What is Tuberculosis?

Tuberculosis (TB) is an ancient disease that still affects many people in Santa Clara County. TB is caused by the bacteria *Mycobacterium tuberculosis* and is spread from person to person through the air when an individual with TB coughs, sneezes, or speaks. Individuals who breathe in infected droplets become infected with TB and are at risk for developing TB disease.

People who have TB can have two types of infection:

1. **Latent or “silent” TB infection:** Individuals with latent TB infection (LTBI) have a small amount of TB in their bodies that their immune system keeps under control. They do not have symptoms, are not contagious and may remain that way for years. Treatment of LTBI can prevent TB disease in the future.

2. **Active TB disease:** Occurs when TB bacteria multiply and a person develops symptoms such as cough, fever, or weight loss. They can also spread disease to others. Active TB disease can develop in people with LTBI when the immune system is weakened by stress or a medical illness, such as diabetes, cancer, kidney disease, or HIV. Certain behaviors, such as smoking, also increase an individual’s risk for developing TB disease.

TB usually affects the lungs, but can also affect any part of the body such as lymph nodes, bones and joints, kidneys, intestines, and the brain. TB can be treated but if untreated, can be fatal.

**TB in Santa Clara County**

There were 181 cases of TB in Santa Clara County (SCC) in 2013\(^1\) which is an increase from the downward trend through 2012 (N=176)\(^2\). This represents a rate of 9.8 cases per 100,000 residents in Santa Clara County\(^1\) which is higher than the rate in California overall of 5.7 per 100,000 people\(^3\) and more than three times the United States rate of 3.0 per 100,000 people\(^4\).

**Who’s at risk for TB infection and developing active TB disease?**

People who were born in or travel to countries with high TB rates are at the highest risk for being exposed to TB. For people with LTBI, certain medical conditions such as diabetes, end stage renal and behaviors increase the risk of progression from latent TB infection to active TB disease\(^4\).

- People with LTBI and diabetes are three times more likely to develop active TB disease than non-diabetics with latent TB infection\(^6\).
• 20% (36/181) of Santa Clara County TB cases identified in 2013 also had diabetes.\(^1\)

• People with LTBI who smoke are 2.5 times more likely to develop active TB disease than non-smokers with LTBI.\(^6\) Studies have shown that people with LTBI who are exposed to secondhand smoke are also more likely to develop active TB disease compared to those with TB infection not exposed to second hand smoke.\(^10\)

• According to a World Health Organization review, people with heavy alcohol use are almost 3 times more likely to develop active TB disease than those who do not drink alcohol.\(^11\)

• Other risk factors that increase the likelihood of progression from LTBI to active TB disease include HIV or other immune-compromising conditions, chronic kidney disease, or immunosuppressant medications such as TNF-\(\alpha\) inhibitors or steroids (Table 1).

### Table 1. Risk factors and comorbidities of TB cases, Santa Clara County, 2013\(^1\)

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Number of Cases N=181 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>36 (20%)</td>
</tr>
<tr>
<td>Immunosuppression (not HIV/AIDS)</td>
<td>8 (4%)</td>
</tr>
<tr>
<td>Excess alcohol use in past year</td>
<td>6 (3%)</td>
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<tr>
<td>End-stage renal disease</td>
<td>6 (3%)</td>
</tr>
<tr>
<td>Homeless within the past year</td>
<td>6 (3%)</td>
</tr>
<tr>
<td>Contact of infectious TB patient</td>
<td>3 (2%)</td>
</tr>
<tr>
<td>Post-organ transplantation</td>
<td>3 (2%)</td>
</tr>
<tr>
<td>Incomplete LTB treatment</td>
<td>3 (2%)</td>
</tr>
<tr>
<td>HIV(^*)</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>Missed contact</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>TNF-alpha antagonist therapy</td>
<td>1 (0.5%)</td>
</tr>
<tr>
<td>Contact of MDR-TB patient</td>
<td>1 (0.5%)</td>
</tr>
</tbody>
</table>

Source: California Reportable Disease Information Exchange, 2013;\(^*\)163/181 (90%) of TB cases had documented screening for HIV infection

Who had TB in Santa Clara County in 2013?

In 2013, the majority of TB cases (58%) were among people between 25 and 64 years of age. Children and young adults between 0 to 24 years of age accounted for 10% of TB cases. Almost 32% of people diagnosed with TB were older than 65 years of age. The majority of SCC TB cases are of Asian or Hispanic race/ethnicity. Although the TB case rate among Asians in Santa Clara County has been trending downward from a peak of 37 per 100,000 people in 2007, it remains eight times the overall rate of TB in the US at 24.7 per 100,000 people in Santa Clara County. This rate is higher among foreign-born residents from certain Asian countries (Figure 1).

In 2013, 91% of active TB cases were in foreign-born residents, primarily from the following countries: Vietnam, Philippines, India, Mexico and China. The majority (67%) of foreign-born...
residents who developed active TB disease had lived in the United States for more than 5 years\(^1\).

How does TB make us sick?

When TB affects the lungs, it is called pulmonary TB and can be spread to others. In 2013, almost three quarters (73\%) of TB cases in Santa Clara County had pulmonary TB\(^1\).

Five adults with TB died in Santa Clara County, 2 of whom were younger than 64 years of age and 3 were 65 years or older\(^2\). No children died of TB in Santa Clara County in 2013\(^1\).

Drug Resistant TB

TB that is resistant to standard treatment is challenging to treat and can require 2 years of a complicated medication regimen. In 2013, 14\% (21/145) of TB cases in Santa Clara County with known drug sensitivity results were resistant to at least one of the standard TB medications (rifampin, isoniazid, ethambutol, or pyrazinamide). Of those without a prior history of TB, 13\% (17/135) were resistant to isoniazid\(^1\), which was higher than the national average in 2012 (8.9\%)\(^5\). Multi-drug resistant TB, which is resistant to both isoniazid and rifampin accounted for 3.0\% of culture confirmed TB cases in Santa Clara County in 2013\(^1\). No extensively drug resistant cases were identified in Santa Clara County in 2013.
What should people do to know if they are at risk?

- If someone was born in or travels to countries where TB is endemic such as countries in Asia, Eastern Europe, Africa, or Latin America then they are at risk for having been exposed to TB and should ask their doctor about TB screening.

- If someone has a positive TB test then they should talk to their doctor about getting treated for latent TB infection in order to prevent the development of active TB disease.

- Treatment of latent TB infection is especially important for children, people with diabetes, HIV, people who smoke, a history of smoking, or exposure to tobacco smoke, chronic kidney disease, or who might be treated with immunosuppressant medications (e.g. prednisone, TNF-α inhibitors).

1. California Reportable Disease Information Exchange, 2013
2. California Reportable Disease Information Exchange, 2012
3. California Department of Public Health Tuberculosis Control Branch
8. Santa Clara County Department of Public Health Department, 2009 Behavioral Risk Factor Survey