LAW ENFORCEMENT MANAGEMENT INSTITUTE

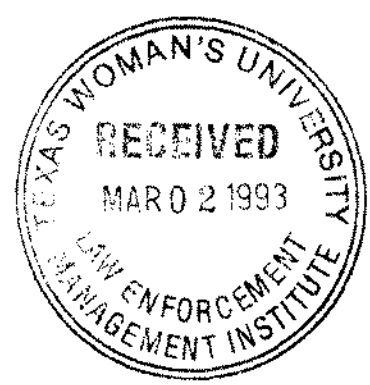
TB: THE NEXT EPIDEMIC IN COUNTY JAILS

A RESEARCH PAPER

SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR

MODULE II



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I. INTRODUCTION

Tuberculosis is a disease that everyone has heard of, but almost no one knows anything about. Tuberculosis, better known as TB, suddenly became of interest to me when I learned that I had been exposed to the disease.

In June of 1992, an inmate in a privately operated jail in our county was found to have an infectious case of TB, and all employees were to be tested. Because I spent a significant amount of time at the facility conducting investigations, I too was tested. When the skin test came back positive, I asked other people in the jail business what the test meant, discovering that most of their information proved to be inaccurate. What was even more worrisome was that most jailers had no information at all.

As a result of this experience, I asked many questions of health officials and did a considerable amount of reading on the subject of TB. This paper will be of help to jail officials, who have a genuine need for the information. Even more importantly, this information may help others to avoid the devastating fear that my family and I experienced when we believed that I might have the dreaded disease.

II. THE HISTORY OF TB

The Early Days

The beginnings of TB are unknown, but in the early writings of Greece, India, Italy, France, England, and China there is frequent mention of a wasting, protracted, and in those times, usually fatal disease. As with all such diseases, man began his attempt to explain it.

Punishment for sins, acidity of the blood, bad eating habits, heaviness of air, and heredity were at various times named the causes of this wasting away that was called "consumption" or the "white plague." Treatments included cold baths, bleeding the patient, use of agents to cause vomiting, horseback riding to stir the blood, suckling of human milk, and eating boiled crocodile meat, among others.

One form of TB that is relatively easy to recognize in early writings is TB of the bone, which frequently caused crumbling of the backbone. Relics found in Egypt and Peru depicting hunchbacks indicate that this form of TB was an old and widespread disease. Victor Hugo's hunchback of Notre Dame was a victim of the disease, as was Punch of England's "Punch and Judy" fame.[1] Much TB of the bone came from drinking raw milk from tuberculosis-infected cows prior to pasteurization.

Another form of TB which affected the neck was called Scrofula. It was so common in the Middle Ages that clothes

were especially designed to accommodate the swelling it caused. Scrofula was also called the "King's Evil," since it was believed that the king could heal it with his divine touch.

The Oxford English Dictionary records "consumption" as a synonym for pulmonary TB as early as 1398.[2] TB was understood as a disease of extreme contrasts: white pallor and red flush; hyperactivity alternating with languidness. The disease produced spells of euphoria, increased appetite, and exacerbated sexual desire. TB was imagined to be an aphrodisiac and to confer extraordinary powers of seduction. The rosy cheeks produced by TB looked like vitality but were actually the result of fever and often symptomatic of approaching death.

Nineteenth century literature reflects the belief that the fever of TB was a sign of too much passion, as if the victim were being consumed by love. Romantics described TB as the image of "diseased love" or a "passion that consumes."[3] Death from TB was described as symptomless, unfrightened, and beautiful making the loss of children, such as Little Eva in Uncle Tom's Cabin, and Domby's son, Paul in Nicholas Nickleby, more bearable.[4]

During the Industrial Revolution, as people moved from the country to the crowded cities, TB reached epidemic proportions and was responsible for one out of every four deaths.[5] The disease also spread wildly whenever the

white man moved to areas where TB was not previously known, such as the South Sea islands, Australia, and the North American continent. Medical writings as far back as the seventeenth century were more speculation than knowledge. Experts of the time knew that tubercles found in the lungs of deceased victims were related to the disease, but no one understood what caused them. Richard Morton, a renowned pathologist of his time, identified fever with tubercles as symptoms of TB but blamed them on everything from bad diet, to smoky air, to troublesome passions.

In 1819, when germs were still unknown, Rene Laennec, a Frenchman, invented the stethoscope to listen better to the chests of suspected TB patients. Laennec later died of TB at the age of forty-five.[6]

Another Frenchman, Jean Villemin, an army surgeon, discovered that TB was contagious. He noticed that whenever men crowded together in army tents or hospitals, a higher incidence of TB resulted. Villemin conducted several controlled experiments in which he placed TB tissue and discharges under the skin of rabbits who later developed the disease. He did not know the cause, but insisted TB was contagious and was the result of one cause.

Louis Pasteur, a French chemist, later confirmed the existence of germs, proving Villemin right. Pasteur proved that one germ causes one disease. He demonstrated the destruction of germs with heat (pasteurization) and worked

out the principle of vaccines, successfully inoculating sheep against anthrax.

Finally, in 1882, a German named Robert Koch identified the TB germ. He isolated the germ and grew it outside the body. Koch then inoculated healthy animals with the germ, and they became ill with the disease. The germ was one ten-thousandth of an inch in length.[7]

Soon, scientists understood how TB works. The rod-shaped tubercle bacillus is a tough germ. Sunlight will kill it outside the body in a few hours, but it can live for days in dust that is out of the sun, and for weeks and months in a moist dark spot. When germs that have been breathed into the lungs take hold, they create an infection. Immediately, special types of the anti-infection white blood cells of the body attack. Like a spider encasing its prey, they weave a web around the germ. This web gradually grows into a strong wall, forming a tiny hard lump called a tubercle, which may later become calcified. The germs cannot do any harm while they are sealed inside, even if they are alive. The body fights off the infection and there is no disease.

Many years later, in a person weakened by illness, overwork, bad living conditions, or long emotional stress, the walls of the tubercle may break down or a new batch of germs may be taken in and the body is unable to resist them. Then the disease begins.

Treatment in Koch's time did not include any drug to kill the germ. The only type of surgical treatment that was practiced was to collapse a lung to give it time to rest or to remove all or part of a damaged lung.

Rest was important to allow the body time to build the web-like structures. Sanitoriums developed in Europe allowed this rest and isolation of patients with the disease. The belief was that wherever a patient contracted the disease was the wrong place to be. Therefore, since most patients developed TB in crowded cities, many sanitoriums were established at the seashore, in the mountains, in the woods, and in dry desert type areas. The first sanitorium in the United States was established in 1844 by a young American doctor who had TB. By 1954, there were more than 110,000 beds devoted to the care of TB patients in the U.S.[8]

While progress had been made, much remained to be done. In 1900, TB was the most feared illness in the world, killing half of those who contracted it.[9]

The Plague Ends

The greatest step toward the detection of TB occurred in 1895 with the invention of the x-ray. Discovered by German physicist Professor William Conrad Roentgen, it was called "x" for "unknown" because he was not sure how the ray could see through his hand. Although the x-ray was not

available for widespread use for many years, it allowed doctors to look inside the lungs of patients and see abnormalities symptomatic of TB.

While sanitoriums were the primary treatment centers for TB well into the 20th century, scientists sought a drug cure. Koch, who had first isolated the TB germ, developed tuberculin, a vaccine made from the germ. Although it did not work to prevent the disease, it proved to be a good test for the disease when placed under the skin.

Dr. S. A. Waksman isolated streptomycin in 1944 and found that it arrested the growth of TB.[10] It caused patients to show an improvement but was not a cure. Because Dr. Waksman also had many concerns about the toxic effect of the drug, it was used in very low doses for extended periods of time. During a twelve month period in 1947-48, almost $7 million was spent on TB research. Of the money spent, over $4 million was used for the study of drugs, chiefly streptomycin.[11]

Victory over the dreaded TB germ finally came with the introduction of isoniazid as a treatment in 1952. Although the drug was discovered in 1912 when it was compounded by two Austrian chemists, Hans Meyer and Joseph Mally, it was not tested on TB for almost forty years.[12]

In 1900, 194 people out of every hundred thousand died from TB. By 1952, the fatality rate had dropped to an astonishing twenty-five per hundred thousand.[13] With skin

tests, x-rays, and isoniazid, TB seemed well on its way to extinction.

The Plague Returns

As recently as 1980, young medical students were taken to the few remaining TB sanitoriums to catch a "last" glimpse of the disease. It was believed that the disease had been controlled to such a great extent that it would be gone forever within a few years. Ironically, 1980 marked the first time in over twenty-five years that the number of TB cases actually rose in the United States.[14]

By 1986, public health officials began to notice a major resurgence of the disease, particularly in the inner cities, and the problem has continued to grow with each passing year. In 1989, the U.S. had a 5% increase in reported TB cases over the previous year. In 1990, 25,701 cases were reported nationwide representing a 9% increase over 1989.[15] During this same period, major cities experienced even more dramatic increases in reported cases: Houston 17%,[16] Dallas 14%,[17] and New York 38%.[18] Los Angeles, Chicago, Detroit, and other major population centers noted the same startling increases.

The reasons for these staggering increases in reported cases seem to fall into five general categories: immigration; the HIV epidemic; homeless people; new drug resistant strains of TB; and a relaxed stance on the part of the medical community and government toward TB.

Immigration is a contributor because of the fact that developing countries have a serious TB problem. The U.S. Centers for Disease Control (CDC) estimates that worldwide, 7.1 million new cases of TB occur each year, and the disease kills more than 2.5 million people annually.[19] TB has never been dealt with effectively in most countries around the world. With the mass migration of people from these countries to the U.S., an epidemic was inevitable.

The HIV problem, which came to light in the early 1980's, is also greatly responsible for the TB increase. Patients who develop HIV infection lose their ability to fight off the dormant TB germ, causing them to become active carriers and spread TB. Furthermore, HIV is running rampant in many countries in Africa, and many of these people are immigrating to the U.S.

The national problem of the homeless has contributed greatly to the spread of TB. Many of these homeless individuals and families are forced to live in crowded, dirty, poorly ventilated shelters in the major cities. One infectious TB patient can quickly infect hundreds of others in a shelter. What further aggravates the problem is that if the carrier is typical, he has moved on to some other location before he can be identified and treated.

The fourth area is perhaps the most alarming. During recent years, new strains of TB that are resistant to currently used drug programs have been found. In the U.S.,

drug resistant TB has already been identified in forty states.[20] In one New York City hospital, almost 25% of the cases of TB diagnosed in 1991 were of the drug resistant type.[21] This frightening resistance to drugs often results from the transient population. Normally, treatment of TB with medication is a long term process and takes several months to complete. When a patient is identified as an active carrier he begins to take the drugs. Transients, though, are likely to take the medication for a short period of time and then move on, abandoning the program. This brief exposure to the medication allows the TB to become immune to the drug before the drug can kill the germ. The resultant bacteria do not respond to typical treatment.

The final contributing factor in the resurgence of TB has been the relaxed stance toward TB by health care providers and the government. Once TB was thought to be almost eliminated, most doctors stopped looking for it. As explained earlier, few doctors practicing currently, had ever seen an infectious case of TB until the current epidemic struck. Without doubt, they misdiagnosed TB as other ailments. Furthermore, routine skin tests were abandoned, and most government funding of TB related programs was stopped when the disease declined. Now the medical community is acutely aware of the return of the "white plague." The number of recent articles dealing with the subject in magazines and medical journals is staggering.

An urgent need now exists to educate those outside the medical profession about the implications of the current TB outbreak. If this crisis is to be brought under control, this education must extend to school officials, homeless shelter operators, and jail administrators.

III. CURRENT MEDICAL KNOWLEDGE REGARDING TB

Non-drug resistant TB is curable, even in those with HIV infection. Currently available drugs can treat and stop the spread of infectious TB at a cost of about $6,000 to $8,000 per patient.[22] In drug-resistant strains of the disease, combinations of medications have proven to be somewhat effective; however, the mortality rate for these patients remains at 70% to 90%, and costs range between $100,000 and $200,000 per patient.[23]

According to the Centers for Disease Control of the U.S. Department of Health, the following information reflects the current medical understanding of TB and its effects.[24]

The Spreading of TB

Tuberculosis is caused by a bacterium (Mycobacterium tuberculosis), often called the tubercle bacillus. TB is spread through the air by tiny airborne particles (called "droplet nuclei") which contain tubercle bacilli. People with infectious TB of the lung or larynx produce these small droplets when they cough, sneeze, sing, or talk. Droplet nuclei can remain suspended in the air, unless ventilated outside, and can then be inhaled by others.

Contact with contaminated food, dishes, clothing, or water will not spread TB. Smoking does not cause TB,

although the frequent coughing of a smoker with TB may facilitate the spread of TB infection.

TB Infection

Tubercle bacilli can enter the lungs of a person who breathes the air contaminated by someone with infectious TB. The bacteria multiply in the lungs for a short time before the immune system controls their growth. This stage is referred to as TB infection rather than the active disease. However, the tubercle bacilli remain dormant in the body and can become active and cause clinical disease later in life.

TB Disease

Some people with TB infection will develop TB disease, either immediately after infection or many years later. Certain factors that suppress the immune system increase the risk of developing TB disease. Among these factors are HIV infection, chemotherapy, malnutrition, and the abuse of drugs or alcohol. In a person with TB infection, HIV infection is by far the strongest identified risk factor for developing active TB disease.

The general symptoms of TB disease may include: lethargy, weakness, weight loss, loss of appetite, fever, and/or night sweats. Most cases of TB disease are diagnosed when symptoms prompt the person to seek medical care. Symptoms of TB have often been present for weeks or months

before this point.

The most common site of TB disease is in one or both lungs. The disease at this site, called pulmonary TB, may produce chronic cough, chest pain, and coughing up blood. TB can also occur at any other site in the body, including the kidneys, brain, or spine. Symptoms vary depending on the site affected.

The Connection Between TB and HIV Infection

A person with both HIV infection and TB infection is far more likely to develop TB disease than a person with TB infection alone. HIV weakens the body's immune system, allowing the tubercle bacilli to multiply and spread rapidly. HIV-infected persons also are more prone to developing TB in sites other than the lungs, especially in the lymph nodes.

Current Diagnosis and Treatment Methods

Although a later section of this paper discusses specific screening guidelines, a general description of TB testing and treatment are helpful.

Generally, the first step in identification of TB is generally the skin test. The Mantoux tuberculin skin test involves injecting a small amount of purified protein derivative (PPD) of killed tubercle bacilli under the skin of the forearm. A trained health care worker examines the

site for reaction 48-72 hours later. If a reaction appears and measures 10 mm or more, the skin test is "positive." This positive reaction generally means that TB infection but not necessarily the disease, is present. No reaction, or reactions smaller than 10 mm, are "negative."

Positive skin tests dictate chest x-rays. If the chest x-ray is normal, the patient may need to take a drug treatment for approximately six months to kill the TB germ in his system. If the chest x-ray shows some abnormality, TB disease may be present.

Patients with abnormal chest x-rays should then be required to submit sputum samples (material coughed up from deep within the lungs). A laboratory will culture these sputum samples to determine positively if TB disease is present. Because these cultures can take up to twelve weeks to grow, patients with abnormal chest x-rays are generally treated as "suspect" disease carriers and are immediately placed on medication to prevent possible spread of the disease.

Currently several drugs, singularly and in combination, are used to treat both the TB infection and the TB disease. These are Isoniazid (INH), Rifampin (RIF), Pyrazinamide (PZA), and Ethambutol (EMB). Based on the type of treatment prescribed, patients take the drug(s) daily for a period of two to twelve months. Drug-resistant TB may require combinations of drug treatment for up to two years.[25]

Since tubercle bacilli are very difficult to kill, TB can recur if a drug treatment program ends too soon or is interrupted. Such a relapse frequently involves the emergence of drug-resistant tubercle bacilli, making treatment much more complex and expensive. Unless a patient completes a preventive or curative treatment program without interruption, chances increase for TB disease development or recurrence, and the person may become infectious.

IV. THE IMPACT OF TB ON COUNTY JAILS

Medical Implications

According to the Centers for Disease Control (CDC), TB is a major problem in correctional facilities, where TB cases occur overall at least three times more often than in the general adult population.[26] The CDC further advises that in correctional facilities screening inmates for TB, infection levels of 10% to 20% are common.[27] The CDC attributes these high rates to the overrepresentation of populations at high risk for TB in prisons and jails, the ease of transmission of TB infection within those facilities, and the overrepresentation of persons at risk for HIV infection.

Both TB and HIV strike hardest among the poor and minority groups, especially those who are intravenous drug users, according to the CDC. They also point out that the population group most at risk are 25 to 44 year-old males.[28] Most jail administrators would readily agree that these groups have been historically overrepresented in county jail populations.

From 1982 to 1989, the population in correctional facilities across the nation grew by 114%[29] Prison overcrowding at the state level has caused a backlog of thousands of convicted inmates in the county jails of Texas. Many "prison" inmates now serve their entire sentences in

county jails. This increased length of stay causes all inmate medical treatment to become the responsibility of the jail administrators, who seldom have the necessary resources to respond to these needs.

In addition, the physical facilities of many of the county jails of Texas facilitate the spread of TB. Many of these jails are old structures with inadequate ventilation systems; coupled with overcrowding, conditions are prime for the spread of TB. These older jails were not designed for long incarceration, and most do not have adequate medical treatment facilities or enough isolation cells for inmates with contagious disease.

Dr. Jeffrey Stark, a tuberculosis expert with Baylor College of Medicine, stated recently, "If you were going to build a building to transmit tuberculosis, you couldn't do a better job than that at the Harris County Jail."[30] Stark claims that poor ventilation in the jail coupled with chronic overcrowding creates a perfect site to spread TB to inmates, who then take the disease home with them.

These factors place both inmates and staff at high risk for acquiring TB infection. A single case of infectious TB has the potential to spread TB to large numbers of inmates, staff, and visitors.

Civil Liability Implications

Inmates of county jails have proven the old adage, "anybody can sue anybody for anything," time and again. With respect to TB however, the threat of a lawsuit by an inmate who contracts the disease while in jail is very serious.

Article 217.09.014 of the Texas Jail Standards deals with communicable disease. It requires that "Inmates suspected of having any type of communicable disease shall be isolated and immediate arrangements must be made for their transfer to a facility equipped to handle the suspected disease, unless the admitting facility can safely and effectively segregate and maintain a medically prescribed course of treatment."[31]

Based on this requirement by the state, any inmate who contracted TB or some other communicable disease while in jail could bring suit in state civil court. The inmate might charge that if jail officials had abided by the standard set out above, he could not have possibly contracted the disease. Although a court must decide each case, the inmate would have a fair chance of winning such a suit.

Furthermore, inmates are filing a multitude of suits in Federal Court under Section 1983 of the Civil Rights Act. With respect to TB, the suit would probably allege that the inmate was subject to "cruel and unusual punishment" in

violation of the 8th Amendment to the U.S. Constitution. The inmate would assert this claim stating that he was exposed to the disease while in custody and that jail administrators should have taken proper precautions to prevent such exposure. Inmates may contend that their sentence was for a specified number of years, but contracting TB actually caused them to be a lifelong prisoner of the disease. The test for culpability in 1983 civil rights cases is "deliberate indifference" on the part of jail officials. Although the Federal Courts are having a difficult time defining the term themselves, deliberate indifference seems to mean "a conscious disregard of some standard that the defendant knew or should have known." It is not farfetched to believe that when an inmate, who has all the classic symptoms of TB or some other contagious disease, is booked into the jail and the jail staff take no action to prevent contagion, they may be "deliberately indifferent." If the jail has a contagious disease screening policy in effect but the staff take no action, they are almost certainly meeting the criterion of deliberate indifference. Win or lose in Federal Court, the costs incurred in defending such a suit are staggering.

Another area of concern is that of jail employees exposed to the disease. When an infectious TB case appears in the jail, screening employees will involve many hours of work time lost. A positive skin test will dictate the use

of even more time and expense for follow-up visits and medication programs. Although revisions in worker compensation laws over the past few years have limited liability, rates can skyrocket in the event of a disproportionate number of claims. Perhaps the most important issue in discussing TB and jail employees is the human factor. Jail administrators owe it to their often overworked and underpaid employees to provide as safe a work environment as possible.

V. PROPOSED POLICIES FOR DEALING WITH TB

The CDC recommends the following guidelines for use in correctional facilities.[32]

TB Control

Every jail should appoint one staff member as TB Control Officer to oversee TB control and prevention efforts. An effective TB control program should consist of surveillance, containment, and assessment activities. The TB Control Officer ensures that inmates and staff get necessary TB screening and treatment services.

Surveillance

Surveillance is the close monitoring of all inmates and staff to identify TB infection and TB disease. Surveillance includes screening, diagnosis, case reporting, and contact investigations. Comprehensive and regular surveillance activities are essential to detect and prevent transmission of the disease. Surveillance is the only way to determine the current status and trends of TB in the jail. Jail administrators should consider every new inmate or employee a potential transmitter of TB infection until proven otherwise.

Screening

Employment or admission procedures should include the Mantoux skin test. After the initial screening, all inmates and all staff who work with inmates should take the skin test annually. More frequent screening should take place in the event of an increase in incidence of either TB or HIV or an increase in the number of positive TB skin tests.

Inmates and employees who have a positive skin test should receive a chest x-ray to rule out active disease, with an accompanying evaluation for preventive therapy. All persons with, or at risk for, HIV infection should receive an x-ray as part of initial screening, regardless of skin test reaction.

A chest x-ray should always be done within seventy-two hours of a positive TB skin test reading. A chest x-ray and sputum smear and culture should always be done within seventy-two hours of identification of such symptoms of TB as: productive cough, coughing up blood, weight loss, loss of appetite, lethargy, weakness, night sweats, or fever.

The CDC has a flow chart titled "GUIDELINES FOR SCREENING OF STAFF AND INMATES," a copy of which is included in Appendix I.

Diagnosis of TB Cases

Inmates or staff with TB symptoms and/or chest x-rays indicative of TB will need further tests, such as sputum or

other bacteriologic specimens.

Initially, a series of three early morning sputum specimens should be collected on successive days and examined by smear and culture. Supervision should be used to insure proper specimen collection. Coaching is often required so that the specimens are secretions brought up from the lungs (sputum), not from the nose or mouth (saliva). Patients may be told to inhale deeply and exhale three times and then inhale swiftly, cough deeply, and spit into the sputum container.

Until culture results return, the symptomatic patient is a "suspect" case. The only way to confirm the diagnosis of TB is to identify Mycobacterium tuberculosis through culture.

Diagnosis of extrapulmonary (not of the lungs) TB can be difficult. This disease can affect many sites other than the lungs, and symptoms will be different for each site. When extrapulmonary TB is suspected, other clinical specimens are necessary. Extrapulmonary TB occurs more often in HIV-infected persons than in persons without HIV infection.

Case Reporting

All suspected or diagnosed cases of TB must be reported to the health department; however, a positive skin test with no other symptoms does not have to be reported unless

accompanied by an abnormal chest x-ray. The jail must not wait for results of sputum smears and cultures before reporting a suspect TB case. The reporting of a TB case makes the resources of the health department available to assist in proper management of the case and in evaluation of contacts. In addition, each jail should maintain an in-house reporting and record-keeping system (see Appendix II).

Contact Investigation

Whenever TB disease is suspected or diagnosed, all close contacts should be skin tested unless the patient has a documented history of a positive skin test. Close contacts include any people who have shared air in an enclosed space with a potentially infectious TB case. Close contacts of inmates could include all cellmates, all inmates and staff on the same tier, or all inmates and staff in the building who share air. Visitors could also be close contacts of an infectious TB case, depending on the ventilation system in the jail, the type of contact allowed between inmates and visitors, and the infectiousness and behavior of the source inmate. Close contacts of staff or of recently admitted or released inmates could include friends, family members, and co-workers.

During contact investigations, investigators must maintain confidentiality concerning the person suspected of being infected. In most cases, the Texas Department of

Health will either conduct these investigations or furnish information on rules and regulations relative to them.

Contacts who have a positive skin test of 5 mm or more, have a history of a positive skin test, or are HIV positive, regardless of skin test results, should receive preventative therapy unless advised not to by a doctor. Contacts with an initially negative skin test should be retested within ten to twelve weeks.[33]

Containment

Containment activities prevent the transmission of TB infection. These activities include isolating suspects and infectious cases, treating all suspected and diagnosed cases, and providing preventive therapy to those with TB infection but no disease. Vital to containment efforts is education, openly addressing the questions and concerns of both inmates and staff.

Isolation

To prevent the spread of TB infection to staff and inmates, jail administrators must recognize and isolate anyone who has symptoms suggestive of TB disease. Whenever possible, inmates suspected of having TB should be placed in special medical isolation cells called AFB isolation rooms. These rooms should be under negative pressure so that all air currents come into the room, with air vented to the

outside of the building and not recirculated. If no such facility is available within the jail, the inmate should be transferred to some other facility which has an AFB isolation room. Inmates should be released from the isolation cell only after infectiousness has been ruled out. Three negative sputum smears collected on three consecutive days must be obtained before an inmate who has a positive smear can be considered non-infectious.

Some hospitals and homeless shelters use ultraviolet lights to kill tubercle bacilli in the air. This method may be effective in some high volume, high turnover holding facilities; however these lights should be supplemental to other control measures such as good ventilation.

Prevention of TB Disease

Preventive therapy substantially reduces the risk of developing active TB in infected persons. All persons with a positive skin test should consider preventive treatment when active disease is not present. Normally the health department will decide on the proper course based on a number of factors including the individual's risk assessment.

Treatment of TB cases

When symptoms and/or results of the skin test, chest x-ray and sputum smear suggest active TB, the person should

receive a TB treatment program consisting of drugs prescribed by a doctor until TB has been ruled out.

Compliance is a major issue in the treatment of TB in jails. When non-compliance occurs in a person with clinically active disease, the TB Control Officer may need to take special measures to ensure that the inmate ingests his medication, since such a person poses a serious threat to the health of others.

Jail personnel should monitor the patient's response to treatment, since the development of drug resistance can be a problem. Persons with clinically active disease should have sputum examinations at least monthly until they are negative as described previously. Persistence or reappearance of organisms in the sputum smear should create suspicion of a drug-resistant form of TB or non-compliance with therapy. In this event, medical personnel must re-evaluate the type of therapy.

To make sure that inmates take their medication, staff should directly observe the ingestion of each dose. Direct observation involves both watching the inmate swallow and checking the hands and mouth to insure compliance. Such measures are often the only way to ensure that the inmate has actually taken the medication.

Because some individuals may experience side effects when taking TB medication, the TB control officer should inform all staff members of the most common side effects.

Staff should immediately report any such observed side effect to the TB Control Officer.

Most inmates who have started treatment or preventive therapy will be leaving the jail before completing their medication program. In such a case, the local health department should follow this person's progress. The TB Control Officer should notify the health department prior to the inmate's release to insure that follow-up takes place.

Assessment

Assessment gives information on how effectively the TB control program is functioning. Assessment involves record-keeping and monitoring rates of infection and disease.

Jails should organize medical records to ensure monitoring of all inmates and staff, with precautions against record loss resulting from transfer, release, dismissal, or retirement. Medical records should include current TB skin test status and TB medication history. Jails should forward copies of such records to other facilities in case of transfer or to the health department in case of the inmate's release. This measure will insure continuity of care and will lower the risk of developing drug-resistant strains of the disease as a result of treatment lapses.

Jail and health department staff should review these

evaluation measures annually comparing local data with data from other similar institutions in the area.

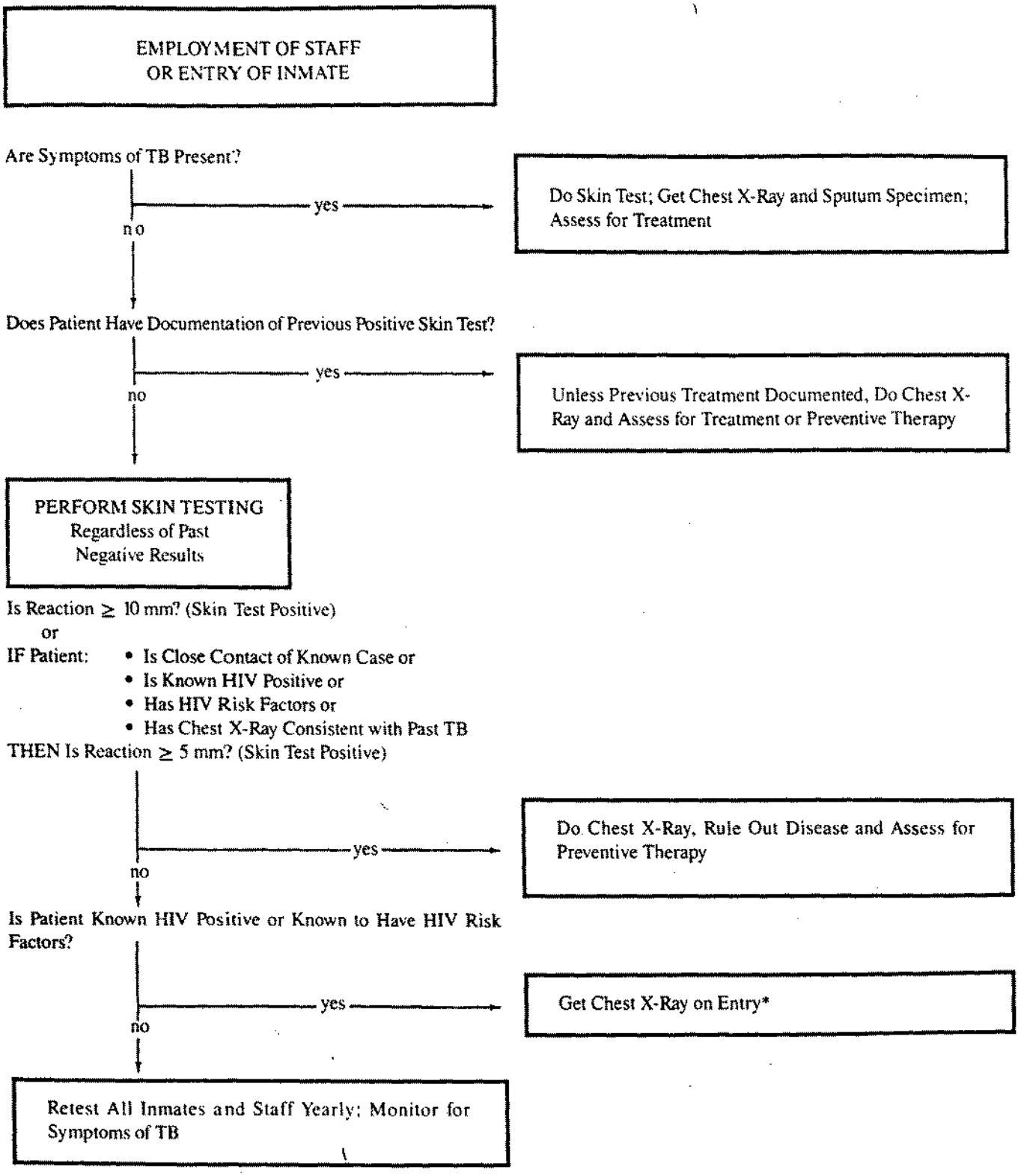
The CDC has a form titled "PROTOTYPE TUBERCULOSIS SUMMARY RECORD FOR CORRECTIONAL FACILITIES" and instructions for its use titled "Confidential Tuberculosis Summary Record." Both forms are included in Appendix II.

VI. CONCLUSION

TB, a highly contagious disease once believed to be near extinction, is on the increase in the U.S. Knowledge of the disease is especially important to county jail administrators, who must now deal with TB as well as other medical conditions present within their institutions since these facilities are often ideal breeding grounds for the illness. For the protection of staff, inmates, and ultimately the community with which these interact, corrections officials must create guidelines and procedures to deal with the new epidemic of this age-old disease.

VII. APPENDIX I

GUIDELINES FOR SCREENING OF STAFF AND INMATES



WHEN SYMPTOMS OF TB ARE PRESENT, ALWAYS SUSPECT TB, REGARDLESS OF SKIN TEST REACTION!

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* If the skin test is < 5 mm and the HIV test is positive, consider evaluating for anergy.

VIII. APPENDIX II

PROTOTYPE TUBERCULOSIS SUMMARY RECORD FOR CORRECTIONAL FACILITIES

Local Institution Name
Local Institution Address
Local Institution Phone

NAME: Last First Middle

Date of Entry/ Employment: ☐☐ ☐☐ ☐☐ Mo Day Yr

Cell Number or Work Location: _____

SS Number: ☐☐☐ ☐☐ ☐☐☐☐

ID Number:

☐ Inmate ☐ Employee

Home Address _____

Phone: ( ) _____

DOB: ☐☐ ☐☐ ☐☐ Mo Day Yr

Country of Birth: _____

RACE:
☐ White ☐ Amer. Ind. or Alaskan Native
☐ Black ☐ Asian or Pacific Islander

ETHNIC ORIGIN:
☐ Hispanic/Latino
☐ Non Hispanic

BASE LINE TESTING

INITIAL SKIN TEST: (or Documented History of Positive Mantoux)
Date Given ☐☐ ☐☐ ☐☐ Mo Day Yr
Date Read ☐☐ ☐☐ ☐☐ Mo Day Yr
Size: ☐☐ mm
Was Therapy Recommended: ☐ Yes ☐ No

Skin Test Date	Size	Skin Test Date	Size	Skin Test Date	Size	Skin Test Date	Size	Skin Test Date	Size
	mm		mm		mm		mm		mm
	mm		mm		mm		mm		mm
	mm		mm		mm		mm		mm

X-RAY: Date ☐☐ ☐☐ ☐☐ Mo Day Yr ☐ Normal ☐ Abnormal

IF ABNORMAL: ☐ Cavitary ☐ Stable ☐ Non Cavitary ☐ Worsening

HISTORY OF PREVIOUS TB TREATMENT: ☐ Infection ☐ TB Disease Dates _____ _____

BACTERIOLOGY FOR *M. TUBERCULOSIS*: AFB Smear ☐ ☐ Culture ☐ ☐ Pos Neg Date Collected _____ Source _____

DIAGNOSIS DATE: ☐☐ ☐☐ ☐☐ Mo Day Yr ☐ Active TB ☐ TB Infection w/o disease

CHEMOTHERAPY FOR INFECTION OR DISEASE:

Drugs	Prescribed	Date Started	Date Stopped	Reason Stopped
INH	☐	☐☐ ☐☐ ☐☐	☐☐ ☐☐ ☐☐	
PZA	☐	☐☐ ☐☐ ☐☐	☐☐ ☐☐ ☐☐	
RIF	☐	☐☐ ☐☐ ☐☐	☐☐ ☐☐ ☐☐	
EMB	☐	☐☐ ☐☐ ☐☐	☐☐ ☐☐ ☐☐	
Other:		☐☐ ☐☐ ☐☐	☐☐ ☐☐ ☐☐	

Drug Resistance? ☐ No ☐ Yes

Supervised by: _____

If No Chemotherapy given, reason: _____

FOR ACTIVE TB:

Major Site of Disease
☐ Pulmonary ☐ Other (Specify _____)

Case Reported to Health Department? ☐ Yes ☐ No

Date of Report: (Mo/Day/Yr) ☐☐ ☐☐ ☐☐

Contact Investigation Done? ☐ Yes ☐ No

If Yes, Date: ☐☐☐☐

Follow-up Date: ☐☐☐☐

HIV TEST: Date ☐☐☐☐ Mo Day Yr
☐ Positive
☐ Negative
☐ Borderline

If Not Done, Give Reason: _____

Date	Event/Comment:	Date	Event/Comment:

Confidential Tuberculosis Summary Record

The Prototype Confidential Tuberculosis Summary Record is designed to update the tuberculosis status of each inmate and employee in a correctional facility. This record may be kept in a central location (e.g., in the infection control office) or may be kept in individual patient or staff medical records. The form should not replace the tuberculosis diagnostic and treatment information found in the medical records of persons with tuberculosis symptoms or of those persons receiving anti- tuberculosis medications.

The form can also be used to prepare statistical reports and to track residents and employees requiring periodic skin testing. This information is important for assessing the overall effectiveness of tuberculosis control efforts in a facility. If kept current, the data on the forms can be summarized periodically and compared with previous data in order to determine, among other measures:

1. The number of staff and inmates currently infected with TB
2. The number of persons newly infected
3. The number of persons started on preventive therapy
4. The number of persons completing therapy (goal is > 95%)
5. The number of diagnosed cases of TB
6. The number of diagnosed cases who complete treatment (goal is > 95%)
7. The number of infectious cases, i.e., sputum-smear positive for AFB
8. The number of infectious cases becoming non-infectious in 3 months or less

When tuberculosis is diagnosed, the form contains the necessary information for reporting the case to the state or local health department. The form also reflects whether or not 1) the case was reported, 2) a contact investigation was completed, and 3) HIV testing was performed. Summary information regarding the use of chemotherapy for infection or disease can also be recorded.

Many items on the form require only a check in the appropriate box. The format follows events in the order they are likely to occur in the diagnosis of tuberculosis infection and disease.

The first section of the form can be completed at the time of admission or employment; it documents personal information, as well as baseline skin-testing results. If baseline skin testing is negative, the results of retesting can be recorded on the second section of the form.

The final section of the form can be used to document x-ray and bacteriologic results, diagnosis, chemotherapy, and other information. This part of the form is generally used only for those inmates or employees who have tuberculous infection or disease, those who have tuberculosis symptoms, or those who require follow-up after exposure to tuberculosis.

IX. NOTES

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10. Perkins, 164.

11. Perkins, 156.

12. Perkins, 166.

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20. Boggan, 2.

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33. Control of Tuberculosis in Correctional Facilities, 7.

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