely case reporting from community sources (e.g. providers, laboratories, hospitals, and pharmacies) is required. Reporting enables the TB control program to take action at local, state, and national levels and to understand the magnitude and distribution of the TB problem.¹⁷



For more information on case reporting as it appears in Idaho Rules and Regulations, see: <http://adminrules.idaho.gov/rules/current/16/0210.pdf>.

Prompt reporting (prior to culture confirmation) allows the state and local public health agency to do the following quickly:

- Verify diagnosis
- Assign a case manager and coordinate treatment
- Determine if an outbreak is occurring
- Control the spread of TB¹⁸

Failure to report cases threatens public health because it may result in the adverse outcome of a patient's treatment or delayed contact investigation of an infectious case.¹⁹

The following public health services are available to assist physicians with managing their TB cases:

- Epidemiologic investigation, including identification and examination of contacts
- Chest radiographic services (limited basis; requires state approval)
- Anti-tuberculosis medications
- State public health laboratory services. The actual *M. tuberculosis* isolate should be sent to the state laboratory so that genotyping can be performed.²⁰

Reporting Suspected or Confirmed Cases of Tuberculosis to the Public Health Department

Healthcare providers and laboratories should report suspected or confirmed cases of TB using the information in Table 2.

TABLE 2: WHEN TO REPORT TUBERCULOSIS

What Condition/ Test Result	Who Reports	When to Report	How to Report
<p>Confirmed or suspected cases of tuberculosis (TB) disease</p> <p>Confirmation by laboratory tests is not required.</p> <p>This includes pulmonary and extrapulmonary cases.</p>	<p>Anyone who knows or suspects that a case or suspected case of TB exists, including but not limited to physician, dentist, nurse, medical examiner, other health care practitioner, administrator of health care facility, public or private school administrator, city health officer, or laboratorian</p>	<p>Within 3 working days</p>	<p>Call the local public health agency or call the Bureau of Communicable Disease Prevention, Epidemiology Program's WATS line at 800-632-5927.</p> <p>For a list of local public health districts in Idaho and their contact information go to:</p> <p>http://healthandwelfare.idaho.gov/Health/HealthDistricts/tabid/97/Default.aspx</p>

Healthcare Providers

Healthcare providers should report the following information on suspect or confirmed cases of TB and any other information related to case management requested by the local public health district and/or the Idaho TB Program.

1. Patient's name, age, date of birth, sex, address, and phone number
2. Name, address, and phone number of treating physician or other treating healthcare provider

Laboratories

Laboratories should report the same information as healthcare providers.

Required Reports from Public Health Departments to the Idaho Tuberculosis Program

Idaho public health districts are required to complete and submit the reports listed in Table 3 to the Idaho TB Program Manager at the Idaho Division of Public Health TB Program. In most instances, the Report of Verified Case of Tuberculosis (“RVCT”) forms should be completed electronically in the state’s communicable disease surveillance system. Alternatively, these reports can be submitted by fax to the attention of the Idaho TB Program Manager at (208) 332-7307 or mailed to the Bureau of Communicable Disease Prevention Epidemiology Program when electronic submission is not available.

TABLE 3: REQUIRED REPORTS

Report Title	When Due
RVCT form	When information is available
RVCT follow-up 1 form	When sensitivities are available, or, if culture negative, once the laboratory declares the specimens to be culture negative.
RVCT follow-up 2 form	At the end of regimen
Directly Observed Therapy Record	Once a quarter during treatment and then at the end of regimen
Contact Tracing Form	Return with RVCT Follow-up 2 form or when contacts complete evaluation or treatment
TB Control Activities Quarterly Report	Quarterly



If the RVCT or the TB Control Activities Quarterly Report (necessary for Idaho PHDs only) forms are needed, contact the Idaho TB program at (208) 334-5939. The DOT Record and Contact Tracing Forms can be found either in Chapter 17, “Forms”, on the TB Forms website (<http://healthandwelfare.idaho.gov/Health/DiseasesConditions/Tuberculosis/TuberculosisForms/tabid/854/Default.aspx>), or on the Idaho Learning Management System (accessible only to Idaho PHDs).



Data Collection and Management

Forms

Examples of additional forms that may be useful (although not required) when treating a patient for TB disease or latent TB infection are listed in Table 4.



The forms listed in Table 4 and additional examples can be found either in Chapter 17 “Forms,” on the Idaho LMS, or online at <http://healthandwelfare.idaho.gov/Health/DiseasesConditions/Tuberculosis/TuberculosisForms/tabid/854/Default.aspx>.

TABLE 4: EXAMPLES OF FORMS WHICH CAN BE USED TO COMPLETE A TUBERCULOSIS (TB) PATIENT’S RECORDS

For a Patient on Treatment for Tuberculosis Disease	
Tuberculosis (TB) Disease Treatment/Case Management <ul style="list-style-type: none"> ▪ “Confirmed/Suspected Report of Tuberculosis Disease” ▪ “Tuberculosis Case Update Monthly Report” ▪ “Treatment Plan” ▪ “Directly Observed Therapy Agreement” ▪ “Home Isolation Agreement” ▪ “TB Home Evaluation” ▪ “Bacteriology Data Sheet” ▪ “Biochemistry Data Sheet” 	<ul style="list-style-type: none"> ▪ “Treatment of Active TB Education Form” ▪ “Monthly TB Patient Assessment” ▪ “Directly Observed Therapy Form 1: Treatment Record” ▪ “Directly Observed Therapy Form 2: Side Effects and Adverse Reactions” Transfer Notifications <ul style="list-style-type: none"> ▪ “Interjurisdictional Tuberculosis Notification Form” (NTCA) ▪ “Interjurisdictional Follow-Up Form” (NTCA)
For a Patient on Treatment for Latent Tuberculosis Infection	
Latent Tuberculosis Infection (LTBI) Treatment <ul style="list-style-type: none"> ▪ “Treatment of LTBI Education Form” If on Directly Observed Therapy <ul style="list-style-type: none"> ▪ “Directly Observed Therapy Agreement” ▪ “Directly Observed Therapy Form 1: Treatment Record” ▪ “Directly Observed Therapy Form 2: Side Effects and Adverse Reactions” 	Transfer Notifications <ul style="list-style-type: none"> ▪ “Interjurisdictional Tuberculosis Notification Form” (NTCA) ▪ “Interjurisdictional Follow-Up Form” (NTCA)
Contact Investigation	
<ul style="list-style-type: none"> ▪ “TB Contact Investigation Report” (with instructions) 	

Tuberculosis Data and Registry

To carry out mandatory community public health responsibilities, the state TB control program maintains a computerized record system (case registry) with up-to-date information on all current clinically active and suspected TB cases in the community.²¹ The TB case registry ensures that laboratory data, including all initial diagnostic tests, are promptly reported, if applicable, to the healthcare provider and local and state TB control programs. Follow-up tests, including data on sputum culture conversion and drug susceptibility testing of clinical isolates, should also be promptly reported so any needed modifications in management can be made. Aggregate program data is analyzed, interpreted, and made available to the healthcare community and to community groups and organizations with specific interests in public health. Providing this information supports education and advocacy and facilitates their collaboration in the planning process.

To ensure appropriate follow-up of all TB patients and persons suspected of having TB, the following information is updated by the state TB program on a continuing basis:²²

- Acid-fast bacilli smear results
- Culture results
- Drug susceptibility results
- Chest radiograph results
- Treatment information

Records on TB patients prior to 1995 are kept by the state in hard copy; please inquire with the state TB program to access these records if needed.

Dissemination and Evaluation

Dissemination

Tuberculosis (TB) surveillance data is disseminated periodically to healthcare providers, health agencies, and the public through multiple channels including health alerts, reports, summaries, and presentations.

Evaluation

The purpose of evaluating public health surveillance systems is to ensure that problems of public health importance are being monitored efficiently and effectively. TB surveillance systems should be evaluated periodically, and the evaluation should include recommendations for improving quality, efficiency, and usefulness. Evaluation of a public health surveillance system focuses on how well the system operates to meet its purpose and objectives.



For more information see the CDC's "Updated Guidelines for Evaluating Public Health Surveillance Systems" (MMWR 2001;50[No RR-13]) at this hyperlink: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5013a1.htm> .



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