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A Quick Look at TB, TB Exposure Control Plan Policy, and Pandemic Influenza and Other Infectious Diseases

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About the Author

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TB/INFECTION PREVENTION AND CONTROL PLAN

A Quick Look at TB

According to the Centers for Disease Control and Prevention (CDC) in 2008, nearly one-third of the world’s population is infected with Tuberculosis (TB), which kills almost 1.6 million people per year. TB is now the second most common cause of death from infectious disease in the world after human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS). In 2011, 8.7 million people fell ill with TB and 1.4 million died from TB.

In the United States, the total number of TB cases in the US in 2012 was the lowest since 1953. However, despite the nationwide downward trend, TB continues to be present in many U.S. communities. In 2012, 12 states were reported to have a higher case rate than other states in the U.S.: California, Nevada, Florida, Georgia, North Dakota, New Jersey, Maryland, New York, Alaska, Hawaii, Washington D.C., and Texas. The toll continues to be greatest among minority and foreign-born individuals, who consistently have higher rates of TB disease.

TB outbreaks have occurred in healthcare facilities that involved transmission of multidrug resistant strains of M. tuberculosis (MDR TB) to both patients and healthcare workers. MDR TB rates continue to remain high in foreign countries.

In 2012, a total of 63% of reported TB cases in the United States occurred in foreign-born persons. The case rate among foreign-born persons (15.9 cases per 100,000) in 2012 was approximately 11 times higher than among U.S.-born persons (1.4 cases per 100,000).

Even though preventable and treatable, TB remains a serious airborne disease—one with the ability to adapt by becoming resistant to antibiotics, and traveling from one country to another as easily as people do. The health threat must continue to be taken seriously, both here in the U.S. and abroad.

TB Transmission

TB is carried through the air in infectious particles (called droplet nuclei) that are generated when a person with the active pulmonary or laryngeal TB coughs, sneezes, speaks, sings, or spits. Particles containing TB are 1-5 µm in size and can remain suspended in normal air currents for prolonged periods, sometimes up to 4 hours depending on the room ventilation rate, spreading throughout a room or building.
Infection occurs when a susceptible person inhales these droplet nuclei containing \textit{M. tuberculosis}. If the infected nuclei reach the alveoli of the lungs, the organisms are taken up by macrophages and spread throughout the body. Usually, within 2 to 10 weeks after initial infection, the immune response limits further multiplication and spread of the tubercle bacilli; however, some bacilli remain dormant and viable for many years. This condition is called “latent TB infection”, or LTBI. Persons with LTBI usually have positive PPD skin tests but no symptoms of active TB, and they are not infectious.

The probability for an exposed person to be infected depends primarily on the number of infectious organisms in the air and the duration of exposure. Activities that elevate the chances of transmission to healthcare workers in office settings include exposure to active TB patients who cough without covering their mouths, or who cough due to aerosolized administration of medication and sputum induction. Another common risk is exposure to TB patients in a relatively small, enclosed space without adequate ventilation.

**Risk Factors for Developing Active TB**

Those who become infected with TB have about a 10% risk for developing active TB during their lifetime. The risk is greatest during the first 2 years after infection. Immunocompromised people have a greater risk for progression of latent TB to active TB. HIV infection is the strongest known risk factor for this progression.

Certain people have a higher risk for TB due to one or both of the following factors:

1. Those who are more likely than other persons in the general population to have been exposed to and infected with TB.

   \textit{Examples are:}
   \begin{itemize}
   \item Contacts of people with active TB
   \item Foreign-born persons from areas of the world with a high prevalence of TB, such as Asia, Africa, the Caribbean, and Latin America
   \item Medically underserved populations such as some African-Americans, Hispanics, Asians, Pacific Islanders, Native Americans, and Alaskan Natives
   \item Homeless persons
   \item Current or former correctional facility inmates
   \item Alcoholics or drug users
   \item The elderly
   \end{itemize}

2. Those who are more likely to progress to active TB after initial infection.

   \textit{Examples are:}
   \begin{itemize}
   \item Persons who have been infected within the last 2 years
   \item Children under 4 years of age
   \end{itemize}
- Persons with fibrotic lesions on chest radiographs
- Persons with certain medical conditions—for example: HIV, diabetes mellitus, some malignancies, silicosis, those who have undergone gastrectomy or jejuno-ileal bypass, those with chronic renal failure with renal dialysis, those under 10% of ideal body weight, those undergoing immunosuppressive and high-dose corticosteroid therapy

**TB Exposure Control Plan Policy**

In 2003, OSHA rescinded its proposed TB standard but the agency will cite a facility under the OSHA General Duty Clause for not following the U.S. Public Health Service’s (CDC’s) recommendations. The General Duty Clause states:

*Each employer must furnish to each of his employees employment and a place of employment that are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.*

Because the General Duty Clause is just that, general, OSHA inspectors can apply it to a variety of unsafe workplace conditions that aren’t specifically mentioned in the Federal Register or OSHA laws. Recent fines from TB citations under the General Duty Clause ranged from $2,000 to $17,500. Some state OSHA plans have adopted infectious disease standards that specifically address TB.

This TB Exposure Control Policy follows these guidelines (Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005 MMWR. Recommendations and Reports. December 30, 2005 / 54(RR17);1-141. www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm?s_cid=rr5417a1_e).

This TB Exposure Control Plan is intended for healthcare facilities such as ambulatory care and medical practices with low risk for occupational exposure to tuberculosis. It is NOT intended for inpatient facilities (e.g., hospitals and other facilities that treat TB patients) that must have special isolation rooms for patients with TB.

Although most medical offices are low risk, some types of workplaces have greater risk of TB infection:

- Healthcare settings that see “suspected” or known TB patients, and that perform high-risk procedures such as aerosolized administration of medications, bronchoscopy, sputum induction, endotracheal intubation, suctioning procedures, and autopsies
- Correctional institutions
- Homeless shelters
- Long-term care facilities for the elderly
- Drug treatment centers
Overview: How to Protect Staff from Contracting TB at Work

1. Perform an annual TB risk assessment for your facility.
2. State how TB patients are identified and managed in your facility. Define what precautions staff must take with these patients.
3. Provide a baseline 2-step TB skin test (TST) to all employees who have patient contact. Refer any employee with a positive TST to the local public health department for a chest x-ray. The frequency of repeat skin testing depends on the risk category of your facility and whether or not an employee is exposed on the job to a person with TB.
4. Evaluate and counsel any healthcare worker who shows symptoms of TB or who has a positive TST conversion. Exclude them from the workplace until TB is ruled out or treated.
5. Train all employees who have patient contact annually. Include how to recognize suspected TB patients and what to do when one enters the facility.

Note: In the event of a TST purified protein solution shortage, refer to your local public health department for guidance on the priority for testing staff. In 2013, there was a shortage due to a manufacturing delay. (MMWR December 13, 2013/62(49);1014-1015)

TB Risk Assessment

Perform an annual risk assessment to determine:
- The extent of control measures to take in your practice
- The index of suspicion for TB among your patients
- The frequency of TB skin testing (TST) for healthcare workers

To begin your practice’s TB risk assessment, contact your local health department and ask for the number of TB patients in your community. Include areas where patients who visit your practice live and work. Place this number on the TB Risk Assessment Results Form (Form 20), provided on page 6-5. Also ask the public health department whether your practice’s risk is higher or lower than state and national trends and whether multi-drug resistant strains of TB have been isolated in your community.

Then, review the number of actual TB patients that have entered your practice in the last year. Write this number on the TB Risk Assessment Results Form. If less than 3 TB patients were seen in your practice last year, your facility is considered “low” risk (Figure 1). If 3 or more TB patients were seen in your facility in the last year, your facility is classified as “medium” risk. Write your risk assessment classification on the TB Risk Assessment Results Form.
# TB RISK ASSESSMENT RESULTS FORM

**Note:** A master copy of this form is located behind Tab 11: Master Record Forms (Form 20)

<table>
<thead>
<tr>
<th>Date/ Person performing Risk Assessment</th>
<th># TB patients from health dept.</th>
<th># TB patients in healthcare facility last year</th>
<th>Do you treat TB patients with known or suspected TB, OR do you have a plan for triage and referral? <em>(circle one)</em></th>
<th>Evidence of TB transmission (employee TST conversions)? <em>(circle one)</em></th>
<th>Risk category (low, medium, potential ongoing transmission)</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
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</tr>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>/</td>
<td>Treat</td>
<td>Triage</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Risk Assessment Additional Comments: _______________________________________________________________
Repeat the TB risk assessment at least annually. Facilities with potential ongoing transmission must repeat the risk assessment more frequently and conduct a problem evaluation and take corrective action.

If your facility performs high-risk procedures (TB clinic, HIV patients where bronchoscopies or other pulmonary procedures are performed, etc.), your risk assessment may be “medium.” If that is the case, pay special attention to healthcare worker TB skin test (TST) results and monitor any TST conversion rates. Also, to lower your future risk, consider postponing procedures on known TB patients until the patient is no longer infectious.

**Figure 1. Risk Assessment for Ambulatory and Medical Facilities**

<table>
<thead>
<tr>
<th>Low risk</th>
<th>Medium risk</th>
<th>Potential ongoing transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3 TB patients/year</td>
<td>≥ 3 TB patients/year</td>
<td>Evidence of ongoing <em>M. tuberculosis</em> transmission, regardless of setting</td>
</tr>
</tbody>
</table>

*Source: Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Settings, 2005 MMWR. Recommendations and Reports. December 30, 2005 / 54(RR17);1-141.
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm?s_cid=rr5417a1_e*

**Early Identification of Patients with Active TB**

Make an effort to promptly identify patients with active TB. Train employees who are the first points of contact in medical practices to ask questions to facilitate identification of patients with signs and symptoms of TB.

Suspect TB in persons who have symptoms consistent with TB (see below), as well as those with confirmed or suspected HIV infection and undiagnosed pulmonary disease. CDC defines a “suspected” TB patient as one with either a positive AFB smear OR an individual with at least 3 weeks of persistent coughing and two or more signs and symptoms of TB.

**Symptoms of TB**

- Productive, prolonged cough (three weeks or longer)
- Chest pain
- Hemoptysis (coughing up blood)
- Fever
- Chills
- Night sweats
- Easily fatigued
- Loss of appetite
- Weight loss
Some suggestions to identify TB patients before they can transmit TB infection to employees are:

1. Make a questionnaire for patients to answer when approaching the reception desk. Include the following questions:
   - Have you had a persistent cough for more than 3 weeks?
   - Have you been coughing up bloody sputum (phlegm)?
   - Night sweats? Loss of appetite? Weight loss? Fever?

   If a patient answers “yes” to these questions, ask him or her to wear a surgical mask. If this is not possible, require the patient to cover his or her mouth with a tissue when coughing or sneezing. Then, immediately escort him or her to a treatment room for consultation with the physician.

2. If your practice routinely mails a patient history form to new patients, include the questions above on the form. If the patient’s answer to the questionnaire indicates that he may have TB, refer the patient to the public health department for TB testing or delay the patient’s visit until respiratory symptoms subside. If this is not possible, schedule the patient at a time when other patients are not present (i.e., as the last patient of the day). Give the patient a surgical mask and request that he or she wear it, or instruct him or her to cover the mouth and nose with a tissue when coughing or sneezing. Separate the patient as much as possible from other patients during his or her office visit.

3. Post a sign on the inside entrance to the facility (see next page for sample sign), and provide boxes of tissues or masks beneath the sign for patient use.

In this practice, the steps we take for the early identification of patients with active TB are:

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________.

We refer suspected TB patients to the local health department (phone number: ____________) for:

- A complete medical exam, including history and physical.
- A TB test.
- A chest radiograph.
- A bacteriological exam (smear and culture of sputum).
Stop the spread of germs that make you and others sick!

Cover your Cough

Cover your mouth and nose with a tissue when you cough or sneeze or cough or sneeze into your upper sleeve, not your hands.

Put your used tissue in the waste basket.

You may be asked to put on a surgical mask to protect others.

Clean your Hands after coughing or sneezing.

Wash with soap and water or clean with alcohol-based hand cleaner.
Managing Patients with Suspected or Confirmed TB

Minimize the amount of time patients with signs and symptoms of active TB are in contact with employees and patients in areas such as waiting rooms to prevent airborne transmission of infection. Immediately transfer known or suspected TB patients to a separate room with the door closed, where they will not contact other patients or health care workers. In this practice, this area is: ________________________________.

Since this facility does not have a TB isolation room, we transfer known, untreated TB patients and suspected TB patients as soon as possible (within 1–2 hours) to ____________________________ for evaluation and management. While awaiting transfer, the suspected TB patient should wear a surgical mask, if possible, and is segregated to protect employees and other patients.

Document exposure incidents on the TB Exposure Log located on page 6-19 and behind Tab 11: Master Record Forms (Form 23). Readminister TSTs to affected healthcare workers. Remember that it takes 2 to 10 weeks from the time of infection for an exposed person to react to the skin test.

TB Isolation Procedures for Cough Inducing and Aerosol-generating Procedures

Do not perform cough-inducing procedures on patients who may have infectious TB unless they are absolutely necessary and can be performed with appropriate precautions (ventilation devices such as booths or special enclosures, or a TB isolation room).

Examples of these procedures are:

- Bronchoscopy
- Sputum collection
- Aerosol induction of sputum
- Endotracheal intubation and suctioning
- Aerosolized treatments (e.g., pentamidine)

Employees who perform these procedures on suspected TB patients must wear an N-95 mask or a medical powered air purifying respirator (PAPR).

Since special enclosure areas such as isolation rooms are beyond the scope of this manual, they are not discussed further.
Respiratory Protection for Healthcare Workers: N-95 Respirators or Medical Powered Air Purifying Respirators (PAPRs)

The CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Settings, 2005 do not require facilities that are “unlikely to encounter TB patients and plan to triage and immediately refer out suspected TB patients” to provide N-95 respirators or PAPRs to employees. Instead, isolate coughing patients and have them wear a mask at all times in your facility before transferring.

If your facility is likely to encounter a TB patient (determined by an annual risk assessment), then provide annual training and N-95 respirators or PAPRs for workers when coming into close contact (i.e., when entering an exam room). All workplaces where employees are required to wear respirators must have a written respiratory protection plan that addresses respirator selection; medical surveillance; fitting and fit testing; maintenance, cleaning, and replacement; procedures for routine and emergency use; annual training; and recordkeeping (see Tab 11, Form 31). Before using a specific N-95 respirator, all employees must be fit-tested. Fit testing must then occur annually and whenever there are changes that would affect proper fit, such as in respirator selection or a worker’s facial characteristics. OSHA’s fit-testing protocol is outlined in Appendix A of the OSHA respiratory protection standard, 1910.134.

Include the following directions in the Exposure Control Plan.

In this facility, N-95 respirators: ( ) Are provided ( ) Are not provided
If provided, N-95 respirators are located: _____________________________________

In this facility medical PAPRs: ( ) Are provided ( ) Are not provided
If provided, medical PAPRs are located: ______________________________________

Seal-checking N-95 Respirators

After donning the N-95 respirator, check the respirator seal capability by forcefully inhaling and exhaling several times. The mask should collapse slightly upon inhaling and expand upon exhaling, and the wearer should not feel any air leaking between his or her face and the respirator. This is the sign of a good facial fit and a successful seal check. If the respirator does not collapse and expand, or if air is leaking out between the wearer’s face and the respirator, then this is not a good facial fit. Adjust the mask until the leakage is corrected and seal-check the mask again.
Medical PAPRs

If medical PAPRs are used, ensure that there are donning and doffing instructions in the kits. PAPRs require that the batteries are continually charged. Spare batteries may be considered if PAPRs would be needed for an extended period of time. Provide cleaning instructions for the reusable parts of the PAPR, such as the face shields. The use of medical PAPRs do not require annual fit testing but does require annual training.

Employee TB Skin Testing (TST)

The purpose of TB skin testing (TST) is to identify those healthcare workers with latent TB (LTBI) or active TB. Importantly, TST helps identify those who require preventive therapy to prevent latent infection from progressing to clinically active TB.

The blood test, QuantiFERON-TB Gold (QFT), is one option for screening healthcare workers for TB infection. The QFT test is less subjective than the TST and is less likely to yield false positive results (i.e., from previous administration of the BCG vaccine or LTBI). Healthcare workers do not need to come back for a reading. A blood sample is drawn and sent to a reference laboratory.

The Mantoux tuberculin skin test continues to be widely used. Administer the Mantoux tuberculin skin test, intradermally, injecting 0.1 ml of tuberculin purified protein derivative on the inner forearm. Administer using a tuberculin syringe with the bevel facing up. Ensure that the needle used is a “safety sharp.” Dispose of needles and syringes in a red sharps containers. Date the tuberculin vials when opened. Some products require refrigeration. Record the temperatures of the refrigerators per CDC guidelines for vaccines. Additional information can be found at www.cdc.gov/tb/education/mantoux/part1.htm.

Test all healthcare workers in your facility that could be exposed to a patient with symptoms of TB. Include all employees who have patient contact, including full- and part-time personnel, maintenance and clerical staff, and temporary or contract workers. Your facility plan may include volunteer workers. Exclude only those employees in your practice who never have patient contact, such as certain billing or information systems staff.
Recommendations for Tuberculin Skin Testing (TST) for Healthcare Workers

<table>
<thead>
<tr>
<th></th>
<th>Low risk</th>
<th>Medium risk</th>
<th>Potential ongoing transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline TST</td>
<td>Yes, 2-step (tuberculin skin test) upon hire if no negative TST is documented within the last 12 months.</td>
<td>Yes, 2-step (tuberculin skin test) upon hire if no negative TST is documented within the last 12 months.</td>
<td>Yes, 2-step tuberculin skin test upon hire if no negative TST is documented within the last 12 months.</td>
</tr>
<tr>
<td>Ongoing serial/screening TST</td>
<td>No</td>
<td>Every 12 months</td>
<td>Administer one TST as soon as possible after exposure to \textit{M. tuberculosis}. If negative, re-test 8–10 weeks after exposure.</td>
</tr>
</tbody>
</table>

Baseline Employee TST: The Two-step Tuberculin Skin Test

Provide an initial baseline two-step TST to every healthcare worker that has patient contact, at no charge to the employee.

The two-step method differentiates boosted reactions from reactions due to new infections. Two-step testing also reduces the likelihood that a LTBI is misinterpreted as a new infection. For some people who are infected with \textit{M. tuberculosis}, delayed-type hypersensitivity to tuberculin may wane over the years. When tested many years later, they may have a negative skin test. However, this initial skin test may boost their ability to react to tuberculin, causing a positive reaction to subsequent TST. This boosted reaction may be misinterpreted as a new infection.

To prevent this misinterpretation, perform two-step TST on all newly employed healthcare workers who have not had a documented negative TST test result during the previous 12 months. Perform a second TST within 1–3 weeks after the first test. If the second TST result is positive, this is most likely a boosted reaction and the healthcare worker should be classified as previously infected. If the second TST result remains negative, classify the healthcare worker as uninfected; a positive reaction on a subsequent TST is then likely to represent a new infection with \textit{M. tuberculosis}.

\textit{Two-step TST Interpretation}

- If the first TST is positive, consider the person infected.
- If the first TST is negative, test again 1–3 weeks later.
- If the second TST is positive, consider person infected (boosted reaction).
- If the second TST is negative, consider person uninfected.
Interpreting the TST

After 48 to 72 hours, measure the diameter of induration (palpable swelling). A negative test should produce a discrete, pale elevation of the skin (a wheal) 6mm to 10 mm in diameter. If the test cannot be read at 48 or 72 hours, reschedule the testing.

CDC furnishes, free of charge, educational and training materials such as posters for interpreting the Mantoux skin test and the latest information about TB treatment and TB prevention for healthcare facilities. Information can be found at CDC.gov/tb/publications.

A positive test is:

- ≥5 mm for very high-risk groups (HIV, persons with recent contact with an infected individual, drug users whose HIV status is unknown, etc.).
- ≥10 mm for other high-risk groups (foreign born persons from high-risk areas, healthcare workers who serve high-risk groups, medically underserved, low-income populations including ethnic minorities such as blacks, Hispanics, and Native Americans, residents of long-term institutions, persons with conditions that increase the risk of TB (silicosis, more than 10% below body weight, chronic renal failure, diabetes mellitus, high dose corticosteroid and immunosuppressive therapy, some leukemias and lymphomas, and some other malignancies).
- ≥15 mm for those with no risk factors for TB.

False Positive/False Negative TB Tests

False Positive TB Test Results: Some causes of false positive TB skin test results are:

- A boosted reaction in an adult from childhood exposure to TB
- Infection with other non-tuberculous mycobacteria
- Previous vaccination with BCG (i.e., BCG, or bacille Calmette-Guérin, is a TB vaccine used in many countries with a high prevalence of TB. BCG is generally not used in the U.S.)

False Negative TB Test Results: Anergy can sometimes cause false negative TB skin test results. Consider anergy in persons with no reaction and those:

- With HIV (33%) and AIDS (60%)
- With overwhelming miliary (disseminated) or pulmonary TB
- Who have severe or febrile illness
- Who have measles or other viral infections
- With Hodgkin’s disease or sarcoidosis
Detect anergy by administering at least two other delayed-type hypersensitivity antigens, such as tetanus toxoid, mumps, or Candida, by the Mantoux technique, in conjunction with TB skin testing.

Those with reactions of ≥ 3mm to any antigens, including TST, are NOT anergic. Record results as mm of induration, not positive or negative. If anergy testing is less than 3mm, patient is anergic. Assess the probability of infection. If risk is high (known contact of persons with TB or persons from a group with a high prevalence of TB), evaluate for preventive therapy.

**Workers Who Have Had BCG Vaccination**

The BCG vaccine is not 100% protective, so those who have had it could still become infected with TB. Perform baseline two-step TST and follow-up serial TSTs, if indicated, unless the BCG-vaccinated employee has a previous documented positive TST result or previously treated LTBI or TB disease. Many persons who received BCG don’t have a positive TST result, and for those that do, their reaction wanes after a few years. As for any employee, provide a medical evaluation, including a chest x-ray at the public health department, if the TST is positive.

**Periodic Retesting of Employees**

**Based on risk assessment:** If your facility falls into the medium risk category, provide TB skin testing to all employees annually or according to the most current CDC guidelines.

**Based on exposure to a person with TB:** If there is employee exposure to an individual with infectious TB, repeat skin testing as soon as possible after the exposure and if that TST is negative, perform another TST 8-10 weeks afterwards. It takes 2 to 10 weeks from the time of infection for an exposed person to react to the skin test.

Do not repeat TSTs annually or after an exposure for employees with a positive skin test. For these employees, it’s necessary to rely on chest x-rays and symptoms to see if they have tuberculosis. Require them to get a chest x-ray if they have a cough lasting for 3 weeks and 2 or more TB symptoms. Routine yearly chest x-rays are not necessary.

**Recording TST Results**

Record results of TB skin testing on the **TST Record**, located on page 6-15 and behind Tab 11: **Master Record Forms (Form 21)**.
<table>
<thead>
<tr>
<th>Person Who Conducted TST</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TST Result(s)</td>
<td></td>
</tr>
<tr>
<td>Reason for Administration (e.g., baseline, annual, post-exposure)</td>
<td></td>
</tr>
<tr>
<td>TST Date(s)</td>
<td></td>
</tr>
<tr>
<td>Employee Name</td>
<td></td>
</tr>
</tbody>
</table>

Note: A master copy of this form is located behind Tab 11: Master Record Forms (Form 21)

Additional Comments:

____________________________________________________________________________________

____________________________________________________________________________________
TST DECLINATION

This form is optional. It may be used to document instances where a certain employee refuses to be tested for M. tuberculosis for any reason. Medical practices can make it a condition of employment to accept the TB test.

Note: A master copy of this form is located behind Tab 11: Master Record Forms (Form 22)

“I understand that due to my occupational exposure to potentially infectious material, I may be at risk of acquiring Mycobacterium tuberculosis (TB) infection. I have been given the opportunity to be tested for TB, at no charge to myself. However, I decline the TB test at this time.

If, in the future, I continue to have occupational exposure to the respiratory secretions of potentially infected individuals and I want to be tested for TB, I can receive the test at no charge to me.”

___________________________          _____________________________
Employee signature          Employee printed name

Date: ______________________
**Evaluation and Management of Healthcare Employees Exposed to TB**

Provide prompt medical evaluation and management for healthcare workers with the following:

- Symptoms of TB (a persistent cough lasting more than three weeks, especially when other symptoms compatible with active TB exist such as weight loss, night sweats, bloody sputum, anorexia or fever)
- Exposure incident
- Positive TST
- Skin test conversion on repeat testing

**Employees with Symptoms of TB**

Evaluate persons with symptoms of TB with a chest x-ray. Suspect TB in any healthcare worker who has symptoms consistent with TB, as well as those with confirmed or suspected HIV infection and undiagnosed pulmonary disease.

Healthcare workers with such signs or symptoms may not return to the workplace until a diagnosis of TB has been excluded or until they are in therapy and a determination has been made that they are noninfectious.

Bacteriology testing of smear and culture specimens for the presence of acid-fast bacilli is the main diagnostic procedure for pulmonary TB. A sputum culture that is positive for *M. tuberculosis* provides a definitive diagnosis of pulmonary TB.

**Employees Who Have Been Exposed to a Known TB Patient**

Repeat TB skin testing as soon as possible after the exposure and if that TST is negative, perform another TST 8 to 10 weeks afterwards. It takes 2 to 10 weeks from the time of infection for an exposed person to react to the skin test.

Do not repeat TSTs for employees with a positive skin test. For these employees, it’s necessary to rely on chest x-rays and symptoms to see if they will develop tuberculosis. Require them to get a chest x-ray if they have a cough lasting for 3 weeks and 2 or more TB symptoms.

**Positive Employee Skin Tests and Skin Test Conversions**

Clinically evaluate any healthcare worker with a newly recognized positive TST conversion for active TB. If the worker’s history, exam, or chest radiograph is consistent with active TB, perform additional TB tests (AFB smear and culture).
Exclude any healthcare worker with symptoms of TB from the workplace until a diagnosis of TB is ruled out or until the worker has been treated and is no longer infectious. Healthcare workers may return to work after documentation that they are receiving adequate therapy, their cough has resolved, and that they have three consecutive negative sputum smears collected on three different days.

In this practice, we evaluate and manage healthcare workers with positive TST and symptoms of TB by (state the name of the facility or health department where employees are sent for medical evaluation and treatment): ________________________________

______________________________________________________________________

______________________________________________________________________
### TB EXPOSURE LOG

<table>
<thead>
<tr>
<th>Employee Name</th>
<th>Date Exposed</th>
<th>Details of Exposure Incident</th>
<th>Action Taken (e.g., skin test, policy changes, etc.)</th>
<th>OSHA Safety Officer</th>
<th>Comments:</th>
</tr>
</thead>
</table>

Note: A master copy of this form is located behind Tab 11: Master Record Forms (Forms 23).
Decontaminating Patient Care Area and Equipment

Equipment used on patients with TB is not usually involved in transmitting TB to other patients and employees, although transmission through contaminated bronchoscopes has been reported.

Clean items that come into contact with the mucous membranes of TB patients (e.g., endotracheal tubes, bronchoscopes, etc.), then sterilize the items (preferred), or disinfect with a high-level disinfectant effective against tubercle bacilli.

Items that either do not ordinarily touch the patient, or touch only the patient’s skin (e.g., crutches, blood pressure cuffs, etc.), are not associated with direct transmission of TB and may be washed with detergent.

Although microorganisms are ordinarily found on walls, floors, and other environmental surfaces, these surfaces are rarely associated with transmission of infections to patients or healthcare workers, therefore extraordinary attempts to sterilize environmental surfaces is not required. Disinfect surfaces in the area in which a known or suspected TB patient was seen with a hospital-level, tuberculocidal disinfectant. This is the disinfectant normally used in facilities for BBP.

Employee Training

The CDC Guidelines recommend training all employees who have patient contact about TB transmission, early identification of patients with TB, triaging and referring these patients and follow-up after exposure to TB patients.

HCPro, Inc. offers an online training course “Respiratory Infection Prevention and Control.” For more information, visit www.hcmarketplace.com.

Document employee training on the Annual Employee Training Record located behind Tab 11: Master Record Forms (Form 27).
Pandemic Influenza and Other Infectious Diseases

It is difficult to predict when the next pandemic influenza or outbreak of a novel virus will occur, but when it does, it will likely “overwhelm the healthcare system locally, regionally, and nationally,” according to OSHA’s Pandemic Influenza Preparedness and Response Guidance for Healthcare Workers and Healthcare Employers. SARS, H1N1, and, most recently, Middle East Respiratory Syndrome (MERS) are viral respiratory illnesses for which the general population has had no immunity. These viruses caused widespread illness and in some cases, fatalities. Information on MERS or any other potentially developing outbreak is readily available through CDC. The following discussion is to prepare your facility for any widespread infectious disease outbreak or “pandemic.”

Although many facilities will need to stay in operation during a pandemic, others may adapt services or even close down. The pandemic plan presented here is a model adaptable to medical practices and other ambulatory settings that will remain open during a pandemic or any infectious disease outbreak.

OSHA strongly encourages healthcare employers to prepare for the emergency and reminds employers of their responsibility to protect employees during such an event.

The following pandemic plan is separated into two sections: “Pre-pandemic Planning” and “Once a Pandemic Is Announced.” Complete the “Pre-pandemic Planning” section now. During an actual pandemic, follow the steps in the “Once a Pandemic Is Announced” section.

Pre-pandemic Planning

To make sure your practice is prepared in the event of a pandemic outbreak, read over the information below and fill in the blanks.

STEP 1. Assign someone to be the pandemic response coordinator (write his or her name and title below) and make sure he or she follows the pandemic response coordinator duties below:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
</table>

Pandemic Response Coordinator Duties

- Establish a way to monitor pandemic news from national sources, such as the CDC, through e-mail, news feeds (RSS), or social networking.
- Assess and identify administrative, engineering, work practice controls, and the use of personal protective equipment (PPE), including masks and respirators, relevant to a pandemic.
Look up key community agencies that may need to be contacted during a pandemic and write their names and contact information below (see Pandemic Resources on page 6-29):

<table>
<thead>
<tr>
<th>Agency*</th>
<th>Name</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Health Department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital #1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital #2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Healthcare</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Medical Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing Facilities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Include any other relevant community organizations, including those involved with disaster preparedness, with which it might be necessary to maintain communication and coordination of care during a pandemic.

Add any coordination plans below or attach to this plan.

Communication and coordination plans with local pandemic planning groups:

_____________________________________________________________________________________________
_____________________________________________________________________________________________
_____________________________________________________________________________________________
_____________________________________________________________________________________________
_____________________________________________________________________________________________

Initiate the plan in the event that a pandemic is announced.

STEP 2. Fill in the name of the person in your facility responsible for external communications (e.g., media, health departments, and other agencies) here:

_________________________________________       ________________________
Name        Title

STEP 3. Assign an educational coordinator (write his or her name and title below) and make sure he or she follows the educational coordinator duties below.

Educational Coordinator:

_________________________________________       ____________
Name        Title
Educational Coordinator Duties

- Train all medical personnel to understand the implications of the pandemic and control measures (administrative, engineering, and work practice controls).
- Identify staff members requiring respiratory protection and arrange for training, medical evaluation, and fit testing in time to respond to the pandemic.
- Provide educational opportunities for staff members and patients (see Pandemic Resources on page 6-29) that are appropriate to their level of practice, language, and reading level.
- Include infection prevention/control measures in your staff training programs to prevent the spread of a pandemic agent.
- Help staff members understand their roles in providing healthcare guidance to patients affected by the pandemic.
- Keep attendance records for all training programs.

STEP 4. Offer influenza vaccine to healthcare staff and keep a log of who accepted the vaccine. Use Influenza Vaccine Log located behind Tab 11: Master Record Forms (Form 25A) to record those who decline.

Administer pandemic vaccine and antiviral medications according to current federal and/or state health department recommendations, including those for prioritizing administration. (See Pandemic Resources on page 6-29.)

This prioritization list will help estimate the number of personnel and patients who would be targeted as first- and second-priority groups. It will also be used to identify staffing requirements and to determine the amount of vaccines and antivirals needed.

STEP 5. Anticipate a staffing shortage due to illness in personnel or their family members during pandemic outbreaks.

Use the following procedures for handling staffing needs related to patient volume during a pandemic:

- Encourage staff members to develop their own plan for the care of dependent family members (e.g., small children and seniors) in the event of community containment measures (e.g., school closings).
- Calculate the minimum number and categories of staff members needed to keep the office/practice open during a pandemic outbreak and use temporary staff members, if necessary, or close the office/practice. Identify your staff members in the following chart:
<table>
<thead>
<tr>
<th>Categories of Staff</th>
<th>Number Needed</th>
<th>Other Staff that Can Cover</th>
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Once a Pandemic Is Announced

STEP 1. During a pandemic outbreak, when scheduling appointments:

- Screen patients to determine who requires medical evaluation.
- Limit office appointments to those that are medically necessary.
- Implement procedures to manage patient care at the height of a pandemic, such as temporarily canceling nonessential medical visits and scheduling separate blocks of time for non-pandemic and pandemic-related patient care.
- Discuss and coordinate plans and criteria for the disposition of patients following medical evaluation to hospitals, home health, or other community health agencies.

STEP 2. In the event of a pandemic, implement the following:

- Post signs asking patients and others to notify the reception staff if they have symptoms of the pandemic agent.
- Direct patients with symptoms of pandemic agents to a specific waiting area segregated from other patients in the waiting area. When this is not possible, require these patients to use masks (if they can wear them).
- Require all symptomatic patients to practice respiratory hygiene and cough etiquette. Post signs instructing symptomatic persons to wear a mask (provide adult and pediatric sizes) or use tissues to cover their cough.
- Provide receptacles for disposal and hand hygiene materials in waiting areas and examination rooms.
- Designate separate exam rooms for patients with pandemic symptoms versus those without a pandemic-like illness.
- Depending on the transmission dynamics of the pandemic, ensure that all staff members use either standard and droplet precautions or airborne precautions (i.e., training and use of respirators in accordance with OSHA respiratory protection standard 1910.134) with symptomatic patients. Provide masks or respirators, depending on risk factors, to reception and triage staff members and others at initial points of contact with patients.
STEP 3. During a pandemic, establish a surveillance report to monitor and review pandemic activity (including seasonal influenza activity) in patients.

- Use the report to evaluate your practice’s ability to meet the needs of patients during a pandemic. Include one or more of the following in your pandemic report:
  - A (circle one) daily or weekly summary report of patients seen with influenza-like/pandemic-like illness
  - A (circle one) daily or weekly summary report of patients calling into the office with influenza-like/pandemic-like illness
  - Other: _____________________________________________________.

The surveillance report will be reviewed by:

_________________________________________       ________________________
Name        Title

This person will also report unusual cases of influenza-like/pandemic-like illnesses to the local or state health department on the same day the patient was seen.

STEP 4. Manage staff members with pandemic symptoms by following the directions from CDC and your local/state public health department:

- Staff members who become ill at work will be evaluated and advised what steps to take for self-care, and when they can return to work if they are relieved of their work duties.
- Staff members who need to care for their ill family members must make arrangements with their immediate supervisor.
- During a non-pandemic period, staff members with symptoms will be evaluated and tested before they report to duty.
- Counseling, mental health, and faith-based resources will be made available to staff members during a pandemic.
- Place staff members who are at risk for influenza/pandemic complications (e.g., pregnant women and immunocompromised healthcare workers) on administrative leave or provide an alternate work location that reduces their risk of exposure.

STEP 5. Manage supplies during a pandemic:

- Estimate consumables (e.g., masks, respirators, gloves, and hand hygiene products) and other medical supplies that will be needed in the event of a pandemic and use this estimate to guide purchases of these items.
- Use the normal means of purchasing medical supplies when possible. When normal means are not accessible, develop a contingency plan, including requesting supplies from alternative sources.
- Stockpile at least 1 week’s worth of supplies and consumable resources, as available, when there is evidence that a pandemic has reached the United States.
OSHA Enforcement for a Pandemic

The CDC has amended the interim guidance for the 2010–2011 flu season with “Prevention Strategies for Seasonal Influenza in Healthcare Settings,” in which the use of N95 respirators has been relaxed. The following recommendations for OSHA compliance are based on the CDC guidance and previously published OSHA documents on pandemic planning and enforcement procedures.

Identifying Very High and High Exposure Risks

Settings in which OSHA will investigate and enforce compliance on pandemic exposures include hospitals, emergency medical centers, doctors’ and dental offices, and clinics. Very high and high exposures are identified as follows:

**Very High Exposure Risk:** A job task or activity involving a medical or laboratory procedure during which there is a potential of occupational exposure to high concentrations of suspected or confirmed pandemic agent.

- Healthcare workers performing aerosol-generating procedures (such as sputum inductions, endotracheal intubations and extubations, bronchoscopies, some dental procedures, or invasive specimen collection) on suspected or confirmed patients.
- Workers present during aerosol-generating procedures and autopsies.

**High Exposure Risk:** A job task or activity involving a high potential for exposure to suspected or confirmed pandemic agent.

- Healthcare workers who are in close contact (working within 6 feet of suspected or confirmed patients or entering into a small enclosed airspace shared with the patient [e.g., size of an average patient room]).
- Staff members transporting suspected or confirmed pandemic patients in enclosed vehicles (e.g., emergency responders).

For these types of exposures, OSHA compliance safety and health officers (CSHO) will seek confirmation that the healthcare facility has implemented a hierarchy of engineering, administrative, work practice controls, and personal protective equipment, including following the Respiratory Protection standard for worker training and fit testing where respirators are required.

The suggested hierarchy of controls includes:

**Eliminating source of infection**

- Postpone elective visits/procedures if influenza-like illness/pandemic symptoms are present
- Deny entry to ill visitors, keep ill personnel at home

**Engineering controls**

- Aerosol-generating procedures (use airborne infection isolation room)
- Physical barriers/partitions in triage areas
- Soap dispensers, trash containers
Administrative controls

- Vaccination, if available
- Screening and enforcing exclusion of ill staff members and visitors
- Educate patients and visitors—cough etiquette, hand hygiene, surgical masks, if needed
- Limiting the number of healthcare workers present during aerosol-generating procedures to only those essential to patient care.
- Not allowing unprotected healthcare workers in rooms where aerosol-generating procedures have been conducted until sufficient time has elapsed to remove potentially infectious particles

Personal protective equipment

- Gloves, gown, face masks, and eye protection, as appropriate
- Use of fit-tested N95s or PAPRs for aerosol-producing procedures. Use of face masks is acceptable protection for routine care.

Dealing with N95 Respirator Shortages

Should the demand for N95 respirators exceed available supplies, it is critical that employers make a good-faith effort to obtain respirators and use all available means to maximize the availability of respiratory protection by considering the following:

- Clearly identify and communicate to workers which tasks require the use of respiratory protection
- Reduce the number of workers who need to use respiratory protection by using the workplace controls and work practices identified above
- Substitute alternatives to N95 disposable respirators (e.g., more protective disposable respirators, elastomeric tight-fitting respirators, and PAPRs)
- Extend the use of or reuse N95 disposable respirators
- Prioritize the use of N95 disposable respirators

Prioritize Your Facility’s Use of N95 Respirators

When a shortage of N95 respirators exists, a prioritizing plan includes: Use N95 or higher level of protection (e.g., PAPR) for high-risk procedures such as those that generate aerosols (e.g., bronchoscopy)

- If NOT performing a high-risk procedure, prioritize use of either N95 or surgical mask based on:
  - Vaccination status of worker
  - Whether worker is in a high-risk group for complications (e.g., pregnant)
  - Frequency of close exposure procedures and contact
- Consider extending use of disposable N95 respirators in special situations for multiple patient encounters (e.g., during triage)

The CDC provides a useful guide to prioritizing N95 respirator use for non-aerosol-generating procedures in the table below.
### Prioritization of Respiratory Protection During Respirator Shortages for Healthcare Personnel Not Participating in Aerosol-Generating Procedures

(Numbers 1–4 indicate relative priorities for respiratory protection, with 1 being the highest priority and 4 being the lowest priority)

<table>
<thead>
<tr>
<th>Exposure Scenario</th>
<th>Not Vaccinated</th>
<th>Vaccinated</th>
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<tbody>
<tr>
<td><strong>Personnel Without Risk Factors for Influenza-Related Complications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Routine care—frequent close exposure</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Routine care—infrequent close exposure</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Personnel With Risk Factors for Influenza-Related Complications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Routine care—frequent close exposure</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Routine care—infrequent close exposure</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

- a. This table is provided as an example of prioritization that considers intensity and duration of exposure, personal health risk factors for complications of infection, and vaccination status. Advance planning is critical to efficient implementation of prioritized use during supply shortages.
- b. Not vaccinated: not vaccinated or less than 14 days after vaccination. Consider including those with immunosuppressive conditions or treatment with immunosuppressive therapies anticipated to impair vaccine response in this group.
- c. Vaccinated: 14 or more days after vaccination.
- d. See section on “Healthcare Personnel at Higher Risk for Complications of Influenza” for list of personal risk factors for influenza-related complications; also see: www.cdc.gov/h1n1flu/recommendations.htm.
- e. Personnel frequently in close contact with patients with suspected or confirmed 2009 H1N1 influenza. For the purposes of this document, close contact is defined as working within 6 ft. of the patient or entering into a small enclosed airspace shared with the patient (e.g., average patient room). This generally includes personnel working in settings where cases of suspected or confirmed 2009 H1N1 influenza are routinely seen (e.g., emergency departments and primary care in environments such as clinics in outpatient settings, employee healthcare facilities, and correctional facilities).
- f. Personnel infrequently in close contact with patients with suspected or confirmed 2009 H1N1 influenza. This generally includes personnel working in settings where cases of suspected or confirmed 2009 H1N1 influenza are not routinely seen and/or having job duties not involving close contact.
- g. Gathering of personal information for the purposes of pandemic planning and response must be done in a fashion that is compliant with all applicable rules and regulations, including the Americans with Disabilities Act (ADA). A short technical assistance document is available at the following Web address: www.eeoc.gov/facts/pandemic_flu.html. Consider offering alternative work environments as an accommodation for employees at highest risk for complications of influenza during periods of increased influenza activity or if influenza severity increases.

**Source:** Interim Guidance on Infection Control Measures for 2009 H1N1 Influenza in Healthcare Settings, Including Protection of Healthcare Personnel

### Documentation

As always with OSHA, documentation is a key component to compliance. Be sure you can produce the following:

- An up-to-date pandemic plan
- Consideration of the hierarchy of controls
- “Good faith” proof of your effort to provide respiratory protection that is at least as effective as N95 respirators
- If you are prioritizing respirators because of shortages, make sure the plan shows consideration for:
  - Vaccination status of workers
  - Type of procedure (routine care vs. aerosol generating)
  - Frequency of close exposure
  - Risk factor of complications (pregnant workers)
  - Documentation of respirator shortage/evidence of attempt to buy
Pandemic Resources

2. Centers for Disease Prevention and Control, CDC (www.flu.gov)
3. OSHA Pandemic Influenza Web page (www.osha.gov/dsg/topics/pandemicflu)
4. CDC: Middle East Respiratory Syndrome (MERS) (www.cdc.gov/CORONAVIRUS/MERS)

MRSA Prevention and Control

*Staphylococcus aureus*, often referred to simply as “staph,” is a bacterium commonly found on the skin and nasal mucous membranes of healthy people. It may also be found in chronic sores such as those caused by psoriasis or eczema. MRSA is a variant of staph that is resistant to methicillin, the antibiotic most commonly used to treat staph infections.

At least three different *Staphylococcus aureus* strains found in the United States cause MRSA infections. The CDC works with state and local health departments to gather data from known cases as researchers attempt to determine why certain people get these infections. *Staphylococcus aureus* infects about 300,000 hospital patients per year; the CDC found that 64% of the *Staphylococcus aureus* strains in American hospitals were MRSA. The bacteria kill an estimated 13,000 Americans every year. About 2 million people in the United States, or 0.8% of the population, are estimated to carry MRSA in their nasal passages.

General risk factors for MRSA acquisition from hospital and community settings are well documented. Known risk factors include but are not limited to the following:

- Hospital admission in the previous year, with at least one underlying chronic illness.
- Admission to a nursing home in the previous year.
- Previous receipt of antibiotics during an admission.
- Diagnosis of skin or soft-tissue infection at admission.
- HIV infection.
- Injection drug use.
- Previous MRSA infection or colonization.
- Hemodialysis.

Colonization refers to the presence of microorganisms with growth and multiplication, but without tissue invasion or damage. In the case of MRSA, the body site most commonly colonized is the anterior nares. Other body sites often colonized with MRSA.
include open wounds, the respiratory tract, perineum, upper extremities, umbilicus (in infants), urinary tract, and axilla. MRSA colonization can serve as a reservoir for the spread of these microorganisms to others and can lead to infection in the host. Colonized patients are also known as asymptomatic carriers.

Infection is the entry and multiplication of microorganisms in the tissues of the host, leading to local or systemic signs and symptoms of infection.

**MRSA Transmission**

MRSA skin infections can occur anywhere on the body, and several factors make for easy MRSA transmission. NIOSH has identified these factors as the five Cs:

- Crowding.
- Frequent skin-to-skin Contact.
- Compromised skin (i.e., cuts or abrasions).
- Contaminated items or surfaces.
- Lack of Cleanliness.

Patients who already have a MRSA infection or who carry the bacteria on their bodies but do not have symptoms (i.e., are colonized) are the most common sources of transmission.

Effective efforts to eliminate MRSA transmission are guided by three main tenets:

- Using proper precautions when treating MRSA patients in the facility.
- Decreasing the probability of harboring MRSA in the environment.
- Taking appropriate actions if employees are infected with MRSA.

**Patient Precautions**

Flag records of MRSA-positive patients. Treat patients formerly infected with MRSA as potentially contagious, unless three or more surveillance nasal cultures indicate otherwise.

When possible, schedule a patient who is known to have MRSA as the last appointment of the day. If the patient cannot be scheduled at the end of the day, add 15 minutes onto the appointment time to allow for adequate decontamination following the patient visit.

Provide staff members with education and training in patient precautions that aid in the prevention of MRSA transmission. Perform staff training during initial workplace orientation and also during periodic educational updates for healthcare personnel. Refer to specific organizational experience with resistant bacteria and prevention strategies whenever applicable.
Hand Hygiene

The main mode of MRSA transmission is via hands (especially healthcare workers’ hands), which may become contaminated by contact with:

- Colonized or infected patients
- Colonized or infected body sites of the personnel themselves, or devices, items, or environmental surfaces contaminated with body fluids containing MRSA

Handwashing is the first and best way to stop the spread of MRSA. Staff members will:

- Wash hands using soap and water or alcohol-based hand sanitizers
- Wash and dry hands thoroughly before and after contact with every patient
- Wash and dry hands thoroughly after handling any potentially contaminated equipment
- Wash and dry hands thoroughly after removing gloves
- Wash and dry hands before touching items such as keyboards, instrument controls, exam tables, and positioners for x-rays or MRIs to avoid cross-contamination

The leadership staff and healthcare providers should be accountable for implementing a culture that supports and promotes appropriate hand hygiene practices.

Contact Precautions

MRSA-infected patients can be cared for safely. However, contact precautions are necessary to prevent cross-contamination to other patients and healthcare workers:

- Wear gloves when touching blood, body fluids, secretions, excretions, and contaminated items. During the course of providing care for a patient, change gloves after having contact with infective material that may contain high concentrations of MRSA (e.g., non-intact skin, fecal material, wound drainage, and mucous membranes). Because environmental surfaces may be contaminated, don gloves before or upon entry to a patient area. Remove gloves before leaving the patient area and wash hands immediately. Dry hands completely. After glove removal and handwashing, ensure that hands do not touch potentially contaminated environmental surfaces or items in the patient’s environment to avoid transfer of microorganisms to other patients and environments.
- Wear a mask and eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.
- Wear a gown to protect skin and prevent soiling of clothes during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions or cause soiling of clothing. Examples are if the patient is incontinent or has diarrhea, an ileostomy, a colostomy, or wound drainage not contained by a dressing. Don the gown upon entry to the patient area and remove it before leaving.
- Disinfect reusable patient care equipment or discard single-use items that are soiled with blood, body fluids, secretions, or excretions. An appropriate disinfectant is a 1:10 solution of ordinary household bleach, made up fresh daily, or an equivalent EPA-approved commercial product. Consider using disposable patient care items (e.g., blood pressure cuffs and tourniquets) for a known MRSA patient.
- Handle, transport, and process used linen soiled with blood, body fluids, secretions, or excretions in a biohazardous waste container.
- Use care when giving injections or placing IVs. Ensure that the site is covered immediately and blood from the puncture wound does not contact the pads or table. Clean and decontaminate any soiled areas immediately.
- Have patients change into clean or disposable garments prior to their examination.

**Environmental Cleaning**

By decreasing the probability of harboring MRSA in the environment, the risk of transmitting MRSA is reduced.

Clean rooms and equipment with an EPA-approved hospital-level disinfectant; follow the manufacturer’s instructions. Focus on obviously soiled surfaces and frequently touched surfaces. There is no need to routinely clean and disinfect walls, window drapes, and other vertical surfaces unless visibly soiled. Also, don’t fog the room with a disinfectant. Discard solutions used for cleaning and disinfection after use.

Environmental cleaning procedures should include the following:
- Visually inspect all exam tables, exam chairs, pads, etc., between patients. If body fluids are noted, disinfect immediately.
- Clean all surfaces of exam tables, exam chairs, pads, etc., with an appropriate disinfectant at least daily.
- Once per month, inspect exam tables, exam chairs, and pads with a magnifying glass to check for fraying or tearing. If present, replace or repair since decontamination will be impaired.
- Enclose any pillows used in waterproof coverings containing antimicrobial agents. Decontaminate covers daily (or immediately, if body fluids are noted to be present).
- If a patient has an open wound or history of MRSA, completely clean and disinfect the exam table, exam chair, and any pads, etc., before the next patient.
- Periodically clean the upholstered furniture and furnishings in patient waiting areas.
- Keep the environment as clean and dry as possible. Clean and dry all equipment after use.
**Infected Employees**

Workers in all healthcare settings, clinical and nonclinical, may be colonized or infected similarly to individuals from communities where CA-MRSA is becoming increasingly prevalent. It should not be assumed that a healthcare worker with MRSA has been infected from the workplace.

Unless advised by a healthcare provider, workers should not be routinely excluded from going to work, according to the CDC. Employees will keep areas of the skin affected by MRSA covered. A worker with wound drainage (i.e., pus) will cover the area with clean, dry bandages and follow his or her healthcare provider’s instructions on proper care of the wound. Since pus from infected wounds can contain MRSA, keeping the infection covered will help prevent the spread of MRSA to others.

Work exclusions should be reserved for:

- Employees with wound drainage that cannot be reliably contained by a dressing or other barrier method or workers who cannot maintain good hygiene practices.
- Employees with active infections who participate in activities in which skin-to-skin contact with affected skin areas is likely to occur.

Culturing to establish colonization is generally not indicated. No work restrictions are necessary for colonized personnel unless they have been epidemiologically implicated in *Staphylococcus aureus* transmission within the facility.

If there is evidence linking a healthcare staff member to ongoing transmission, obtain cultures from the individual for evaluation using one sterile swab moistened with sterile saline. Gently swirl the swab in each anterior nare (i.e., the opening of each nostril) for two to three seconds. The same swab can be used for both nares.

Place the swab in a transport system and label prior to shipping to a qualified laboratory for identification and susceptibility testing. The laboratory should be instructed to screen the specimen for MRSA only.

Treatment of a MRSA carrier state among healthcare workers appears to have no effect on the spread of MRSA. Therefore, routine decolonization of staff members is not recommended.

**MRSA Resources**

4. NIOSH: “MRSA and the Workplace.” www.cdc.gov/niosh/topics/mrsa
Pertussis and Worker Vaccination

Reports of whooping cough (pertussis) were at an all-time high in the U.S. during 2010 and 2011, according to the CDC. The increase in pertussis reports prompted the Advisory Committee on Immunization Practices (ACIP) to alter the vaccination guidelines for healthcare workers in February 2011.

ACIP recommends a dose of Tdap for previously unvaccinated healthcare personnel regardless of age. This expands the recommendation to healthcare personnel older than 64 years regardless of the type of patient contact. This change is included in the Healthcare Worker Vaccination Recommendations (Revised 2011) table in Tab 12 of the OSHA Program Manual.

ACIP also made amended post-exposure prophylaxis recommendations for healthcare personnel who have already received Tdap vaccine. Staff members who “are exposed and are expected to have contact with persons at high-risk of severe pertussis disease (e.g., hospitalized neonates and pregnant women) need to receive post-exposure prophylaxis,” according to ACIP. If a vaccinated staff member has been exposed but is not in contact with at-risk patients, the facility has the option of providing postexposure prophylaxis or monitoring the worker for 21 days after exposure and treating at the onset of signs and symptoms of pertussis.

The ACIP changes are recommendations only. There is no specific requirement under federal OSHA to provide the Tdap vaccination to potentially exposed workers, but OSHA could cite the employer under the General Duty Clause for failing to protect workers from hazards that were known to be present in the workplace.

Also, employers should check with the state health department for regulations specific to pertussis vaccination.