CHAPTER 22
COMMUNICABLE DISEASE REPORTING AND CONTROL

Part A: Reportable Diseases Other than HIV Infection, AIDS, Tuberculosis & Sexually Transmissible Diseases

BOARD OF HEALTH ROLE AT A GLANCE

- Receive and process reports of reportable infectious diseases and undertake appropriate follow-up measures, which include notifying the Massachusetts Department of Public Health (MDPH) of diseases dangerous to the public health.

- Investigate communicable diseases and control the spread through such measures as vaccine distribution, isolation and quarantine.

OVERVIEW

Control and prevention of infectious diseases remains a very important part of public health programs. Over the past century, advances in sanitation, nutrition, surveillance and immunization have contributed to a marked decrease in incidence and mortality from diseases that were once the primary focus of public health programs. There may be a tendency to dismiss communicable diseases as problems of the past that are of little contemporary importance. In fact, they remain an ever-present threat to health.

Communicable diseases will be infrequent only as long as aggressive control measures are enforced. Immunization is effective only when maintained continuously at a satisfactory level. The occurrence of pertussis, rubella, mumps and measles outbreaks in unimmunized and partially immunized populations is a recurrent reminder of this fact. In addition, we must be vigilant and ready to respond to influenza pandemics and bioterrorist threats. Foodborne outbreaks are an ever-present threat and mass food preparation amplifies the consequence of human or system error.

The risk of a communicable disease outbreak increases under any condition that interrupts continuous control measures or disrupts normal sanitation. Among conditions that promote outbreaks are natural disasters (floods, earthquakes), man-made social problems (crowding, poverty, malnutrition), inadequate immunization levels, lack of personal hygiene, carelessness in food handling, contamination of water supplies, and failure to control insects, rodents or other animals capable of transmitting disease.

The first responsibility of boards of health is to keep timely and accurate records of all reports of infectious diseases. Clusters of cases often provide the first information about breakdowns in control measures. Reports should be given prompt follow-up by personnel from the local health department,

or from a nursing service agency providing public health services under contract with the board of health (BOH), or in conjunction with personnel from the MMDPH Bureau of Infectious Disease Prevention, Response and Services. Cooperation with local healthcare providers is important for both gathering information and carrying out investigations. Delay in responding to reports of infectious disease may lead to spread of disease that would have been preventable.

The BOH has broad powers to ensure that infectious diseases are contained and treated, and that sources of contamination are removed, destroyed or purified.

The MDPH *Guide to Surveillance, Reporting and Control* is the best source of information on how to identify, report and control specific reportable diseases. It provides basic information on each disease and technical assistance on their surveillance and control measures. It is available on the MDPH web site: www.mass.gov/dph/.

Two publications that are also helpful in communicable disease control are: *Control of Communicable Disease in Man*, 19th edition, 2008, edited by David L. Heymann, an official report of the American Public Health Association, and *The Report of the Committee on Infectious Diseases (The Red Book)*, 28th edition, 2009 edited by the Committee on Infectious Diseases, American Academy of Pediatrics. Both of these publications consider an extensive list of communicable diseases and provide in-depth information.

In addition, a school health manual has been developed and is available to all school systems in Massachusetts from MDPH's School Health Program (see Guidebook chapter on School Health).

The Massachusetts *Foodborne Illness Investigation and Control Reference Manual* contains comprehensive information on BOH responsibilities relevant to foodborne illness. It includes basic disease information, guidelines, recommendations, regulatory requirements; and offers instruction on foodborne illness surveillance, epidemiologic and environmental investigation, and control. For information, contact the Division of Epidemiology and Immunization at (617) 983-6800. The reference manual is available on the MDPH web site at www.mass.gov/dph/ under the "Publications" link.

BOARD OF HEALTH RESPONSIBILITIES

- Investigate and control the spread of infectious diseases within the town or city (M.G.L. c. 111 §§7, and 92-116). Specific powers and duties of the BOH relating to the control of the spread of diseases dangerous to the public health, including provision of treatment, transportation, and protection of the sick person and the community at large, are contained in M.G.L. c. 111 §§6, 7, and 92-116. Advice on current public health practice regarding investigation and control of general communicable diseases may be obtained from the Division of Epidemiology and Immunization at (617) 983-6800. Guidelines and advice about the control of vaccine-preventable diseases may be obtained from either the immunization epidemiologists or nurses at the regional offices of MDPH or from the Division of Epidemiology and Immunization. MDPH has coordinate powers with the BOH of a town to investigate communicable diseases and institute control measures to prevent their spread (M.G.L. c. 111 §7).

- Receive and process reports of diseases dangerous to the public health:

a. Receive and process reports from physicians within the town limits, from institutions in the town (including hospitals, schools, clinics, laboratories, jails, camps, etc.) or from residents, of any case of the diseases defined by MDPH as "dangerous to the public health," as per M.G.L. c. 111 §6. A listing of these diseases is contained in 105 CMR 300.100, "Diseases Reportable to Local Boards of Health."

b. Send a copy of any such report to the BOH or health department of:

1. the town where the patient resides;
2. the town in which the patient is known to have contracted the disease;
3. the town(s) in which the patient is known to have exposed any person(s) to h disease (M.G.L. c. 111 §111); and
4. Bureau of Infectious Disease Prevention, Response and Services, Office of Integrated Surveillance and Informatics Services (ISIS)

c. Receive and process reports from physicians within the town limits and from institutions in the town (including hospitals, schools, clinics, laboratories, jails, camps, etc.) of occurrences of any clusters or outbreaks of illness.

d. Notify MDPH Bureau of Infectious Disease (305 South Street, Boston, MA 02130, (617) 983-6800) within 24 hours of receiving notice of any case "dangerous to the public health." For those disease requiring an immediate response, please call the Division of Epidemiology and Immunization at (617)983-6800, available 24/7. Daily reporting of routine disease events may be done by either sending ISIS a report either by confidential fax to (617)983-6813 or in a sealed envelope marked "Confidential."

Many diseases must also be reported using specific case report forms, once a case investigation has been completed. For assistance contact ISIS at (617)983-6801. Also, clusters or outbreaks of any disease (e.g. suspected food poisoning or unusual incidence of diarrhea and/or febrile illness) must be reported immediately by telephone or other electronic means to the MDPH. Regulations are contained in 105 CMR 300.000, "Reportable Diseases, Surveillance, and Isolation And Quarantine Requirements."

Please note, that for these situations , local boards of health may use MAVEN, the web-based disease surveillance and case management system, instead of paper-based methods

e. Report vaccine-preventable diseases to a MDPH immunization epidemiologist at 617-983-6800.

f. Keep a confidential and secure record of all reports of diseases dangerous to the public health, including:
1. name and location of infected persons;
2. disease;
3. name of person reporting;
4. date of report;
5. other information required by MDPH (105 CMR 300).

(Please note that MAVEN, the web-based disease surveillance and case management system will fulfill this requirement.)

Appoint a person to be responsible for sending notices to MDPH regarding diseases dangerous to the public health, and appoint an alternate person to make reports during disability or absence of the primary appointee, to assure continuity of reporting (M.G.L. c. 111 §113).

- Receive reports and undertake follow-up as necessary regarding certain food borne and waterborne diseases and other diseases. The MDPH *Guide to Surveillance, Reporting and Control* and *Foodborne Illness Investigation and Control Reference Manual* can assist local boards of health in foodborne illness in surveillance and investigation and control procedures.

  a. Illnesses believed to be transmissible through food. The manager or supervisor of any food handling facility, when he/she knows or has reason to believe that an employee has contracted any disease transmissible through food or has become a carrier of such disease, shall report the same immediately by telephone, by facsimile or other electronic means to the local BOH in the community in which the facility is located. If the local BOH is unavailable, contact the Department directly.

  b. Illnesses believed to be due to food consumption. Every person who is a health care provider or who is in a supervisory position at a school, day care, hospital, institution, clinic, medical practice, laboratory, labor or other camp who has knowledge of the occurrence or suspected occurrence of case or cases of illness believed to have been due to the consumption of food, shall report the same immediately by telephone, by facsimile or other electronic means to the local BOH in the community in which the facility is located. If the local BOH is unavailable, contact the Department directly.

  c. The BOH receives reports, investigates and conducts follow-up on all incidents involving positive rabies results. Follow-up should include, but not be limited to, discussion about possible direct and indirect exposures to rabid animals and post-exposure prophylaxis recommendations. MDPH Division of Epidemiology and Immunization at (617) 983-6800 is available to answer questions regarding human prophylaxis. See the Guidebook chapter on animal and insect control for a full discussion of BOH responsibilities concerning animal bites and rabies.

Investigate, control, and report vaccine-preventable diseases according to the protocols outlined in the chapters on the diseases in the latest edition of MDPH's *Guide to Surveillance, Reporting and Control*, which can be found on the MDPH web site.

The latest advisories, recommendations, immunization schedules and requirements are available at the MMDPH's immunization program website. The URL internet address is: http://www.mass.gov/dph/imm. Please contact an MDPH immunization epidemiologist at 617-983-6800 to report cases and get advice about investigation and control measures. They can also advise you about the proper collection of clinical specimens for diagnosis and to arrange for transportation of the specimens to the William A. Hinton State Laboratory Institute.

- Enforce "isolation and quarantine requirements" of diseases declared to be dangerous to the public health (M.G.L. c.111 §6). A copy of the "Summary of the Reportable Diseases, Surveillance, and Isolation and Quarantine Requirements" can be obtained by contacting the MDPH's Division of Epidemiology and Immunization at (617) 983-6800 or going to the MDPH website at www.mass.gov/dph.

- Submit an initial report, followed by a written or electronic (in MAVEN) case investigation report form, to MDPH for certain reportable communicable diseases. Complete and submit to MDPH in a timely manner such "case reports" as may be required. Services of a public health nurse are appropriate for such investigations. The specific case investigation report forms or morbidity reporting cards can also be obtained by calling the above number.

  At the time of this publication, routine MDPH-provided vaccines are shipped from a central national distribution center. However, towns must still establish or designate a biologic (vaccine) distribution station (M.G.L. c. 111 §5A) if necessary. A BOH not equipped to act as a biologic distribution station may designate a hospital or drug store as its agent, but may not designate more than one agency. This capacity is important to enable a community to respond to infectious disease emergencies, including pandemic influenza and bioterrorism-related events.

- Handle all information about individuals with communicable diseases in a confidential manner.

  a. Send all case reports to the proper agency.

  b. When mailing reports which contain personal identifiers use a sealed envelope with "Confidential" and "to addressee only" marked on the front.

  c. When reporting potentially identifying information to MDPH, other local health departments, or other communities by telephone, affirm that the connection is made to the properly designated agency and receive assurance that the responder is authorized to accept the information which is to be discussed.

  d. When faxing or receiving faxes with potentially identifying information, use appropriate measures to ensure confidentiality.

  e. Maintain secure and confidential records at the local BOH.

BOARD OF HEALTH RECOMMENDED ACTIVITIES

- Maintain close contact with area physicians, nurses, and other health care providers to facilitate prompt and accurate reporting of any disease declared dangerous to the public health. This may include, but not be limited to, provision of pre-addressed envelopes to be used for the mailing of reporting cards with standard required information pre-printed on the back; reports to physicians regarding disease outbreaks in the region or diseases to be alert for; reminders when changes occur in the list of reportable diseases and isolation and quarantine requirements. Also remind physicians to report sexually transmitted diseases, tuberculosis, HIV infection and AIDS directly to the appropriate division of MDPH or to the Office of Integrated Surveillance and Informatics Services (ISIS).

STD Program: 617-983-6940
Tuberculosis Program 617-983-6989
AIDS Surveillance 617-983-6560
ISIS: 617-983-6801

Address: 305 South Street, Jamaica Plain MA 02130

(All reports should be in sealed envelope marked "Confidential" and clearly directed to the appropriate program).

- Ensure that the public health nurse or contracted visiting nurse follows up cases of communicable diseases to identify the source of contagion; establish control measures; check contacts; instruct patient, family members and other relevant people regarding prevention and control; and make necessary referrals and reports. If public places are involved, or if water sources or septic systems, food processing, handling, or storage is involved, a qualified sanitarian should investigate and take necessary action.

- Contact the regional MDPH immunization epidemiologist and/or the Division of Epidemiology and Immunization periodically for new educational materials and guidelines or updated versions of existing ones. Policy guidelines and fact sheets are available on a variety of diseases and issues in long-term care facilities (e.g. guidelines for dealing with diarrhea illness, scabies and *Clostridium difficile*) and vaccine preventable diseases. Videos are also available on topics which include, but are not limited to, rabies control, Lyme disease, hygiene in day-care facilities, and immunization. Many documents useful to BOH staff may be viewed or downloaded off the MDPH website: www.mass.gov/dph.

- Have available for distribution the above mentioned educational materials describing communicable diseases. Fact sheets and pamphlets can accompany notification of disease or be distributed during disease investigations. Materials can also be made available for distribution in schools, libraries, pharmacies or other public gathering places in the town.

STATE RESPONSIBILITIES

- Determine which diseases shall be deemed dangerous to the public health and establish appropriate control procedures (e.g. quarantine) for each disease (M.G.L. c. 111 §6; 105 CMR 300.000 Reportable Diseases, Surveillance, and Isolation and Quarantine Requirements).

- Receive reports from local health agencies of cases of diseases dangerous to the public health, and of suspected outbreaks or clusters of diseases.

- Investigate, as necessary, outbreaks or clusters of diseases dangerous to the public health, and provide assistance to local official health agencies in such investigations, if requested (M.G.L. c.111 §7).

- Protect the confidentiality of persons who are reported to the Massachusetts Bureau of Infectious Disease. All Bureau staff are required to follow MDPH confidentiality and data security policies when reporting data from their division or program.

Part B: Prevention, Control, and Elimination of Tuberculosis

TUBERCULOSIS (TB) OVERVIEW

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis*. The bacteria can attack any part of the body, but they usually attack the lungs. TB is spread through the air from one person to another. The bacteria get into the air when a person with TB disease of the lungs coughs. People who are exposed to this air, generally as a close contact for a prolonged time, may have the bacteria settle in their lungs and cause TB infection.

Tuberculosis infection occurs after sustained exposure to someone with infectious, active TB and, in most instances, it does not progress to disease. Infection without evidence of active disease is called latent TB infection (LTBI). Its only manifestation is a positive skin test (performed with purified protein derivative [PPD] antigen by the Mantoux method) or by another diagnostic test approved for this purpose by the federal Food and Drug Administration, such as an interferon-gamma release assay blood test, resulting in a reaction that represents a positive test according to the most recently published guidelines of the U.S. Centers for Disease Control and Prevention. Those with LTBI do not feel sick, nor do they have symptoms and they cannot spread TB to others. However, they may develop active TB disease sometime in the future. Active TB disease can be treated and cured when those with the disease adhere to an appropriate medication regimen. Latent TB infection can also be treated with medication, thus preventing it from becoming active at a later date.

The central office for the Division of Tuberculosis Prevention and Control is located at the William A. Hinton State Laboratory Institute, 305 South Street, Jamaica Plain, MA 02130. Telephone: (617) 983-6970. Fax: (617) 983-6990. The Division is responsible for surveillance, containment, education, and prevention activities. State-funded TB clinics, located in accessible areas throughout the state, are available for diagnostic and treatment services.

Regional Tuberculosis Surveillance Area (TSA) nurses collaborate with local boards of health on case management, contact investigations, consultation services and educational programs.

Local boards/departments of health (BOH) and the state have coordinate responsibilities for TB control. The sections of Massachusetts General Laws (MGL) relating to TB, a disease deemed dangerous to the public health include: M.G.L. c. 111 §§5, 6, 7, 50, 57, 77, 79, 80, 81, 81A, 94A-H, 95, 96A, 97, 98, 104, 105, 108, 112, 113; c. 111D §6; c. 71 §55B. Regulations (105 CMR 350.000, 360.000, and 365.000) for the prevention and control of tuberculosis were reviewed and updated in 1994.

BOARD OF HEALTH ROLE AT A GLANCE

- Identify persons, and close contacts of persons who are known or suspected to have active tuberculosis (TB) disease. Report, within 24 hours, all known or suspected cases of TB to the Massachusetts Office of Integrated Surveillance and Informatics Systems (ISIS).

- Designate a registered nurse to be the nurse case manager for all suspected/confirmed cases of active TB disease in the community.

- Investigate and control the spread of TB through such measures as nursing case management, treatment, isolation and contact investigation.

- Assure completion of treatment of persons with active TB and contain the spread of TB through nursing case management and collaboration with local providers, agencies, and the Division of TB Prevention and Control and the Refugee and Immigrant Health Program In this collaboration address issues of appropriate treatment, patient isolation and discharge from institutions; plans for identifying, screening and treating contacts; and implementation public health laws for compulsory hospitalization, when needed.

- Prevent the spread of tuberculosis in the community by identifying persons at high risk for developing TB disease and assuring treatment for latent TB infection (LTBI), when appropriate.

BOARD OF HEALTH RESPONSIBILITIES

Reporting: (See Exhibit A-1 and A-2 for reporting forms)

- **Reporting Active TB cases:** 105 CMR 300.180 (A), and 105 CMR 365.500 (A) requires the reporting of all *known* or *suspected active cases* of tuberculosis to MDPH *within 24 hours*. The TB Division is required to notify the patient's LBOH within 24 hours of the initial notification. TB case reporting forms, for faxing, are obtainable from ISIS (617-983-6801). There is also a 24-hour toll free TB case reporting line: 1-888-MASSMTB (1-888-627-7682). In addition, if the local BOH may utilize MAVEN, the web-based disease surveillance and case management system for notification of MDPH. It cannot be assumed that the diagnosing health care provider also reported the suspected case to the Division.

- **Reporting Latent TB Infection:** 105 CMR 300.180 (B), and 105 CMR 365.500 (B) requires the reporting of LTBI directly to ISIS. LTBI reporting forms are available from ISIS. The LTBI fax line is 617-983-6220.

Isolation:

- M.G.L. c.111 §95 allows BOHs to immediately isolate persons with diseases dangerous to the public health in order to protect the community. This includes TB. Isolation and Quarantine Regulations (105 CMR 300.200) are applicable in the community when LBOHs need to make decisions about whether a patient with TB should return to community activities. In general, an infectious patient may remain in the home as long as there is no threat to the community or other vulnerable persons at risk for TB infection or disease. Questions regarding community isolation should be directed to the Division of TB Prevention and Control.

Hospitalization:

- Hospitalization in the Tuberculosis Treatment Unit (TTU), currently located within Lemuel Shattuck Hospital (LSH) is available for patients with diagnosed or suspected TB when outpatient treatment has failed, when outpatient treatment is not advisable because of medical complexity, when infectious patients cannot be adequately isolated in congregate settings (such as shelters, prisons, jails, nursing homes), or when there are high risk vulnerable persons living in the same household. The TTU manages the most difficult cases and also accepts those who are non-adherent to treatment.

- Admission to the TTU is either voluntary or involuntary. Contact the TB Division or the regional TSA nurse regarding the procedure for admission.

- Involuntary admissions are reserved for those who are unable or unwilling to accept proper medical treatment. MGL c 111, s 94A-H details the requirements for involuntary admissions after the patient has failed all less restrictive measures. A 15-day involuntary admission may originate from a hospital setting or from the community. Local boards of health may petition the Commissioner of Public Health, through the Division of TB Prevention and Control, for an involuntarily hospitalization.

- An involuntary admission or an emergency voluntary admission, for a Massachusetts resident, from a hospital, is a direct transfer from the hospital to the TTU. For these admissions, the health care provider/hospital administrator may discuss the case details with the TTU medical director (or designee) to determine the appropriateness of the admission. For evening, night, or weekend admissions, the LSH evening nursing supervisor should be contacted at 617-522-8110, the main # at LSH.

- Under the authority of M.G.L. c. 111 §§ 77 and 79 for the hospitalization and supervision of TB patients who require inpatient care, 105 CMR 360.000 defines all the necessary standards for appropriate admission to, and transfer or discharge from, a state designated TTU.

TB Cases/Suspects

Nursing Case Management: (Exhibit B is a fact sheet that outlines the elements of nursing

case management)

- Local BOHs are required by Massachusetts regulation (105 CMR 365.200: Case Management) to designate a registered nurse as nurse case manager for every confirmed or suspected TB case. The designated case manager may be a nurse who works for the BOH or a nurse under contract with the BOH. The nurse case manager is responsible for ensuring that the TB patient receives the necessary services that will enable him or her to complete an appropriate and effective course of treatment. Nursing case management is required regardless of the source of health care (public or private) or the ability to pay for services and treatment.

- Nursing Case Management Protocols are available from the Division of TB Prevention and Control.

- Important highlights of nursing case management include the following:

  Case Investigation: (Exhibit C is the TB Initial Assessment form - MMDPH-TB18) Each reported, confirmed or clinically suspected case of TB should be investigated to determine, if possible, the source of the patient's disease and the possible spread of infection to others. The initial case investigation is to be done by the LBOH nurse case-manager within three working days after the BOH is notified of the potential case and is optimally done in the hospital and/or patient's home environment, accompanied by a community health worker, when indicated. (NOTE: A laboratory report is not a diagnosis. The BOH should discuss any positive or negative findings on such reports with the attending physician before discussing them with a patient). The case investigation includes a nursing assessment to determine potential transmission of infection to others; the risk of infection for contacts based on level and duration of exposure; and the medical, environmental, economic and social factors which may influence adherence to the prescribed treatment plan. A TB Initial Assessment form(Exhibit C) is available for nurse case managers to use to complete their initial assessment / case investigation and send to the Division of Tuberculosis Prevention and Control.

  Patient Education: The BOH nurse is responsible for educating the patient (and her/his family and/or other potential contacts) about TB disease or infection, and about the medications prescribed for the treatment of TB disease or infection, including their side effects, the importance of taking the medicines and the consequences of not taking the medicines as prescribed.

  Nursing Care Plan: The BOH nurse case-manager should develop a nursing care plan with input and approval of the case management team, which includes the patient, the state TSA nurse, healthcare providers, and community health workers. The standard of care includes an evaluation of every suspected case of TB for the need for directly observed therapy (DOT), based on an assessment of risk factors for nonadherence. (Exhibit D is a DOT fact sheet.) If risk factors for nonadherence are present, the nurse-

case manager is responsible for implementing a DOT plan that is mutually agreeable to the patient and the DOT provider. Assistance of a community health worker may be available from the TB Division, or the Refugee and Immigrant Health Program, to share the responsibility for DOT. Intervention strategies may need to be changed and priorities re-assessed over time, as a patient's health status or lifestyle changes. A minimum of monthly nursing assessments are done by the nurse case manager through a visit to the patients home, clinic, office or other mutually-agreed-upon site to evaluate the patient's response to therapy, including indicators of adherence to therapy. Signs of *adverse reactions* or signs suggesting the development of *drug resistance* are monitored, at least monthly. Monitoring for adverse effects may include the performance of eye examinations for persons on ethambutol for acuity and color vision deficits. If indicators of nonadherence or poor clinical response are present, new measures to address the problem need to be implemented. This may require referral for a new or immediate clinical evaluation by a physician. The nursing care plan should be revised as needed.

Discharge Planning: (Exhibit E is a fact sheet for hospital discharge planning)
A LBOH nurse case manager may be called upon to facilitate hospital discharge planning of persons with diagnosed / suspected active TB. Regulation 105 CMR 365.600 requires a pre-discharge conference from hospitals, correctional facilities and other institutions. The conference includes the LBOH nurse case manager, the TSA nurse as needed, the institution's discharge planner and medical providers. A pre-discharge conference is often best held in person, with all staff present, especially when complex problems need to be resolved, so that there is no misunderstanding regarding the actions to be taken. When the individuals involved in discharge planning cannot meet, it is essential for the case manager to be in contact with key persons involved in the patient's care to communicate outpatient requirements and to be certain the patient, as well as the providers, agree upon the care plan. The *discharge plan must be completed prior to discharge* with community arrangements in place to allow for successful outpatient treatment for tuberculosis.

Contacts to Cases of Infectious TB Disease

Contact Investigation: (Exhibit F is a "TB Contact Investigation" Fact Sheet; Exhibit)
105 CMR 365.200 C provides the BOH nurse case manager the legal authority to conduct contact investigations (CI) according to CDC recommendations, and to prepare CI reports in accordance with TB Division policies.
Comprehensive CI policies and procedures are available through the TB Division. The following outlines some essentials of CI.

- **Given their increased risk for progression to TB disease, identification of contacts to infectious cases and treatment of infected contacts are a major priority of TB prevention and control**, only second to the treatment of persons with active TB.

- Contact investigation is a procedure for identifying individuals who have been exposed to persons with potentially infectious TB, evaluating them for active TB and LTBI, and providing appropriate treatment as needed.

- The BOH nurse initiates the CI no more than *three working days* after the case/suspect is reported to the health department, ideally coinciding with the initial face-to-face encounter with the case. This initial interview is one of the most critical parts of the CI, with the BOH nurse being the main link between the health department and the contacts.

- Evaluation of identified contacts consists of a tuberculin skin test, using the Mantoux method and, when indicated, a referral for medical evaluation, including a chest radiograph to rule out active TB disease. Contacts with an initial negative skin test should be re-tested by the BOH nurse 8-10 weeks after the contact's last exposure to the case while the case was infectious. In some lower risk circumstances, only one skin test may need to be done at 8 to 10 weeks after the exposure.

- It is not enough to simply find and test contacts of an infectious case. *Infected contacts are at high risk for developing TB disease (75 times higher risk than the general population).* Therefore, **for a CI to be successful, infected contacts should begin and complete adequate treatment for LTBI.**

- Contacts under five years of age and immunosuppressed contacts should be medically evaluated and considered for treatment, *regardless of skin test results*.

- As is the case for all TB control and other public health activities, resources available to conduct CIs are often limited. Therefore, **prioritization is necessary**, both in terms of deciding which of possible contact investigations to conduct first, and in terms of which contacts to evaluate first within a particular contact investigation.

    - The priority of an investigation depends mostly on the identified characteristics of the source case that are associated with an increased or decreased risk of transmission
    - The priority of a contact evaluation within an investigation depends on characteristics of the contacts that are associated with an increased probability of developing disease, if infection occurs, and also on the circumstances of exposure that increase the probability of transmission. **All high- and medium-priority contacts should be fully evaluated for active TB disease and LTBI and completely treated, if indicated.**

- Within 30 days after the case/suspect is reported, the BOH nurse reports the contacts' names and the results of their initial screening and medical evaluation to the respective regional TSA nurse on contact report forms provided by the Division or via the Division's electronic surveillance and case management system

- MAVEN. Information on the second round of testing is reported 8 to 12 weeks later.

Refugees and Immigrants

The Division of TB Prevention and Control and receives notifications of refugee and immigrant arrivals to the state who had a TB condition identified during their overseas medical examination prior to permanently emigrating to the U.S. **Class A/B arrivals are high priority for follow-up:** Class A persons arrive with a diagnosis of TB disease and some Class B1 arrivals are considered TB suspects until proven otherwise (definitions: *Class A TB arrival*: active tuberculosis, on treatment, smear negative prior to departure; *Class B TB arrival categories*: Include persons with active, non-infectious TB; persons with TB infection, not active, and contacts to infectious cases with positive skin tests). The role of the local BOH is to ensure all Class A/B arrivals, subject to Federal Law P.L. 87-301, are evaluated according to the Department of Public Health protocols *within 30 days of arrival* in the United States. The LBOH also needs to ensure that all CDC worksheet forms are completed and returned to the TB Division. Ultimately, most refugee arrivals do not have active TB; however, those diagnosed with LTBI are at higher-risk for developing active TB disease. **Therefore, it is very important to have these individuals go beyond the initial evaluation to complete a full course of treatment for latent infection.**

BOARD OF HEALTH RECOMMENDED ACTIVITIES

Treatment of latent TB infection (LTBI):

The CDC periodically updates recommendations for screening and treatment of TB disease and infection in high-risk populations. The Division of TB Prevention and Control, consistent with these recommendations, advises LBOHs to work with local providers and others serving high-risk populations to develop, implement and evaluate LTBI screening programs in the community. It is especially important to establish priorities for screening and follow-up of those at high-risk for TB. The Division of TB Prevention and Control is available for consultation regarding methods for establishing priorities in the community.

Designating Staff

BOHs may want to designate a person on the staff, or a person or agency under contract with the BOH, who will be responsible for assuring compliance with the laws, rules, and regulations pertaining to TB and for carrying out the public health duties and responsibilities of the BOH or health department.

Evaluation

Periodic evaluation of the surveillance, containment, education, and prevention activities of the BOH, in collaboration with the Division of Tuberculosis Prevention and Control, is ideal.

Review of TB morbidity (overall case rate, infection/disease rates among high risk populations, skin test conversions among contacts, etc.) and other data relating to community risk for TB with the Division of Tuberculosis Prevention and Control should be performed.

Documentation

Maintenance of up-to-date information on each TB case, suspect, and contact in the community, including laboratory, clinical, and x-ray reports, and the current tuberculin skin test status is critical. Information management should be coordinated with the Division of Tuberculosis Prevention and Control. BOHs are encouraged to be online with MAVEN, the electronic surveillance and patient management systems for TB and other communicable diseases in the state, as they will receive notifications of new suspects and the latest data entered by various team members, including the TSA nurses and community health workers. Copies of medical test records and clinic forms are also attached or entered into the electronic record.

STATE RESPONSIBILITIES

Disease Definition:
MDPH must define the diseases deemed dangerous to the public health, including TB, and makes rules and regulations, consistent with the law, to prevent and control such diseases (M.G.L. c.111 §6). The Division of Tuberculosis Prevention and Control investigates reports of TB, consults with local authorities, and requires notification of all TB cases (M.G.L. c.111 §7).

TB Clinics:
Massachusetts General Law, c 111, § 57, is the legal authority for the establishment and maintenance of 'tuberculosis dispensaries' (TB Clinics). In addition, MGL, c 111, § 81 allows the department to establish, foster, and give aid as needed for outpatient and diagnostic facilities. Throughout the Commonwealth, there are TB Clinics located in hospitals and selected health centers to maximize access to target populations. These TB Clinics are state-funded and free to patients, although third-party billing is done for those with insurance (co-payments are paid by the Commonwealth). Eligibility requirements include: Massachusetts residence; a diagnosis of TB (confirmed or suspected); contact to someone diagnosed with TB, or a designated high-risk person with LTBI. Priority appointments are given to diagnosed or suspect cases and their contacts. For more information about TB Clinics contact the TB Division at (617) 983-6970.

TB Data Dissemination:
MDPH also has responsibility for programs aimed at preventing, controlling and eliminating TB within facilities in collaboration with the LBOH. M.G.L. c.111 §81 requires the department to coordinate with, and provide consultation to, BOHs on gathering and disseminating information regarding the prevalence of TB.

The Division of Tuberculosis Prevention and Control collects and analyzes data on confirmed cases of active TB within the Commonwealth of Massachusetts. Aggregate data on the annual incidence of TB in the state and characteristics of the cases are reported annually in a statistical report, including analysis of trends

Case Management Support:
Regionally-based TB Division TSA nurses provide support to the LBOH nurses, who have the responsibility for direct patient management. The TSA nurses work collaboratively with local public health nurses to determine the level of involvement and intensity of follow-up measures needed to ensure adherence to therapy, (such as the assignment of a community health worker for weekly to monthly home visits, patient incentives and enablers, DOT, voluntary hospitalization, and involuntary hospitalization). The TSA nurses also advise local nurses on the appropriate contacts to screen, and the evaluation and referral of patients. The Division and the Refugee and Immigrant Health Program also employ community health workers for specific high-risk communities or populations, who work under the supervision of the TB Division or the Refugee and Immigrant Health Program and, depending upon resources, are available to assist local health departments in the follow-up of patients.

Education:
The TB Division regularly conducts regional TB educational activities for health providers, laboratory staff, and health department officials in order to keep individuals involved in local TB control efforts informed about current practice standards and research. Patient/family/community educational products and resources also are available from the Division.

Resources:

- Division of Tuberculosis Prevention and Control website: http://www.mass.gov/MDPH/cdc/tb

- CDC, National Center for HIV, STD, and TB Prevention, Division of Tuberculosis Elimination website: http://www.cdc.gov/tb/.

- "TB Publications and Resources" is a list of materials available from the Division of TB Prevention and Control (617-983-6970)

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Nursing Case Management for Tuberculosis: Fact Sheet

Division of Tuberculosis Prevention and Control: (617) 983-6970; Fax (617) 983-6990

What is case management for TB? It is the coordination of medical, nursing, outreach and social service systems which ensure that persons with suspected / confirmed TB start and complete appropriate and effective treatment for TB

Who does it? Local boards / departments of health are required (Massachusetts regulation 105 CMR 365.200: Case Management) to designate a nurse case manager for every confirmed or suspected TB case. The Division of Tuberculosis Prevention and Control assigns regional Tuberculosis Surveillance Area (TSA) Nurses to work cooperatively and in consultation with local nurse case managers.

Applies to all patients regardless of source of health care (public or private)

WHEN, WHERE, AND HOW?

Begins when a suspected / confirmed TB case is reported to the Division of TB Prevention and Control:
24 hr. confidential reporting (toll free): 1-888-MASS MTB (888-627-7682); Fax (617) 983-6813

Patient visit within 3 working days: begin the initial case assessment and contact investigation
~ Hospital visits ASAP to begin discharge plan

Case assessment:

- Confirm that therapy is appropriate and according to American Thoracic Society (ATS) guidelines
- Determine factors that may effect adherence to therapy:

~ poor access to healthcare	~ health/cultural beliefs	~ poverty
~ homelessness	~ substance abuse	~ recent immigration
~ work schedules	~ mental health status	~ previous / incomplete therapy
~ language barriers	~ age (young / old)	~ other medical conditions

Contact investigation:

- Identify and categorize contacts according to their risk for TB infection
- Risk includes:
  - ~ case's potential for generating air-borne bacilli (droplet nuclei)
  - ~ level of exposure
  - ~ contact's risk for progressing from infection to TB disease
- Test close contacts to infectious TB cases within 7 working days
- Vulnerable close contacts (i.e. children, immunosuppressed) need immediate plan for protection
- Ensure clinical evaluation for infected / vulnerable contacts
- Report infected contacts: Fax (617) 983-6220
- Contacts on therapy for latent TB infection: monitor monthly to ensure therapy adherence

NURSING CARE PLAN:

- **Plan is tailored** according to individual needs
- **Directly Observed Therapy (DOT)** for persons with the following risk factors:
  - ~ sputum smear positive
  - ~ drug resistant and multi-drug resistant (MDR) TB
  - ~ worsening clinical status
  - ~ previous / incomplete TB treatment
  - ~ HIV infections
  - ~ other immunocompromised condition
  - ~ children under 18
  - ~ patients discharged from Tuberculosis Treatment Unit (see below)
  - ~ recent history of substance abuse, mental illness, homelessness, or incarceration
  - ~ language/cultural barriers
  - ~ contacts to MDR case
- **Remove barriers to adherence**
  - ~ enablers to increase access (i.e. transportation arrangements, late/early appointments)
  - ~ incentives to motivate continued treatment
- **Educate patient and family**
  - ~ spread / prevention of TB
  - ~ medications
  - ~ what happens when treatment not adequate or complete
  - ~ consequences if patient unwilling to accept course of treatment
- **Number of nursing and outreach worker visits** vary according to adherence risk and medical needs
  - ~ nurse evaluates at least monthly for adherence and treatment progress
  - ~ TB Division outreach workers assist nurses with adherence to treatment
- **Social support** plans related to adherence, medical, and social problems

SPECIAL HOSPITAL SERVICES:

Tuberculosis Treatment Unit at Lemuel Shattuck Hospital

- Outpatient treatment not adequate
  - ~ continued non-adherence in the face of a nursing care plan tailored to the individual
  - ~ medical care requires specialized TB care not available in the outpatient setting
  - ~ infectious patient in congregate living situation or vulnerable, unprotected persons at home
- Voluntary admission
- Involuntary admission as a last resort for documented non-adherence that is a public health threat
  - ~ must meet legal requirements (MGL, c.111, s.94A-H)
  - ~ contact TB Division for policies and procedures: (617) 983-6970

COLLABORATION:

Local Nurse Case Manager and regional Tuberculosis Surveillance Area Nurse

- Review initial nursing assessment and contact investigation
- Discuss updates and changes to nursing care plan
- Review medical treatment plan, follow-up, and all treatment changes
- Submit reports required for tracking patient care and disposition of contacts

For complete protocols call the Division of TB Prevention and Control

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

TB Contact Investigation: Fact Sheet

Division of Tuberculosis Prevention and Control: (617) 983-6970; Fax (617) 983-6990

http://www.mass.gov/dph/cdc/tb

Why is a contact investigation (CI) important?

- Identifies persons at greatest risk of TB infection / disease
- Prevents TB disease by ensuring infected contacts start and complete appropriate treatment for latent tuberculosis infection (LTBI)

Clinical characteristics of suspects and/or cases that need a CI

- Pulmonary, laryngeal, or pleural sites
- Sputum or other respiratory specimen acid-fast bacilli (AFB) smear positive (unless Amplified Mycobacterium tuberculosis Direct test [MTD] negative)
- Cavitary disease on chest x-ray
- AFB smear-negative, but *M. tuberculosis* culture-positive
- AFB smear and culture unknown or not done, but signs and symptoms of TB (e.g. coughing)

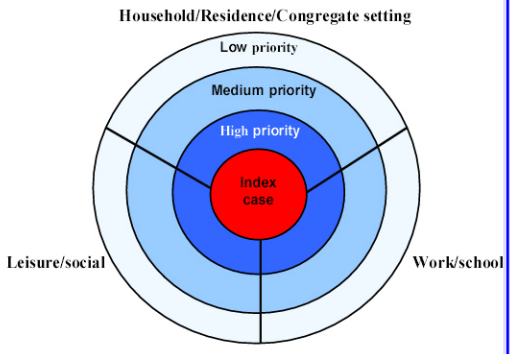
Who does the CI? The public health nurse case manager assigned by the local health department. The TB Division is available for consultation. Regulation: 105 CMR 365.200, section C, 4 provides the legal authority for the investigation and reporting of contacts to the TB Division.

When to initiate a contact investigation

- Initiate CI ≤ 3 working days of case/suspect notification (coincides with the initial case assessment)
- In ≤ 7 working days, tuberculin skin test (TST) high-priority contacts (see below, Prioritize Contacts).
- In ≤14 working days, TST medium-priority contacts (see below, Prioritize Contacts).

How to Proceed (Call your TSA Nurse or refer to: Massachusetts Tuberculosis Nursing Case Management Protocols:

- **Prioritize Contacts:** Establish CI priorities (high, medium, low) based on:
  - Characteristics of case (e.g. AFB sputum smear positive)
  - Characteristics of contact (e.g. < 5 years of age, immune status)
  - Characteristics of exposure (i.e. length, environment)
  - Begin with high-priority contacts (home, school/work, social)
  - Expand testing if more contacts than expected are TST-positive or if secondary cases are identified



- **Interview** contacts for medical history and to assess degree of exposure
- **TST** (unless documented history of past-positive TST)
- **Repeat** TST for initially TST-negative contacts 8-10 weeks post-exposure
- **Refer** for medical evaluation and chest x-ray:
  - TST-positive contacts
  - Immunosuppressed contacts regardless of skin test result
  - Infants and young children regardless of skin test result (See reverse side)
- **Treat:**
  - Contacts with positive TST
  - Contacts with negative initial TST, but at high risk for TB disease -e.g. immunosuppressed, children < 5 years old
- **Discontinue treatment:**
  - When the repeat TST is negative 8-10 weeks post-exposure
    exception: immunosuppressed, < 6 months of age, at physician's discretion

Special Considerations: Infants and Children (< 5 years of age)

Initial testing and evaluation:

- Skin test with Purified Protein Derivative (PPD) by Mantoux method, regardless of history of BCG vaccination
- Refer for evaluation
- Perform both posterior-anterior and lateral chest x-rays, regardless of skin test results
- Treat (skin test positive or negative) if symptomatic and/or chest x-ray abnormal

Possible results:

- Initial TST-neg. (< 5 mm): Start window prophylaxis (See Frequently Asked Questions #2 below)
- Initial TST-pos. (≥ 5 mm), chest x-rays normal: 9 months treatment for latent TB infection (LTBI) [see frequently asked question #3 below]

Follow-up testing and evaluation:

- Repeat the skin test 8-10 weeks post-exposure (initially TST-negative)
- Perform chest x-rays (posterior-anterior and lateral) if skin test converts to positive (≥5 mm)

Possible results:

- TST-neg. (< 5 mm) and chest x-rays normal: Discontinue window prophylaxis
- Skin test converts (≥ 5 mm), chest x-rays normal: Continue treatment (9 months)
- Skin test converts (≥ 5 mm), symptomatic or chest x-rays abnormal: Refer for diagnosis/treatment

Frequently Asked Questions

1. Do infants less than 6 months old need a skin test? **Yes**, skin test at age 4-6 weeks. Infant may be anergic. If initial skin test is negative and chest x-rays are negative, start window prophylaxis. Repeat the skin test at age 3-4 months and again at age 6 months. Discontinue treatment if skin test is negative at age 6 months.

2. What is "window prophylaxis"? Treatment of possible LTBI given to contacts under 5 years of age (or immunosuppressed contacts) with an initial negative skin test. Window prophylaxis is given during the window period between the two TSTs. If the repeat skin test is negative, discontinue prophylaxis, unless the contact is less than 6 months old or immunosuppressed (they may be anergic). For children 5 to 15 years old, window prophylaxis is at the physician's discretion.

3. What is "treatment of latent TB infection (LTBI)"? Formerly known as "preventive therapy," it is medication (e.g. INH) given to TST-positive individuals to treat TB infection.

4. What if infant/child exposure to the infectious case is ongoing? Children under 5 years who live in the same household as an infectious TB case may need to be separated from the case until:

- TB case responds to treatment (i.e. AFB smear-negative with decrease in symptoms)
- Child has started treatment of latent TB infection.

Note: Repeat the skin test every 3 months for uninfected contacts who remain in close contact with an infectious case.

5. Should contacts have Directly Observed Therapy (DOT)? DOT is recommended for children less than 5, older children who can not/will not reliably self-administer therapy, and for contacts of multi-drug resistant TB disease.

6. Can pregnant women be tested for TB infection? **Yes**, PPD has no harmful effects on the fetus.

7. Can mothers who take INH breastfeed? Breastfeeding is not contraindicated, but the infant should receive supplemental pyridoxine (B6). If the infant needs treatment for TB infection, the amount of INH provided by breast milk is inadequate for treatment of the infant.

Reminder: Send CI results (initial and 8-10 week follow-up) on EPI Report form to your regional TSA nurse.
Please call the TB Division for names and phone #s of the TSA nurses.

Directly Observed Therapy (DOT) for Tuberculosis

An intervention to support patients on TB therapy

What is DOT?

- DOT is the direct observation by a health care provider, or other designated responsible person, of the ingestion of prescribed anti-tuberculosis medication by the patient. DOT is for TB patients who have one or more risk factors that may jeopardize their ability to adhere to, or complete therapy. Nationally, DOT is the preferred strategy. Observation by a family member is not considered DOT.

Why is DOT needed?

- To ensure that persons at high-risk for non-completion of therapy are able to finish an appropriate and effective course of therapy.
- To prevent disease transmission when persons are unable or unwilling to take medication.
- To prevent drug resistance due to intermittent / inadequate drug therapy.
- **When the risk of disease transmission is very high, or especially dangerous to the public health, the TB Division's policy is for mandatory DOT to ensure disease containment.** *

Who is responsible?

- The latest treatment standards published in MMWR, June 20, 2003 place the responsibility for successful treatment on the public health program or private provider, not on the patient. (http://www.cdc.gov/mmwr/PDF/rr/rr5211.pdf)
- Local public health nurse case managers coordinate the services that ensure therapy completion for persons with TB disease (Massachusetts Regulation 105 CMR 365.200 - Case Management).
- The local public health nurse case manager assesses the need for DOT based upon risk factors and input from other members of the case management team (e.g. the state Tuberculosis Surveillance Area nurse, physician, outreach educator).

* Criteria for Mandatory DOT for Highest Public Health Risk TB Patients in Massachusetts

- Drug resistance to two or more first line TB drugs
- Sputum smear positive until sputum smears convert to negative
- History of incomplete treatment for TB disease
- Previous episode of TB disease
- Compulsory hospitalization on TB Treatment Unit (94A, 94B, or 94C)

Strongly Recommended for DOT

- Child with TB disease under 5 years of age
- HIV positive
- Other immunocompromised condition
- Worsening clinical condition

Continued on Page 2 →

Other potential barriers to adherence that may indicate a need for DOT

- Child with TB disease age 5 to 17 years
- Homeless within past year
- Injecting drug use within past year
- Excessive alcohol use within past year
- Patient/family denial of TB diagnosis
- Language barrier
- Resistant to taking treatment
- Resistant to taking DOT
- Other locally determined reason
- History of incarceration within past year
- Recent history of mental illness
- Non-injecting drug use within past year
- Perceived fear of medication side effects
- Long work hours/multiple jobs
- Cultural barrier
- Voluntary hospitalization on TB Treatment Unit

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Tuberculosis Patient Discharge: Hospital to Community

REQUIREMENTS:

1. Massachusetts Regulation 105 CMR 365.600 requires hospitals and other institutions to plan the discharge of persons with suspected or diagnosed tuberculosis in collaboration with the Division of Tuberculosis (TB) Prevention and Control.

   Tel: (617) 983-6970 or 6989; Fax: (617) 983-6990

   → Begin by notifying the Division of TB Prevention and Control whenever there is a suspected case of TB in the hospital. There is never too much lead time to develop an outpatient case management plan

   → Pre-discharge conference/consultation is **required**: includes state and local health department nurse as well as the provider and discharge planner

2. Isolation and Quarantine Regulation, 105 CMR 300.200 (B), Tuberculosis: For isolation of a smear positive, infectious, patient. Helps providers determine the infectious period and to develop a discharge plan that protects the public

PRIORITIES FOR DISCHARGE PLANNING:

All patients

1. Hospital providers and the local public health nurse case manager participate in and agree upon the discharge plan.

2. **Pre-discharge home evaluation is strongly recommended to verify household and community risk:** Early consultation with the local public health nurse will facilitate timely information.

3. Arrange for the patient to have enough TB medications, **in hand**, until his/her next medical appointment. Prescriptions alone are usually inadequate for the new TB patient (pharmacies may not have drugs, or there may be linguistic/economic barriers)

4. Follow-up appointments need to be made prior to discharge

5. **Free drugs and medical appointments** are available through state funded TB Clinics: Call **(617) 983-6970** for the location of one in the patient's home area

DISCHARGE SAFETY

AFB Smear Positive -Pulmonary / Laryngeal TB

1. Smear positive but not suspected of having multi-drug resistant (MDR) TB

   Allow discharge when these criteria are met:

   → Symptoms resolving

   → Treatment regimen is consistent with American Thoracic Society standards and specific for the suspected strain

   → Hospital staff **and** local public health nursing case manager have confidence the patient will adhere to treatment

   → Patient lives alone or with other immunocompetent persons who understand that, although the most infectious period has passed, the patient may still be infectious

   → Patient willing, able, and motivated to cover mouth when coughing

   Do not allow discharge into the following living conditions:

   → Congregate living sites (e.g., shelter, nursing home, jail, group home)

   → Where infants and children also reside until an evaluation is made and the risk of a new infection is minimized

   → Where immunosuppressed persons also reside

   → Where healthcare/social service providers are present in the home several hours a day and are subject to prolonged airborne exposure

2. Smear positive patients suspected of having MDR TB

   Remain in the hospital until these criteria are met:

   → Three consecutive negative AFB smears from sputum specimens taken 24 hours apart

   → Appropriate treatment regimen has been devised and initiated

   → Local public health nurse case manager has appropriate outpatient follow-up plans including arranging for directly observed therapy (DOT): to be administered by healthcare worker (not family member)

Related Services / Requirements:

- Nurse Case Manager, **required** for all cases and suspects (local health department assignment)
  → Coordinates medical, nursing, outreach, social service systems needed to begin and complete appropriate therapy, and Directly Observed Therapy (DOT) when indicated
  → Responsible for case/contact investigations, nursing care plans, and patient education
- State regional nurses collaborate with local nurses regarding case management services
- Tuberculosis Treatment Unit, Lemuel Shattuck Hospital (617) 971-3352 / (617) 971-3476

  Admission Criteria:

  → Unable/unwilling to accept appropriate outpatient care

  → Inpatient setting is a medical necessity

  → Patient infectious and cannot return to congregate setting (shelter, group home) or vulnerable, high risk persons are in household