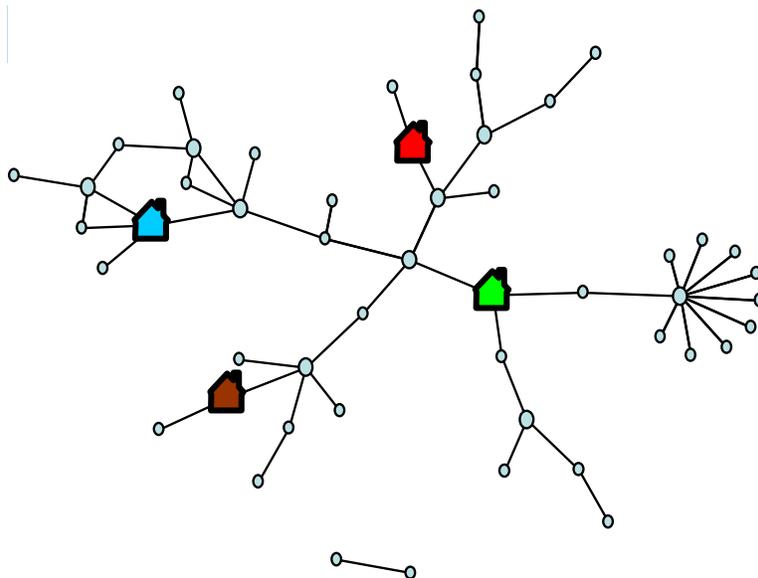


# North Dakota Tuberculosis Outbreak Response Plan



November 2009

Prepared by  
Rachel Birk, MS, TB Coordinator  
North Dakota Department of Health

## **Acknowledgments**

We wish to thank Dr. Charles Nolan and representatives from Idaho, Montana, Utah, and Wyoming State TB Programs; Central District Health Department, Boise, Idaho; and the Centers for Disease Control and Prevention Division of Tuberculosis Elimination for their vital contributions in the preparation of this plan. We also thank Phil Griffin, Denise Ingman, Evelyn Lancaster, Masa Narita, Carol Pozik, Dawn Tuckey, Ruth West, and Jan Young for their help in launching this project.

## **About the Cover**

Advances in molecular epidemiology and an increasing focus on hard-to-reach, high-risk groups have required new ways of thinking about outbreaks. Social network models are being explored for the potential to reveal hidden routes of transmission, to prioritize contact investigations, and to portray the scope of outbreaks. In this fictitious network, cases of tuberculosis (dark grey) share connections to contacts (white), while both share connections to homeless shelters.

## **Abbreviations**

Centers for Disease Control and Prevention (CDC); contact investigation (CI); directly observed therapy (DOT); Division of Tuberculosis Elimination (DTBE); human immunodeficiency virus (HIV); latent tuberculosis infection (LTBI); TB outbreak response plan (ORP); TB outbreak response team (TORT); QuantiFERON®-TB Gold (QFT-G); tuberculin skin test (TST); tuberculosis (TB)

## TABLE OF CONTENTS

Purpose and definition for TB outbreak.....	4
Initiating the outbreak response plan.....	5
Goals of outbreak response.....	5
Legal authority.....	5
Composition of the TB outbreak response team.....	5
Notification and request for assistance.....	8
Local and state public health responsibilities.....	8
Data management.....	10
Internal and external communication.....	10
Training and education.....	10
Community partnerships.....	11
Evaluation.....	11
De-activation of the TB outbreak response plan.....	11
Glossary of terms for TB outbreak and contact investigation.....	12
References.....	16
Appendix A Ten steps to take when a TB outbreak is suspected.....	17
Appendix B Exceptional TB circumstances.....	18
Appendix C State and local laws and regulations.....	19
Appendix D Risk communication checklist.....	23
Appendix E Evaluation checklist.....	25
Appendix F De-activation checklist.....	26

The Tuberculosis (TB) Outbreak Response Plan (ORP) includes the following sections: purpose, indications for initiating the response plan, legal authority, composition of the response team, notification procedures, local and state public health responsibilities, data management, communication, training and education, community partnerships, evaluation, de-activation, and glossary. Guidelines for contact investigations (CIs) are provided in the TB Manual, another project of Task Order 6.

## I. PURPOSE

The purpose of the ORP is to ensure comprehensive and timely response to a TB outbreak.

### A. Definition for TB Outbreak

Definitions for TB outbreak are relative to the local context. Outbreak cases can be distinguished from other cases only when certain associations in time, location, patient characteristics, or *Mycobacterium tuberculosis* attributes (e.g., drug resistance or genotype) become apparent. In low-incidence jurisdictions, any temporal cluster of cases is suspicious for an outbreak. A working definition for a potential "TB outbreak" is helpful for planning and response and may include any of the following six criteria:

Criteria based on surveillance and epidemiology:

- An increase has occurred above the expected number of TB cases
- During and because of a contact investigation (CI), two or more contacts are identified as having TB disease, regardless of their assigned priority, (i.e., high, medium, or low priority)
- Any two or more cases occurring within one year of each other are discovered to be linked, and the linkage is established outside of a CI (e.g., two patients who received a diagnosis of TB disease outside of a CI are found to work in the same office and only one or neither of the persons was listed as a contact to the other)
- A genotyping cluster leads to discovery of one or more verified transmission links which were missed during a CI within the prior two years

Criteria based on program resources:

- Transmission is continuing despite adequate control efforts by the TB control program
- CI associated with increased cases requires additional outside help

## B. Suspected TB Outbreak

A TB outbreak may be suspected on the basis of information from diverse sources, including TB case reports, CIs, routine surveillance, and genotyping data. Because of the possibility of uncertainty as to whether an outbreak has occurred, it is helpful to define some initial activities which can be put into place while seeking additional information. **Appendix A** suggests ten initial steps to take when a TB outbreak is suspected.

## II. INITIATING THE OUTBREAK RESPONSE PLAN

The state TB program manager and TB coordinator after consultation with the state epidemiologist, the state health officer and the local TB nurse will declare a TB outbreak and initiate the ORP. The decision to declare a TB outbreak and initiate the ORP will be based on the criteria for TB outbreak above.

**Appendix B** lists examples of “exceptional TB circumstances,” defined as situations that merit additional scrutiny and discussion, but are not specifically addressed in the above criteria for TB outbreak. An exceptional TB circumstance may prompt initiation of the ORP. Alternatively, an exceptional TB circumstance may be resolved by standard program operations and not require initiation of the ORP.

## III. GOALS OF OUTBREAK RESPONSE

- Identify all TB cases
- Initiate CI in a timely manner
- Identify infected persons for evaluation (for disease and treatment of latent tuberculosis infection [LTBI]) and ensure appropriate follow-up

## IV. LEGAL AUTHORITY

Authority will remain with the state health officer. See **Appendix C**, “State and local laws and regulations.”

## **V. COMPOSITION OF THE TB OUTBREAK RESPONSE TEAM (TORT)**

### **A. State TB Program Manager**

- Makes decision to initiate ORP
- Provides leadership and overall management of activities of TORT
- Provides recommendations related to TB response, including decisions about legal issues
- Provides clinical and public health guidance (e.g., guidance for CI, isolation, and infection control) to TORT, local public health staff, and community providers
- Reviews all reports, publications, and other documents related to TB response prior to use or distribution
- Convenes team for evaluation of outbreak response
- Maintains communication with state epidemiologist and the state health officer
- Coordinates inter-jurisdictional communication, including provider alerts and advisories
- May serve as primary media spokesperson

### **B. State TB Program Coordinator**

- Makes decision to initiate ORP
- Provides leadership and overall management of activities of TORT
- Provides recommendations related to TB response, including decisions about legal issues
- Provides clinical and public health guidance (e.g., guidance for CI, isolation, and infection control) to TORT, local public health staff, and community providers
- Reviews all reports, publications, and other documents related to TB response prior to use or distribution
- Convenes team for evaluation of outbreak response
- Maintains communication with state epidemiologist and the state health officer
- Coordinates inter-jurisdictional communication, including provider alerts and advisories
- May serve as primary media spokesperson

### **C. State Public Health Laboratory Representative**

- Conducts routine and specialized testing
- Provides collection kits and forms for clinical specimens as needed
- Analyzes samples
- Sends isolates to California Department of Health Services Genotyping Laboratory

- Reports test results to state TB program, local TB nurse, and primary health care provider
- Maintains communication with state TB program

#### **D. State Epidemiologist**

- Requests assistance from the Centers for Disease Control and Prevention (CDC)
- Provides guidance for data management of TB cases and contacts (e.g., oversees epidemiological analysis) and evaluation of outbreak response
- Provides clinical and public health guidance (e.g., guidance for CI, isolation, and infection control) to TORT, local public health staff, and community providers
- Ensures quality of ongoing TB surveillance and genotyping data
- Prepares communications and written reports related to outbreak response
- Maintains communication with state TB program

#### **E. State Health Officer**

- Provides clinical and public health guidance (e.g., guidance for CI, isolation, and infection control) to TORT, local public health staff, and community providers
- Provides legal advice and maintains legal authority

#### **F. Local Public Health Nurse**

- Investigates and reports suspected and confirmed TB cases to state TB program.
- Provides TB case management and directly observed therapy (DOT); documents all laboratory reports (e.g., smear, culture, susceptibility, nucleic acid amplification tests, HIV status, genotyping)
- Conducts CIs, specifically: identifies, interviews, and evaluates contacts by performing symptom screen and initial and follow-up tests for TB infection (i.e., tuberculin skin test [TST] or interferon-gamma release assay); obtains chest x-ray if contact has symptoms and/or positive test for TB infection; determines contacts eligible for treatment of LTBI and window prophylaxis; and ensures safe treatment for persons with LTBI
- Provides incentives/enablers for TB cases and persons with LTBI
- Advises about infection control
- Provides education to other public health staff and the community
- May assist with media communication
- Maintains communication with state TB program

## **G. Indian Health Service and Tribal Health**

- Investigates and reports suspected and confirmed TB cases to state.
- Provides TB case management and directly observed therapy (DOT); documents all laboratory reports (e.g., smear, culture, susceptibility, nucleic acid amplification tests, HIV status, genotyping)
- Conducts CIs, specifically: identifies, interviews, and evaluates contacts by performing symptom screen and initial and follow-up tests for TB infection (i.e., tuberculin skin test [TST] or interferon-gamma release assay); obtains chest x-ray if contact has symptoms and/or positive test for TB infection; determines contacts eligible for treatment of LTBI and window prophylaxis; and ensures safe treatment for persons with LTBI
- Provides incentives/enablers for TB cases and persons with LTBI
- Advises about infection control
- Provides education to other public health staff and the community
- May assist with media communication
- Maintains communication with state TB program

## **H. Field Epidemiologist**

- Provides education to other public health staff and the community
- May assist with contact investigations
- Maintains communication with state TB program

## **I. Public Information Officer** (state and local; see Section VIII and **Appendix D**)

- Coordinates all public information activities
- May assist with provider alerts and advisories
- May assist with internal communication
- Maintains communication with state TB program

## **J. Support Personnel**

- Provide logistical and administrative support to TORT
- Arrange for acquisition and delivery of additional supplies and services

## **K. Sources of Additional Staffing**

Additional personnel from other state and local public health programs may be required to support the functions listed above. Examples of positions include: outbreak coordinator; nurse to oversee CI, testing for TB infection, and treatment for LTBI; outreach workers; and

health education specialists. Staff may be needed to fill above roles when others involved in outbreak response become overwhelmed.

## **VI. NOTIFICATION AND REQUEST FOR ASSISTANCE**

### **A. Local Public Health Notification to State Public Health**

The local public health nurse will notify state TB program by phone immediately when TB outbreak is suspected.

### **B. State Public Health Notification to CDC**

The state epidemiologist will notify area CDC TB program specialist by phone, email or fax when a TB outbreak is suspected or confirmed.

### **C. Request for Assistance from CDC**

Assistance from CDC Division of TB Elimination (DTBE) is available at three levels:

- Telephone consultation
- Program management with on-site assistance
- On-site outbreak investigation (EPI-AID); the request for an EPI-AID must be made by the state epidemiologist

## **VII. LOCAL AND STATE PUBLIC HEALTH RESPONSIBILITIES**

### **A. Local Public Health Agency/Indian Health Service/Tribal Health Responsibilities**

- Establish authority, in collaboration with state public health agencies, for response
- Build consensus with state and other TB control advisors regarding response
- Establish accountable systems of communication, evaluation, response and tracking of TB cases and contacts
- Notify appropriate state officials
- Designate media spokesperson
- Ensure sufficient number of trained staff for response as resources
- Ensure the following response activities: CI, data management, collection and transport of laboratory specimens, tests for TB infection, infection control, education and training for community health providers and affected groups (e.g., parents, employees, employers, schools, organizations)
- Request assistance from state TB program

- Provide a list of available isolation resources if needed, including list and location of airborne infection isolation rooms in the local jurisdiction
- Facilitate education and training for community health providers and affected groups (e.g., parents, employees, employers, schools, organizations)
- Designate liaison to local law enforcement
- Designate liaison for logistics

## **B. State Public Health Agency Responsibilities**

- Establish authority, in collaboration with local public health agencies, for response
- Build consensus with local and other TB control advisors regarding response
- Monitor response activities
- Notify appropriate CDC officials
- Provide periodic epidemiological and other response-related reports
- Designate media spokesperson
- Ensure appropriate laboratory testing, including genotyping, and specimen transport
- Provide consultation and onsite assistance to local public health, as resources allow, for the following response activities: CI, data management, collection and transport of laboratory specimens, tests for TB infection, infection control, education and training for community health providers and affected groups (e.g., parents, employees, employers, schools, organizations)
- Assist local public health in procuring resources needed for outbreak response (e.g., personal protective equipment, interpreters, translated patient educational materials, isolation facilities, laboratory resources, drugs)
- Request assistance from CDC or assist in finding additional resources needed for outbreak response activities
- Implement other activities as recommended by CDC

## **VIII. DATA MANAGEMENT**

Maintenance of data is crucial to all aspects of the outbreak response and CIs. Data should be collected for cases and contacts by using standardized forms (paper or electronic) with standard definitions and formats, according to national guidelines.

## IX. INTERNAL AND EXTERNAL COMMUNICATION

Internal and external communication should utilize written protocols and designated media spokespersons. For complex situations and multiple agency involvement, management systems, such as the incident command system, can be used.

**Table 1. Suggested Lead for Communication in Different TB Outbreak Situations**

Situation	Lead
TB outbreak occurs within a given local public health jurisdiction	Local public health/Indian health service/tribal health TB nurse
TB outbreak occurs in multiple jurisdictions within a given state	State TB program manager or TB coordinator
TB outbreak occurs in multiple jurisdictions involving more than one state	State TB program manager or TB coordinator should discuss the situation as soon as possible to clarify the communication strategy. CDC can facilitate communication among multiple states.

Public health leaders should prepare and practice for emergency risk communication in advance of a TB outbreak. A TB outbreak communication checklist and worksheet for developing key messages are provided in **Appendix D**.

## X. TRAINING AND EDUCATION

Education of TB program and other public health staff, community providers, and laboratory professionals should be ongoing, but often needs to be specially arranged during a TB outbreak. Resources are available through CDC and the regional training and medical consultation centers (RTMCCs). The Heartland National Tuberculosis Center (HNTC) serves the midwestern region including Arizona, Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wisconsin. As a RTMCC, HNTC welcomes inquiries regarding training, educational products, technical assistance, and medical consultation (visit <http://www.heartlandntbc.org>). Education may be needed for the general public or different groups in the community. Additional information about TB can be found at CDC/DTBE (visit <http://www.cdc.gov/tb/default.htm>).

## **XI. COMMUNITY PARTNERSHIPS**

Partnerships with community groups are essential to successfully reach persons with TB disease and infection, their communities, and their health care providers. For example, health department staff may lose patients because of cultural and linguistic barriers. The forging of partnerships can help solve these problems. Potential partnerships involve a wide range of organizations. What follows is a partial list of suggested organizations: cultural and ethnic, refugee resettlement and immigration, American Indian tribes, community clinics, health care providers and hospitals, corrections, advocacy groups, HIV, homeless, substance abuse, professional societies, lung association, faith community, business associations, and the media.

## **XII. EVALUATION**

Outbreak response activities should be reviewed among the TORT and other stakeholders to determine how closely they reflected the ORP and if modifications to the ORP need to be made. Plans should be put in place to evaluate the outcomes related to the outbreak response. Plans for data collection should be articulated and specific dates set for re-evaluation. The debriefing and exit interviews (see Section XIII) are opportunities for these tasks. Findings used to refine the process can be shared with others. An evaluation checklist is provided in **Appendix E**.

## **XIII. DE-ACTIVATION OF TB OUTBREAK RESPONSE PLAN**

ORP de-activation procedures will be conducted by the TORT when the situation no longer supports the need for intensified outbreak response activities (see checklist **Appendix F**):

- Debriefing - TORT meeting to review all activities and outcomes related to the specific outbreak response
- Change of Command - If the outbreak response required modification of authority, leadership, or responsibilities during the investigation, a change will be made to restore local public health agency responsibilities, as previously conducted
- Exit Interview - TORT will conduct an exit interview with the local public health agency and others involved in the outbreak response to review response activities and outcomes and collect any additional information with regard to the response
- Final Report - TB Program Manager/Coordinator may prepare a final written report about the outbreak response

#### **XIV. GLOSSARY OF TERMS FOR TB OUTBREAK AND CONTACT INVESTIGATION**

- Associate contact: A person who is somehow affiliated with a patient who has noninfectious tuberculosis or with another contact. Often used in connection with source-case investigations; does not imply an *M. tuberculosis* transmission pathway.
- Contact: Refers to someone who has been exposed to *Mycobacterium tuberculosis* (*M. tuberculosis*) infection by sharing air space with a person with infectious TB.
- Contact investigation: A series of undertakings typically requiring hundreds of interdependent decisions for investigation of TB exposure and transmission and prevention of future cases of TB. The features of the TB case under investigation inform decisions about whether to perform a contact investigation. An investigation (i.e., seeking and evaluating contacts) is recommended for the following forms of suspected or confirmed TB because they are likely to be infectious: pulmonary, laryngeal, or pleural TB disease with 1) pulmonary cavities, 2) respiratory specimens that have acid-fast bacilli (AFB) on microscopy, or 3) both.
- Exposure: The condition of being subjected to something (e.g., an infectious agent) that could have an effect. A person exposed to *M. tuberculosis* does not necessarily become infected. Much of the work in a TB contact investigation is dedicated to learning who was exposed and, of these, who became infected.
- Exposure period: The coincident period when a contact shared the same air space as a person with TB during the infectious period.
- Exposure site: A location that the index patient visited during the infectious period (e.g., a school, bar, bus, or residence).
- Exposed cohort: A group of people who shared the same air space with a TB patient during the patient's infectious period. An outbreak investigation focuses on defining the exposed cohort for infectious TB patients in order to identify contacts that need to be screened for TB and latent TB infection.
- False-positive culture: Cultures or reports of cultures of *M. tuberculosis* that are not accurate. False-positive cultures occur when *M. tuberculosis* bacteria from one specimen, instrument, or culture inadvertently contaminates another specimen or culture or when clerical errors occur and specimens are mislabeled or misreported. Clinical equipment (e.g., bronchoscopes, sputum collection booths, and ultrasonic nebulizers), if inadequately cleaned, can become contaminated and be the source of false-positive cultures. Cross-contamination can occur in the laboratory during batch processing, pipetting, transfer of bacilli from a broth culture system, work in a faulty exhaust hood, or species identification procedures.
- Genotype: The designation that results from one or more of the three genotyping techniques used for *M. tuberculosis*: spoligotyping, MIRU analysis, and IS6110-based RFLP. See reference, Genotyping Guide.

**Genotyping cluster:** Two or more isolates that share the same genotyping pattern. This term is also applied to the TB patients who produced the isolates with the same pattern. The genotyping laboratories will report a PCR cluster designation for isolates with spoligotypes and MIRU types that match other isolates from the same TB program. The laboratories will report a PCR/RFLP cluster designation for isolates in the same PCR cluster that also have the same RFLP pattern.

**Genotyping match:** Two or more *M. tuberculosis* isolates that share the same genotype.

**Genotyping:** Also referred to as DNA genotyping. A laboratory approach used to determine if *M. tuberculosis* isolates are genetically related.

**Immunocompromised and immunosuppressed:** Conditions in which at least part of the immune system is functioning at less than normal capacity. According to some style experts, immunocompromised is the broader term, and immunosuppressed is restricted to conditions with iatrogenic causes, including treatments for another condition. Some immunocompromised conditions increase the likelihood that *M. tuberculosis* infection will progress to TB disease. Certain conditions also make TB disease or infection from *M. tuberculosis* more difficult to diagnose because manifestations of TB disease differ, and tests for infection rely on an intact immune system.

**Index:** The first case or patient that comes to attention as an indicator of a potential public health problem. Contrast with Source.

**Infection:** A condition in which microorganisms have entered the body and typically have elicited immune responses. *M. tuberculosis* infection might progress to TB disease. The expression *M. tuberculosis* infection includes both latent infection and TB disease. Latent *M. tuberculosis* infection or latent tuberculosis infection (LTBI) is an asymptomatic condition that follows the initial infection; the infection is still present but is dormant (and believed not to be currently progressive or invasive). TB disease is determined by finding anatomic changes caused by advancing infection (e.g., shadows from infiltrates on a chest radiograph) or by noting symptoms (e.g., malaise, feverishness, or cough), and typically by both. Positive culture results for *M. tuberculosis* complex typically are interpreted as both an indication of TB disease and its confirmation, but infecting organisms can be obtained from patients who have no other evidence of disease.

**Infectious period:** On the basis of expert opinion, an assigned start that is three months before a TB diagnosis is recommended (see Table 2). In certain circumstances, an even earlier start should be used. For example, a patient (or the patient's associates) might have been aware of protracted illness (in extreme cases, >1 year). Information from the patient interview and from other sources should be assembled to assist in estimating the infectious period. Helpful details are the approximate dates that TB symptoms were noticed, mycobacteriologic results, and extent of disease (especially the presence of large lung cavities, which imply prolonged illness and infectiousness).

**Table 2. Guidelines for Estimating the Beginning of the Period of Infectiousness of Persons with TB, by Index Case Characteristic**

Characteristic	Acid-fast Bacilli Sputum Smear Pos	Cavitary Chest Radiograph	Recommended Minimum Beginning of Likely Period of Infectiousness
Yes	No	No	3 months before symptom onset or first positive finding (e.g., abnormal chest radiograph) consistent with TB disease, whichever is longer
Yes	Yes	Yes	3 months before symptom onset or first positive finding consistent with TB disease, whichever is longer
No	No	No	4 weeks before date of suspected diagnosis
No	Yes	Yes	3 months before first positive finding consistent with TB

Source: California Department of Health Services Tuberculosis Control Branch; California Tuberculosis Controllers Association. Contact investigation guidelines. Berkeley, CA. California Department of Health Services, 1998.

Latent *M. tuberculosis* infection (or latent tuberculosis infection [LTBI]): See Infection.

Mantoux method: A skin test performed by intradermally injecting 0.1 mL of PPD tuberculin solution into the volar or dorsal surface of the forearm. This is the recommended method for tuberculin skin testing.

Multidrug-resistant TB (MDR TB): TB disease caused by an *M. tuberculosis* strain that is resistant to at least INH and rifampin. Treatment regimens for curing MDR TB are long, expensive, and difficult to tolerate. The cure rate depends on the susceptibility of *M. tuberculosis* to alternative chemotherapy.

*Mycobacterium tuberculosis* (*M. tuberculosis*): The namesake member organism of *M. tuberculosis* complex, and the most common causative infectious agent of TB disease in humans. At times, the species name refers to the entire *M. tuberculosis* complex, which includes *M. bovis* and five other related species.

NTCA: National Tuberculosis Controllers Association.

Purified protein derivative (PPD) tuberculin: A material used in diagnostic tests for *M. tuberculosis* infection. In the United States, PPD solution (5 tuberculin units per 0.1 mL) is approved for administration as an intradermal injection as a diagnostic aid for *M. tuberculosis* infection (latent infection or TB disease).

QuantiFERON®-TB Gold: An in vitro cytokine assay that detects cell-mediated immune response to *M. tuberculosis* in heparinized whole blood from venipuncture. QuantiFERON®-TB Gold (QFT-G) appears capable of distinguishing between the sensitization caused by *M. tuberculosis* infection and that caused by BCG vaccination. CDC recommends that QFT-G can be used in all circumstances in which the TST is currently used, including contact investigations. QFT-G can be used in place of and not in addition to the TST. A positive QFT-G result should prompt the same evaluation and management as a positive TST. No reason typically exists to follow a positive QFT-G with a TST. For persons with recent contact to infectious TB, negative QFT-G results typically should be confirmed with a repeat test performed 8-10 weeks after the end of exposure.

Recent transmission: The transmission of TB that has occurred in the recent past, as opposed to reactivation of a latent TB infection. Although the precise time period that distinguishes TB that resulted from “recent” transmission and TB that resulted from

reactivation of a latent infection is not well defined, “recent” transmission is often considered to be within the last two years.

Secondary (TB) case: A new case of TB disease that is attributed to recent (i.e., <2 years) transmission as part of a scenario under investigation. Technically, all cases are secondary, in the sense that they arise from other cases that are contagious.

Secondary (or "second-generation") transmission: Transmission of *M. tuberculosis* from persons with secondary cases (see Secondary [TB] case). This creates a chain of transmission, and if secondary transmission is identified as part of a contact investigation, the scenario can be classified as an outbreak.

Source patient: A patient with infectious TB who is thought to be the source of another patient's TB infection. Also referred to as the source case.

TB disease: See discussion under Infection.

Treatment for LTBI: Treatment that prevents the progression of infection into TB disease.

Tuberculin: A precipitate made from a sterile filtrate of *M. tuberculosis* culture medium.

Tuberculin skin test (TST): A diagnostic aid for finding *M. tuberculosis* infection. A small dose of tuberculin (see also Mantoux method and PPD) is injected just beneath the surface of the skin by the Mantoux method, and the area is examined for induration by palpation 48--72 hours after the injection. Indurated margins should be read transverse (perpendicular) to the long axis of the forearm.

Universal genotyping: The policy of submitting all *M. tuberculosis* isolates for genotyping.

Sources:

Centers for Disease Control and Prevention. Guidelines for the investigation of contacts of persons with infectious tuberculosis; recommendations from the National Tuberculosis Controllers Association and CDC, and Guidelines for using the QuantiFERON® TB Gold test for detecting *Mycobacterium tuberculosis* infection, United States. MMWR 2005;54(No. RR-15) <http://www.cdc.gov/mmwr/pdf/rr/rr5415.pdf>

National TB Controllers Association / CDC Advisory Group on Tuberculosis Genotyping. Guide to the Application of Genotyping to Tuberculosis Prevention and Control. Atlanta, GA: US Department of Health and Human Services, CDC; June 2004  
[http://www.cdc.gov/nchstp/tb/genotyping/images/TBGenotypingGuide\\_June2004.pdf](http://www.cdc.gov/nchstp/tb/genotyping/images/TBGenotypingGuide_June2004.pdf)

## REFERENCES

National TB Controllers Association / CDC Advisory Group on Tuberculosis Genotyping. Guide to the Application of Genotyping to Tuberculosis Prevention and Control. Atlanta, GA: US Department of Health and Human Services, CDC; June 2004

[http://www.cdc.gov/nchstp/tb/genotyping/images/TBGenotypingGuide\\_June2004.pdf](http://www.cdc.gov/nchstp/tb/genotyping/images/TBGenotypingGuide_June2004.pdf)

Questions and Answers about TB 2005 [http://www.cdc.gov/nchstp/tb/faqs/qa\\_glossary.htm](http://www.cdc.gov/nchstp/tb/faqs/qa_glossary.htm)

Centers for Disease Control and Prevention. Controlling tuberculosis in the United States: recommendations from the American Thoracic Society, CDC, and the Infectious Diseases Society of America. MMWR 2005;54(No. RR-12)

<http://www.cdc.gov/mmwr/PDF/rr/rr5412.pdf>

Centers for Disease Control and Prevention. Guidelines for the investigation of contacts of persons with infectious tuberculosis; recommendations from the National Tuberculosis Controllers Association and CDC, and Guidelines for using the QuantiFERON®-TB Gold test for detecting *Mycobacterium tuberculosis* infection, United States. MMWR 2005;54(No. RR-15) <http://www.cdc.gov/mmwr/pdf/rr/rr5415.pdf>

## **Appendix A: Ten Steps to Take When a TB Outbreak is Suspected**

1. Convene the potential outbreak team with representation from local, regional (if applicable), and state programs and the public health laboratory. Identify potential consultants, including CDC. Review legal issues, authority, and roles, and identify the lead agency.
2. Review epidemiological and genotyping data and establish what is needed to answer the question, "Has a TB outbreak occurred?" Refer to the criteria in "Definition for TB outbreak."
3. Clarify mechanisms for internal communication among the outbreak team (remember the team likely includes representatives from several agencies and institutions); in particular, describe channels of communication regarding new information about suspected cases, contact investigations, and laboratory data, including genotyping results.
4. Identify media spokesperson(s).
5. Review guidelines for contact investigations and ensure that protocols exist for other potential outbreak response activities.
6. Identify additional resources that may be needed, including financial resources and staffing. Discuss potential sources to obtain additional resources.
7. Enhance surveillance for TB cases (remember that this will often be associated with notification of health care providers).
8. Decide whether or not to issue a media release, health alerts to providers, or make special contact with certain groups depending on the initial epidemiology (e.g., corrections, homeless shelters, parents at a school, etc).
9. Provide basic TB education to public health staff and plan for health care provider training and education.
10. Decide when to contact community partners.

*We recommend the decision to declare a TB outbreak and initiate the outbreak response plan be made by the state TB controller/manager or local TB controller, depending on authority for TB control in the jurisdiction. The decision should be made after consultation with local and state epidemiologists and other TB program staff. The information gathered in the "ten steps" may assist with making the decision.*

## Appendix B: Exceptional TB Circumstances

The following list describes exceptional TB circumstances which may prompt activation of the TB Outbreak Response Plan.

- A patient with infectious tuberculosis is suspected or known to have *Mycobacterium tuberculosis* resistant to at least rifampin.
- Persons with HIV infection or other immune-compromising conditions are suspected or known to be exposed to a patient with infectious tuberculosis.
- A child five years of age or younger is confirmed to have tuberculosis for which a source of infection is not discovered after an investigation.
- An increase in the number of cases over time in a particular area is considered significant by a local or state public health worker.
- Extensive TB transmission is confirmed or suspected. These situations may involve workplaces, schools, unconventional social networks, or other circumstances in which screening for TB disease and infection involves a large number of people or in which multiple cases are suspected.
- The exposure involves high-risk settings, including correctional facilities, educational facilities, healthcare settings, shelters, or group settings.
- A false-positive culture is suspected.
- A TB case generates a great deal of public interest or political concern.

## Appendix C: State and Local Laws and Regulations

### CHAPTER 23-07.1

#### TUBERCULOSIS TREATMENT

**23-07.1-01. Declaration of legislative intent.** It is hereby declared that it is the intent of the legislative assembly, as follows: It is the policy of the state of North Dakota to treat persons having tuberculosis as dangerous to the health and welfare of the citizens of the state. It is also the policy of the state to declare that all cases of tuberculosis should be treated in an appropriate facility in order to complete the course of therapy for tuberculosis to lower the risk of relapse. To this end, it is declared that isolation provisions to achieve treatment of such persons should be accomplished to the fullest extent regardless of such person's ability to pay. It is further declared that such persons with tuberculosis must be given full opportunity to enter treatment voluntarily and to seek treatment from physicians and hospitals of their own choice at their own expense. In order to effectively prevent the spread of this disease it is necessary that the state:

1. Further the discovery, care, supervision, and treatment of persons having tuberculosis.
2. Encourage the use of all available public and private facilities to that end.
3. Regard this tuberculosis program as one of public health and one to be dealt with according to public health requirements rather than those of indigency.

**23-07.1-01.1. Definitions.** As used in this chapter:

1. "Appropriate facility" includes a licensed hospital, a public or private outpatient clinic a long-term care facility, a correctional facility, or a person's home, and may also include directly observed therapy under the supervision of the department.
2. "Department" means the state department of health, including local public health boards.
3. "Medically approved course of treatment" means a treatment regimen or therapy prescribed by a licensed physician.
4. "Tuberculosis" includes those cases in which a person is found to have tuberculosis based upon laboratory testing, clinical evidence, or as diagnosed by a physician, the department, or a local health officer.

**23-07.1-02. Care and treatment of tuberculosis patients or suspects provided without charge by state.** Care and treatment provided by the state of North Dakota for persons suffering from tuberculosis, including diagnosis, tests, studies, and analyses for the discovery of tuberculosis, must be available without cost or charge to anyone who is suffering from tuberculosis or is suspected of having tuberculosis. Any such person who volunteers to assume and pay for the cost of such care and treatment or for the cost of such diagnosis, test, studies, or analyses must be permitted to do so; but no state, county, or other public official may request or require such payment or make or cause to be made any inquiry or investigation for the purpose of determining the ability of such person or of the person's legally responsible relatives to pay therefor. This section in no way bars freedom of the

individual to seek treatment from a physician or in an institution of the individual's choice at the individual's own expense.

**23-07.1-03. State has prior claim on patient benefits.** Notwithstanding any provision in this chapter, this state has prior claim on benefits for the care and treatment of tuberculosis, including diagnosis, tests, studies, and analyses, accruing to patients for whom care and treatment is provided by the state of North Dakota under entitlement by the federal government, medical or hospital insurance contracts, workforce safety and insurance, or the medical care and disability provisions of programs under the supervision of the department of human services.

**23-07.1-04. State health officer - Designee - Responsibility.** The state health officer or designee is responsible for the inpatient and outpatient care of persons afflicted or suspected of being afflicted with tuberculosis. If the state health officer determines that suspected or actual tuberculous patients may be adequately cared for on an inpatient basis by contract with general hospitals or other appropriate facilities, authority for contracting with such facilities is granted to the state health officer. In addition, the state health officer is authorized to establish and maintain the necessary outpatient clinics for diagnostic workup and evaluation on all suspected or actual tuberculous patients in the state. The state health officer shall pay the contract fee to general hospitals or other appropriate facilities and provide funds to the outpatient evaluation clinics from funds to be appropriated for this purpose by the legislative assembly. The state's claim on patient benefits as provided in section 23-07.1-03 applies insofar as applicable to tuberculous patients in general hospitals and for services rendered in outpatient clinics. The state health officer or a designee has the power to:

1. Do any act necessary and proper in the performance of the functions imposed upon the state health officer by the provisions of this chapter.
2. Issue orders and compel obedience thereto.
3. Administer oaths.

**23-07.1-05. Reports - Orders for the custody of persons.** Upon of state health officer's final order. The final order of the state health officer, in duplicate, together with the findings of the physician and the findings of the state health officer must be delivered to the sheriff who shall execute the same by conveying the person named therein to the facility specified in the order and delivering the person, together with the findings of the physician and the state health officer's findings and the duplicate of the order, to the person in charge of such facility or to the local health officer or a designee if the person is sent home. The sheriff must be allowed reasonable travel expenses, paid by the county, in the same manner and at the same rate as the expenses of other county officials are paid.

**23-07.1-08. Hearing - Order.** Unless waived by the alleged tubercular person, a hearing must be held by the district judge serving the county in which the person alleged to have tuberculosis resides within one hundred twenty hours, exclusive of weekends and holidays, after the date of the state health officer's final order. The court may consider all relevant evidence, including the results of a physical examination made pursuant to section 23-07.1-06, and the state health officer and the alleged tubercular person must be afforded an opportunity to testify, to present and cross-examine witnesses, and to be represented by counsel. Upon the request of the state health officer, the state's attorney of the county

wherein the hearing is held shall represent the state health officer without additional compensation.

If, upon completion of the hearing, the court finds that the allegation that the person has tuberculosis, and the allegation that that person was not undertaking a medically approved course of treatment for tuberculosis prior to the state health officer's final order, have not been sustained by clear and convincing evidence, the court shall dismiss the case and order that the person alleged to have tuberculosis be discharged if in custody prior to the hearing. If the court finds that the allegations have been sustained by clear and convincing evidence, the court shall issue an order that must:

1. State its findings that the person does have tuberculosis;
2. State that the person has not undertaken a medically approved course of treatment for tuberculosis prior to the state health officer's order; and
3. Authorize the facility specified in the state health officer's final order to receive and keep the person in its facility for necessary and appropriate care, treatment, quarantine, or isolation for so long as the danger to public health exists.

**23-07.1-09. Appeal to supreme court - Habeas corpus - Hearing.** An appeal from an order of the judge of a district court authorizing a specified medical facility to receive a person for care, treatment, quarantine, and isolation may be taken to the supreme court. In such a proceeding, the state's attorney of the county wherein the appeal is taken, without additional compensation, shall represent the state health officer. The clerk of the district court of the county from which the appeal is taken shall notify the state's attorney of the filing of the appeal. The appeal must be limited to a review of the procedures, findings, and conclusions of the lower court. All persons placed in the custody of the state health officer under the provisions of this chapter for care, treatment, quarantine, and isolation are entitled to the benefit of the writ of habeas corpus and a determination as to whether a person in custody has tuberculosis must be made at the hearing. If the court decides that the person does have tuberculosis, the decision does not preclude a subsequent application for a writ or the issuing of a writ upon a subsequent application, if it is alleged that the person has been restored to health.

**23-07.1-10. Discharge - Release.** All orders of the state health officer or of a judge of a district court authorizing the reception and retention in custody for care, treatment, quarantine, or isolation of persons having tuberculosis endangering public health are effective only during the continuation of the condition and any person who has completed a medically approved course of treatment for tuberculosis must be discharged immediately from custody. The discharge must be made by the state health officer or a designee. The person in charge of a medical facility may also release any person admitted to the medical facility under the provisions of this chapter at such times and under such conditions as deemed advisable after consultation with the state health officer or a designee.

**23-07.1-11. Liability of officers.** The order of the state health officer authorizing the admission of any person to the custody of a medical facility and the reception and detention of such person at such medical facility as a patient, accompanied by the state health officer's findings as provided in this chapter protects the state health officer or the state health officer's designee and the other personnel of the medical facility from all liability, civil or criminal, on

account of the reception and detention of such person therein, if such detention is in accordance with the laws of the state of North Dakota.

**23-07.1-12. Confinement exception - Quarantine.** Any person who observes quarantine regulations as established by the state health officer and undertakes a medically approved course of treatment for tuberculosis may not be subject to confinement under the provisions of this chapter.

**23-07.1-13. Indian jurisdiction.** Nothing in this chapter requires the admission of an enrolled Indian, resident on any reservation in this state, to any off-reservation institution except upon written request and authorization of the superintendent of the reservation on which said Indian is enrolled. However, in the public interest and with the objective of eradication of tuberculosis in the state of North Dakota, an Indian with tuberculosis off any reservation is subject to this chapter. It is the responsibility of the Indian affairs commission pursuant to the commission's powers and duties, stated in section 54-36-03, to work closely with the tribal councils and other reservation officials to adopt any agreements found necessary in assisting the state health officer in carrying out responsibilities under this chapter so that all residents of this state will benefit, and eradication of tuberculosis in North Dakota can be achieved.

**23-07.1-14. Care of tubercular patients - Acceptance of federal funds – General hospital.** The state health officer, or a designee, is hereby authorized to contract with public or private agencies for the care of persons having tuberculosis. The state health officer is hereby authorized to accept any federal funds or to enter into any federal programs on behalf of persons having tuberculosis in North Dakota. The state health officer may also utilize general hospitals or other appropriate facilities in the placement of recalcitrant persons having tuberculosis.

**23-07.1-15. Penalty.**

1. A person is guilty of a class A misdemeanor if:
  - a. That person fails to undertake diagnostic examination for tuberculosis upon the request of the state health officer which is based upon the reasonable suspicion that that person has or has been exposed to tuberculosis;
  - b. That person has been diagnosed with tuberculosis and fails to undertake a medically approved course of treatment for tuberculosis; or
  - c. That person is the parent of a minor or guardian of a person who violates subdivision a or b.
2. Upon conviction, the court may order that person to obtain a supervised medically approved course of treatment for tuberculosis until the treatment is completed, in addition to other penalties or conditions provided by law.

## Appendix D: Risk Communication Checklist

### 1. PLANNING

	Yes	No	No need
Does the TB program have an outbreak communication plan for public information and media, partner, and stakeholder relations?			
If yes, does the plan have the following elements:			
Designated line and staff responsibilities for the public information team?			
Information verification and clearance/approval procedures?			
Agreements on information release authorities (who release what/when/how)?			
Regional and local media contact list (including after-hours news desks)?			
Designated spokespersons for public health issues in an outbreak?			
Identified vehicles of information dissemination to public, stakeholders, and partners (e.g., email list serves, broadcast fax, press releases)?			
Have you coordinated your planning with other organizations?			
Have designated spokespersons received media training and risk communication training?			

### 2. MESSAGES AND AUDIENCES

	Yes	No	No need
Have you identified special populations (e.g., elderly, first language other than English, tribal communities, border populations)? List any specific sub-populations that need to be targeted with specific messages during a public health emergency related to TB (e.g., tribal nations, persons with chronic respiratory illness, seniors).			
Have you developed topic-specific, pre-crisis TB materials for outbreaks, or identified sources of these materials (if needed): Topic fact sheet (e.g., description of an outbreak investigation, transmission of TB, treatment, etc.)?			
Resource fact sheets and web links for media/public/partners to obtain additional information?			
Recommendations for affected populations?			

List of subject matter experts outside your organization, to speak to public/media regarding your activities during an outbreak?			
--	--	--	--

### 3. MESSENGER

	Yes	No	To do
Have you identified TB partnership spokespersons for media and public appearances during an outbreak?			
If yes, have you: Ensured that spokespersons understand their roles and responsibilities and will incorporate them into their expected duties during the outbreak?			

Selected elements of TB risk communication. (For further information about risk communication visit CDCynergy at <http://www.cdc.gov/communication/cdcynergy.htm>.)

#### Single Overriding Communications Objective (SOCO)

In one BRIEF paragraph, state the key point or objective you want to accomplish by doing the interview. This statement should reflect what you, the author or speaker, would like to see as the lead paragraph in a newspaper story or broadcast report about your topic.

What are the three or four facts or statistics you would like the public to remember as a result of reading or hearing about this story?

Who is the main audience or population segment you would like this message to reach?  
Primary: Secondary:

What is the ONE message you want the audience to take away from this interview/report?

Who in your office will serve as the primary point of contact for the media?

Name: Phone: Email: Date(s) and time(s) available: Date: Time:

## Appendix E: Evaluation Checklist

- Was the outbreak identified in a timely manner so transmission was interrupted?
- Was a Tuberculosis Outbreak Response Team (TORT) assembled?
- Did the TORT composition include all appropriate representatives from the public health sector, as well as other stakeholders? If not, who was missing and why?
- Did the TORT enhance the process?
- Were roles clearly identified for all TORT members?
- Did all TORT members have the information needed for them to perform their responsibilities?
- Were internal communication mechanisms established? Did they work? If not, why?
- Were external communication mechanisms established? Did they work? If not, why?
- Are the findings and recommendations resulting from the outbreak response being implemented? If so, describe. If not, what are the reasons for not implementing these recommendations?

## **Appendix F: De-activation Checklist**

- Debriefing of TORT and others as appropriate to review all activities and outcomes related to the situation (include dates)
- Change of command restored
- Exit Interview
- Evaluation of results of all activities and outcomes (specify)
- Final outbreak response report completed and submitted to the State Health Officer
- Long-term follow-up of contacts complete