



CHAPTER 9: TUBERCULOSIS REPORTING AND SURVEILLANCE

INTRODUCTION

Tuberculosis (TB) has been a reportable condition in New York City (NYC) since 1897; reporting requirements are based on mandates defined by the NYC Health Department. (See *Chapter 17: Laws Governing Tuberculosis in New York City*.) Healthcare providers and laboratories are required to report individuals with confirmed TB disease, those with signs and symptoms consistent with TB, and children younger than five with latent TB infection (LTBI) to the NYC Health Department. Reporting of individuals from multiple sources increases the likelihood that TB cases will be reported in a timely manner. Additionally, universal TB reporting facilitates rapid case identification and case management activities and enables the Bureau of TB Control (BTBC) to: ensure prompt initiation and completion of TB treatment, monitor epidemiologic trends, detect and respond to TB outbreaks, identify high-risk groups, and identify data quality and reporting issues.

TUBERCULOSIS REPORTING

The following sections summarize programmatic implications of the NYC Health Code related to surveillance and case management. See Chapter 17 for a more detailed description of the Health Code.

The NYC Health Code mandates that persons with any of the following criteria or laboratory reports indicating the following are reported to BTBC by healthcare providers and/or laboratories:

- Positive acid-fast bacilli (AFB) smear from any anatomic site
- Positive nucleic acid amplification (NAA) test result for *Mycobacterium tuberculosis* (*M. tuberculosis*) complex
- Positive culture for *M. tuberculosis* complex
- Biopsy, pathology, or autopsy findings consistent with active TB disease
- Clinical suspicion of pulmonary or extrapulmonary TB disease such that the physician or other healthcare provider has initiated or intends to initiate:
 - Airborne infection isolation
 - Treatment for TB disease with two or more anti-TB medications
- Children younger than five with a positive test for TB infection

PROVIDER REPORTING REQUIREMENTS

Healthcare providers, infection control practitioners, and/or administrators of hospitals or other institutions providing care and treatment to patients are required to report all individuals with confirmed TB disease or signs and symptoms consistent with TB disease within 24 hours of diagnosis or clinical suspicion. Individuals should be reported whenever TB is a potential diagnosis, even if bacteriologic evidence of disease is lacking or treatment has not been initiated.

When an individual has an AFB-positive smear or has started treatment for TB disease, reporting should occur immediately. Medical providers must report individuals even though laboratories are also required to report findings consistent with active TB disease. All submitted reports must be timely, accurate, and detailed to ensure that BTBC can appropriately follow up with patients. When requested, providers must also report results for TB infection tests (tuberculin skin test [TST] and interferon gamma release assay [IGRA]), chest radiographs (CXR), other imaging findings, evaluation results, and treatment outcomes of individuals who have been identified as a contact to an infectious TB patient.

In addition to reporting individuals with suspected or confirmed TB disease, the NYC Health Code requires providers to report any child younger than five years of age (up to the day of their fifth birthday) with a positive TB infection test result. For such children, providers must also report qualitative and quantitative TB infection test results (including induration [in millimeters (mm)] for TST), radiography results (CXR, computed tomography [CT], and magnetic resonance imaging [MRI]), as well as any LTBI treatment initiated for these children.

The following essential information must be included when a report is submitted:

- Information needed to identify and locate the individual (e.g., name, date of birth, address, telephone, email address)
- Provider information (e.g., physician's name, reporting facility/practice's address, telephone number, fax number, email address)
- Microbiology and/or pathology test results related to the TB diagnosis (including date specimen obtained, specimen source, and accession number)
- Results of CXRs and other imaging studies obtained to evaluate any TB site of disease including date performed
- Results of tests for TB infection (e.g., IGRA or TST) including date performed
- TB treatment information including date initiated, medications, and dosages
- Airborne infection isolation status



Healthcare providers should report individuals electronically using the electronic **UNIVERSAL REPORTING FORM (URF)**, which is available through Disease Reporting Central at: <https://a816-healthpsi.nyc.gov/NYCMED/Account/Login>. Information reported on the URF should be as complete as possible. If providers are unable to report electronically, paper reports can be faxed to (844) 713-0557. (See Appendix Q: New York City Health Department Universal Reporting Form.)

MICROBIOLOGY AND PATHOLOGY LABORATORY REPORTING REQUIREMENTS

Microbiology and pathology laboratories are required to report all confirmed TB cases and all laboratory results consistent with TB disease. Microbiology laboratories are required to report via the New York State (NYS) Electronic Clinical Laboratory Reporting System (ECLRS). The following test results must be reported to BTBC within 24 hours of the observed result:

- AFB-positive smears (regardless of anatomic site)
- Cultures positive for *M. tuberculosis* complex
- NAA test results that identify *M. tuberculosis* complex including: *M. tuberculosis*, *M. africanum*, *M. bovis*-bacille Calmette-Guérin (BCG), *M. caprae*, *M. canettii*, *M. microti*, *M. pinnipedii*, *M. bovis*, *M. dassie*, *M. mungii*, and *M. orygis*
- Results of drug-susceptibility tests (DSTs) performed on *M. tuberculosis* complex cultures
- Biopsy, pathology, or autopsy findings consistent with active TB disease, such as: caseating necrosis or caseating granulomas, or presence of AFB in biopsy of lung, lymph nodes, or other specimens
- Any culture or NAA result associated with an AFB-positive smear (even if negative for *M. tuberculosis* complex)

- Any AFB smear, NAA, or culture result obtained on a specimen collected within 12 months of the date a specimen was collected that had an NAA or culture result that was positive for *M. tuberculosis* complex

INTERJURISDICTIONAL NOTIFICATION

Interjurisdictional notification is a process used when TB patients are reported to a jurisdiction where they do not reside. BTBC coordinates with health departments in other jurisdictions to ensure continuity of care for TB patients working or living outside of NYC. When a non-NYC resident is identified as a TB patient and is reported to BTBC, their reporting data is sent to the public health officials of that jurisdiction. For individuals residing in other parts of the United States (U.S.), data are sent to state public health departments. Residents of other countries are typically reported to the national ministry of health. NYC residents initially reported to other local U.S. jurisdictions are in turn reported to BTBC. This bi-directional flow of data ensures that the local health departments are fully informed about the TB status and treatment of their residents and have enough data to initiate case management, contact investigation, and other applicable follow-up in their jurisdiction when warranted.



BTBC uses the **INTERJURISDICTIONAL TUBERCULOSIS NOTIFICATION FORM** to share and receive information about patients moving out of or into NYC from another jurisdiction. The form can be found at: <http://www.tbcontrollers.org/resources/interjurisdictional-transfers/>



CureTB is a referral program focused on preventing TB among persons who travel internationally. It links people to TB care by collaborating with ministries or other health authorities in the United States and countries of destination. This is a collaboration between the CDC's Division of Global Migration and Quarantine (DGMQ) and the County of San Diego's TB Control Program. Information on CureTB can be found at: www.cdc.gov/usmexicohealth/curetb.html

DISCHARGE PLANNING AND CASE MANAGEMENT FOLLOW-UP

DISCHARGE PLANNING

Hospitals in NYC are required to confer with BTBC prior to discharging an infectious TB patient from inpatient care. The NYC Health Code mandates that healthcare providers submit discharge plans for approval 72 hours prior to discharging any sputum or respiratory AFB smear-positive patients. Patients with AFB-positive smears for sputum or respiratory specimens (including those who are asymptomatic) who are not suspected of having multidrug-resistant TB (MDR-TB) and who are well enough to be discharged from the hospital may be discharged if they meet select criteria. (See *Chapter 13: Infection Control*.) This requirement helps ensure that patients are eligible for discharge, and that BTBC staff have adequate time to follow up with patients, initiate specific home isolation services, and schedule follow-up clinic appointments as needed.

TREATMENT PLAN

When a patient elects to receive TB care from a community provider instead of at a NYC Health Department TB clinic, the treating physician is required to report the patient's initial and monthly treatment plans to BTBC. Submission of an initial treatment plan allows BTBC the opportunity to offer guidance on the most appropriate treatment regimen for a patient, while the submission of subsequent monthly plans helps ensure that the patient is being seen regularly by a provider and enables BTBC staff to follow up on any potential changes to the treatment regimen. Monthly updates are submitted via the Report of Patient Services (RPS) form, which treating providers fill out and return to NYC Health Department staff. Providers also notify the NYC Health Department whenever treatment is discontinued (e.g., when the provider determines that the patient does not have TB, when treatment was completed, or for any other reason). (See *Chapter 10: Case Management for Patients with Tuberculosis.*)

SURVEILLANCE

All submitted reports are reviewed for completeness, timeliness, and accuracy to determine whether patients are eligible for case management. Mandatory reporting ensures that cases of TB disease are not missed in the community, and that individuals with suspected and confirmed TB receive appropriate diagnosis, treatment, and care.

BTBC staff collect, document, and analyze patient information systematically, and use this data to inform case management activities, ensure TB treatment completion, monitor epidemiologic trends, prepare surveillance reports, submit line-level data to the NYS Department of Health (NYS DOH) and Centers for Disease Control and Prevention (CDC), and identify data quality and reporting issues.

ELECTRONIC TUBERCULOSIS REGISTRY AND CASE MANAGEMENT SYSTEM

BTBC utilizes and maintains Maven (Conduent Inc., Florham Park, NJ), an electronic registry and case management system that serves as the central data repository for all public health activities conducted by the Bureau. This system houses demographic, clinical, and risk factor data, as well as information collected as part of case management activities for all individuals reportable to BTBC. Custom built tools within Maven, such as reports, workflows, and forms, are tailored to the specific needs of the Bureau and assist with all levels of programmatic activities. Data extracted from Maven are used to monitor epidemiologic trends, detect and respond to TB outbreaks, prepare surveillance reports, report aggregated data to the NYS DOH and the CDC, and identify data quality and reporting issues.

CASE ASSIGNMENT

Patients are assigned automatically by the electronic registry and case management system (Maven) based on current criteria from electronic and paper reports. The following priority levels indicate the timeline to initiate case management, with priority level 1 being the most urgent for action (within one business day):

PRIORITY LEVEL 1

- Smear-positive, culture-positive, or NAA-positive
- Left hospital against medical advice or eloped with no specimen collected or with unknown AFB smear results
- Contacts reported with signs and symptoms consistent with TB disease
- Other cases as requested by the Program Director

PRIORITY LEVEL 2

- Cavitory CXR or computed tomography (CT) scan
- Patients younger than 18 years of age
- Patients with HIV infection and one of the following:
 - homeless at the time of report,
 - have a history of prior TB,
 - have a positive test for TB infection result,
 - have ever been in a correctional facility,
 - have pathology findings consistent with TB
- Smear-negative or culture-negative patients confirmed with TB
- Smear-positive pathology results

PRIORITY LEVEL 3

- Patient on 2 or more anti-TB medications (currently or recently) but does not meet criteria for priority levels 1 and 2
- Case previously closed, which did not meet priority levels 1 and 2
- Smear-positive and NAA-negative
- Pathology finding of caseating granulomas, or caseating necrosis from any site

DATA DISSEMINATION

BTBC has a long history of disseminating TB surveillance data to healthcare providers, health agencies, and the public through the production of a surveillance summary that has been published annually since 1900. This report is shared both in hard copy and electronically and contains a comprehensive summary of BTBC activities, summary statistics and trends in the number of cases, and initiatives performed by BTBC in the previous year.



BTBC's **ANNUAL TUBERCULOSIS SUMMARY** provides robust surveillance data, summaries of core program activities and annual highlights. The report is available online at www.nyc.gov/health, search "TB Report"

Periodically, data may also be disseminated through presentations (e.g., Citywide TB Rounds, Grand Rounds, and other medical talks), BTBC publications (e.g., epi data briefs), publications in the scientific literature, at BTBC's annual World TB Day Conference, and through public use data projects such as Epi Query and NYC Health Atlas.

QUALITY ASSURANCE AND EVALUATION OF DATA

Surveillance data are used to conduct various quality assurance (QA) activities to maintain data accuracy and identify programmatic areas for potential improvement. The TB surveillance and case management system data are routinely evaluated to ensure efficiency of data collection and improve data accuracy and utility. Data are reviewed and analyzed for many reasons, including routine data analyses, reporting, program evaluation, and research. (See *Chapter 16: Program Evaluation and Research*.)

REPORTING TO THE CENTERS FOR DISEASE CONTROL AND PREVENTION AND THE NEW YORK STATE DEPARTMENT OF HEALTH

The Report of Verified Cases of Tuberculosis (RVCT) is the national TB surveillance data reporting form. The RVCT is used by the CDC to collect demographic, clinical, social, and laboratory data for confirmed cases of TB in the U.S. RVCT data are submitted electronically to the National TB Surveillance System (NTSS) on a daily basis. Data are also sent to the CDC's National TB Indicators Project (NTIP) to help monitor progress towards national TB control objectives. In addition to daily reporting of data to the CDC, data are also sent to the NYS DOH TB Control Program quarterly.

SUMMARY

Surveillance is a core TB control activity in NYC. BTBC's surveillance activities help ensure that all patients with TB are identified and treated appropriately and that public health response is timely and effective.

KEY SOURCES

Centers for Disease Control and Prevention. *Report of Verified Case of Tuberculosis (RVCT), Instruction Manual*. Atlanta, GA: US Department of Health and Human Services; 2009.

Maven Disease Surveillance & Outbreak Management System. Conduent.com. <https://www.conduent.com/solution/public-health-technology/disease-surveillance-system/>.

New York City Health Code can be found at nyc.gov/health; search for “NYC Health Code”

Tuberculosis Annual Reports. nyc.gov. <https://www1.nyc.gov/site/doh/health/health-topics/tuberculosis-historical-reports.page>.