TB and the Native Population: Review of a Multi-year TB Outbreak in a Tribal Area in South Dakota

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South Dakota Department of Health
Disclosures:

I have no relevant financial relationships to disclose.
Learning Objectives:

1) Describe the epidemiology of an outbreak on a Native American Reservation.

2) Describe how the socioeconomic and cultural challenges of the Native American community affect TB management.

3) Explain the different jurisdictions between the Tribal Health Office, Indian Health Service and the South Dakota Department of Health.
Review of The Great Sioux Nation

Consisted of 3 bands:

1) Santee (Eastern Dakota)
2) Yankton (Western Dakota)
3) Lakota (Teton)
Lakota Sioux

- Largest Sioux Band
- Lakota language still spoken
- Strong cultural and spiritual ties
- Known as a great hunting and warrior culture.
- Battled the US military in the Great Sioux War of 1876-77.
- Dec. 1890 Wounded Knee Massacre where ~150 Lakota men, women & children were killed by US military.
- Currently comprise ~70,000 people, the majority living on 5 reservations in South Dakota.
Famous Lakota Sioux Chiefs

Chief Big Foot (1825-1890)

- Also known as “Spotted Elk”.
- Called “great negotiator” because of his political and diplomatic skills.
- Died at the Wounded Knee Massacre.

Chief Red Cloud (1822-1909)

- Most important field commander for the largest division of warriors with the Sioux Nation.
- Along with his warriors, succeeded in closing down the Bozeman Trail west to Montana.
- Signed the 1868 Fort Laramie Treaty.
Famous Lakota Sioux Chiefs

Chief Sitting Bull (1831-1890)

- United the Lakota bands on the northern plains.
- Great warrior known for his legendary courage.
- Had a vision before the Battle of the Little Bighorn that US soldiers “would fall like grasshoppers from the sky”.
- Major field commander at the Battle of the Little Bighorn.
- Performed in Buffalo Bill’s Wild West Show.

Chief Gall (1840-1895)

- Adopted brother of Sitting Bull.
- Major field commander at the Battle of the Little Bighorn.
Famous Lakota Sioux Chiefs

Chief He Dog (1840-1940)

• Warrior brother to Crazy Horse.
• Fought at the Battle of the Little Bighorn.
• 100 years old when he died in 1940.

Chief Crazy Horse (1838-1877)

• Probably best known Lakota Sioux Chief.
• Recognized as a great leader committed to preserving the traditional Lakota way of life.
• Refused to allow photographs taken of himself.
• Legendary warrior and military strategist.
• Led warriors to take the high ground at the Battle of the Little Bighorn which resulted in a decisive victory.
“My lands are where my dead lie buried”. Chief Crazy Horse
Current Status of Lakota Culture

Multiple challenges because of high rates of:

- Poverty & unemployment
- Suicide
- Violent crime
- Alcoholism and drug use
- Child abuse
- Infant mortality
- Chronic disease (diabetes)
- Infectious disease (TB, STD’s)
Welcome to the SIOUX TRIBE INDIAN RESERVATION
South Dakota Reservations & Tribal Areas
Dewey & Ziebach County Demographics

- 2 counties constitute one Lakota Sioux tribe
- Population: 8,090 4,416 square miles
- ~1.8 persons per square mile – very rural
- 74% of population is American Indian
- 88% unemployment rate (2005)
- 56% of population lives below 200% of federal poverty rate

- 2014 United States TB case rate: 3.0 per 100,000
- 2014 South Dakota TB case rate: 1.0 per 100,000
- 2015 Dewey & Ziebach Co. TB case rate: 86.5 per 100,000
Health Care Options

- Indian Health Service which consists of an in-patient hospital and out-patient clinic. This is the primary health care provider for most American Indians in these 2 counties.
- Tribal Health Office which consists of several health programs including the field health nurses who are responsible for TB control activities and treatment of patients. They also have a physician who provides some clinical work for patients.
- There are also a few private medical clinics that provide care mainly to patients who are Medicaid eligible.
South Dakota Department of Health Interface with Tribal Health & IHS

- SD Dept. of Health receives reports of reportable diseases including tuberculosis and provides recommendations on treatment, isolation, patient management and contact investigation.
- Work with tribal nursing staff weekly to receive updates and advise on case management of TB cases in the community.
- Work with Indian Health Service nursing staff regarding TB patients in the IHS Hospital.
- Provide grants to fund gaps in program services (i.e. incentives for completion of therapy, temporary tribal DOT workers during an outbreak).
- Does not provide direct work with patients because of jurisdictional issues.
Review of the Epidemiology of a Multi-year Outbreak on a Lakota Sioux Reservation
TB Case X
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case Y
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057
2007

TB Case A
78 y/o AI Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case X
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case 1
63 y/o AI Female
Pulmonary, AFB-, cul+
Reported 4-17-2007
PCR02397

TB Case Y
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057
TB Case A
78 y/o AI Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

2008

TB Case 1
63 y/o AI Female
Pulmonary, AFB-, cul+
Reported 4-17-2007
PCR02397

TB Case X
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case B
17 y/o AI Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case C
2 y/o AI Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case Y
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057
TB Case A
78 y/o AI Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case B
17 y/o AI Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case C
2 y/o AI Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case 1
63 y/o AI Female
Pulmonary, AFB-, cul+
Reported 4-17-2007
PCR02397

TB Case X
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case Y
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case Z
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022
2013

TB Case A
78 y/o AI Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case B
17 y/o AI Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case C
2 y/o AI Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case 1
63 y/o AI Female
Pulmonary, AFB-, cul+
Reported 4-17-2007
PCR02397

TB Case 2
49 y/o AI Female
Pulmonary, AFB+, cul+
Reported 8-12-2013
PCR02397

TB Case X
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case Y
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case Z
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022
TB Case A
78 y/o Al Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case B
17 y/o Al Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case C
2 y/o Al Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case D
63 y/o Al Female
Pulmonary, AFB-, cul+
Reported 4-17-2007
PCR02397

TB Case E
78 y/o Al Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case F
72 y/o Al Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case G
67 y/o Al Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case H
69 y/o Al Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case I
18 y/o Al Male
Pulmonary, AFB+, cul+
Reported 10-6-2014
PCR05048
December 2014

TB Case A
78 y/o Al Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case B
17 y/o Al Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case C
2 y/o Al Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case D
1 y/o Al Female
Pulmonary, AFB-, cul+
Reported 12-3-2014
PCR05048

TB Case 1
63 y/o Al Female
Pulmonary, AFB-, cul+
Reported 4-17-2007
PCR02397

TB Case 2
49 y/o Al Female
Pulmonary, AFB+, cul+
Reported 8-12-2013
PCR02397

TB Case 3
18 y/o Al Male
Pulmonary, AFB+, cul+
Reported 10-6-2014
PCR05048

TB Case 4
1 y/o Al Female
Pulmonary, AFB-, cul+
Reported 12-3-2014
PCR05048

TB Case X
72 y/o Al Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case Y
67 y/o Al Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case Z
69 y/o Al Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022
February 2015

**TB Case 1**
63 y/o Al Female
Pulmonary, AFB+, cul+
Reported 4-17-2007
PCR02397

**TB Case 2**
49 y/o Al Female
Pulmonary, AFB+, cul+
Reported 8-12-2013
PCR02397

**TB Case 3**
18 y/o Al Male
Pulmonary, AFB+, cul+
Reported 10-6-2014
PCR05048

**TB Case 4**
1 y/o Al Female
Pulmonary, AFB-, cul+
Reported 12-3-2014
PCR05048

**TB Case 5**
20 y/o Al Female
Pulmonary, AFB+, cul+
Reported 1-30-2015
PCR02397

**TB Case 6**
16 y/o Al Male
Pulmonary, AFB+, cul+
Reported 2-11-2015
PCR05048

**TB Case 7**
68 y/o Al Male
Pulmonary, AFB+, cul+
Reported 2-13-2015
PCR05048 (DIED)

**TB Case A**
78 y/o Al Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

**TB Case B**
17 y/o Al Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

**TB Case C**
2 y/o Al Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

**TB Case D**
2 y/o Al Male
Pulmonary, AFB+, cul+
Reported 8-12-2013
PCR02397

**TB Case E**
2 y/o Al Male
Pulmonary, AFB, cul-
Reported 5-1-2008
Clinical – No Genotype

**TB Case F**
1 y/o Al Female
Pulmonary, AFB+
Reported 12-3-2014
PCR05048

**TB Case G**
19 y/o Al Male
Pulmonary, AFB-, cul-
Reported 2-20-2015
Clinical – No Genotype

**TB Case H**
25 y/o Al Male
Pulmonary, AFB-, cul-
Reported 2-18-2015
Clinical – No Genotype

**TB Case X**
72 y/o Al Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

**TB Case Y**
67 y/o Al Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

**TB Case Z**
69 y/o Al Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

**TB Case Z**
69 y/o Al Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

?
### Summary of Dewey and Ziebach County TB Outbreak Genotyping Results

<table>
<thead>
<tr>
<th>TB Case #</th>
<th>Report Date</th>
<th>County</th>
<th>Spoligotype</th>
<th>MIRU1</th>
<th>MIRU2</th>
<th>PCR Type</th>
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<tbody>
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<td>TB Case 1</td>
<td>4-17-2007</td>
<td>Ziebach</td>
<td>777776777760601</td>
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<td>244334423434</td>
<td>PCR05048</td>
</tr>
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<td>TB Case 5</td>
<td>1-30-2015</td>
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<td>PCR02397</td>
</tr>
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<td>TB Case 6</td>
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<td>777776777760601</td>
<td>223325143323</td>
<td>244334423434</td>
<td>PCR05048</td>
</tr>
<tr>
<td>TB Case 7</td>
<td>2-13-2015</td>
<td>Todd</td>
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<td>223325143323</td>
<td>244334423434</td>
<td>PCR05048</td>
</tr>
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<td>TB Case 8</td>
<td>2-18-2015</td>
<td>Ziebach</td>
<td>Clinically diagnosed – no genotyping results</td>
<td>223325143323</td>
<td>244334423434</td>
<td>PCR05048</td>
</tr>
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<td>TB Case 9</td>
<td>2-20-2015</td>
<td>Ziebach</td>
<td>Clinically diagnosed – no genotyping results</td>
<td>223325143323</td>
<td>244334423434</td>
<td>PCR05048</td>
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<td>TB Case 10</td>
<td>4-17-2015</td>
<td>Ziebach</td>
<td>Clinically diagnosed – no genotyping results</td>
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<td>244334423434</td>
<td>PCR05048</td>
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<td>Pending</td>
<td>Pending</td>
<td>Pending</td>
</tr>
</tbody>
</table>
April 2015

TB Case A
78 y/o Al Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case B
17 y/o Al Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case C
2 y/o Al Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case D
1 y/o Al Male
Pulmonary, AFB+, cul+
Reported 12-3-2014
PCR05048

TB Case E
16 y/o Al Male
Pulmonary, AFB+, cul+
Reported 2-11-2015
PCR05048

TB Case F
68 y/o Al Male
Pulmonary, AFB+, cul+
Reported 2-13-2015
PCR05048 (DIED)

TB Case G
69 y/o Al Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case H
19 y/o Al Male
Pulmonary, AFB-, cul-
Reported 2-20-2015
Clinical – No Genotype

TB Case I
25 y/o Al Male
Pulmonary, AFB-, cul-
Reported 2-18-2015
Clinical – No Genotype

TB Case J
20 y/o Al Female
Pulmonary, AFB+, cul+
Reported 1-30-2015
PCR02397

TB Case K
67 y/o Al Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case L
69 y/o Al Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case M
72 y/o Al Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case N
67 y/o Al Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case O
68 y/o Al Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case P
72 y/o Al Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case Q
78 y/o Al Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case R
70 y/o Al Female
Pulmonary, AFB+, cul+
Reported 4-17-2007
PCR02397

TB Case S
49 y/o Al Female
Pulmonary, AFB+, cul+
Reported 10-6-2014
PCR05048

TB Case T
49 y/o Al Female
Pulmonary, AFB+, cul+
Reported 10-6-2014
PCR05048

TB Case U
2 y/o Al Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case V
2 y/o Al Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case W
2 y/o Al Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case X
72 y/o Al Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case Y
67 y/o Al Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case Z
69 y/o Al Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

Slight genetic mutation noted
May 2015

TB Case A
78 y/o AI Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case B
17 y/o AI Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case C
2 y/o AI Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case D
18 y/o AI Male
Pulmonary, AFB-, cul+
Reported 12-3-2014
PCR05048

TB Case E
19 y/o AI Male
Pulmonary, AFB-, cul-
Reported 2-20-2015
Clinical – No Genotype

TB Case F
20 y/o AI Female
Pulmonary, AFB+, cul+
Reported 1-30-2015
PCR02397

TB Case G
25 y/o AI Male
Pulmonary, AFB-, cul-
Reported 2-18-2015
Clinical – No Genotype

TB Case H
6 y/o AI Male
Pulmonary, AFB
Reported 4-17-2015
Clinical – No Genotype

TB Case I
6 y/o AI Male
Pulmonary, AFB+
Reported 12-3-2014
PCR05048

TB Case J
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case K
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case L
6 y/o AI Male
Pulmonary, AFB
Reported 4-17-2015
Clinical – No Genotype

TB Case M
68 y/o AI Male
Pulmonary, AFB+, cul+
Reported 2-13-2015
PCR05048 (DIED)

TB Case N
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case O
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case P
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case Q
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case R
68 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case S
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case T
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case U
6 y/o AI Male
Pulmonary, AFB+
Reported 12-3-2014
PCR05048

TB Case V
6 y/o AI Male
Pulmonary, AFB
Reported 4-17-2015
Clinical – No Genotype

TB Case W
6 y/o AI Male
Pulmonary, AFB+
Reported 12-3-2014
PCR05048

TB Case X
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case Y
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case Z
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

Slight genetic mutation noted

Tribal School student not directly linked to outbreak
Ruled out 5-26-2015
June 2015

TB Case 1
63 y/o AI Female
Pulmonary, AFB-, cul+
Reported 4-17-2007
PCR02397

Slight genetic mutation noted

TB Case 2
49 y/o AI Female
Pulmonary, AFB+, cul+
Reported 8-12-2013
PCR02397

TB Case 3
18 y/o AI Male
Pulmonary, AFB+, cul+
Reported 10-6-2014
PCR05048

TB Case 4
1 y/o AI Female
Pulmonary, AFB-, cul+
Reported 12-3-2014
PCR05048

TB Case 5
20 y/o AI Female
Pulmonary, AFB+, cul+
Reported 1-30-2015
PCR02397

TB Case 6
16 y/o AI Male
Pulmonary, AFB+, cul+
Reported 2-11-2015
PCR05048

TB Case 9
19 y/o AI Male
Pulmonary, AFB-, cul-
Reported 2-20-2015
Clinical – No Genotype

TB Case 8
25 y/o AI Male
Pulmonary, AFB-, cul-
Reported 2-18-2015
Clinical – No Genotype

TB Case 7
68 y/o AI Male
Pulmonary, AFB+, cul+
Reported 2-13-2015
PCR05048 (DIED)

TB Case 10
6 y/o AI Male
Pulmonary, AFB-
Reported 4-17-2015
Clinical – No Genotype
Tribal School student not directly linked to outbreak
Clinically dx again 6-2015

TB Case X
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case Y
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case Z
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case A
78 y/o AI Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case B
17 y/o AI Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case C
2 y/o AI Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case D
1 y/o AI Female
Pulmonary, AFB-
Reported 12-3-2014
PCR05048

TB Case E
18 y/o AI Male
Pulmonary, AFB+, cul+
Reported 10-6-2014
PCR05048

TB Case F
20 y/o AI Female
Pulmonary, AFB+, cul+
Reported 1-30-2015
PCR02397

TB Case G
25 y/o AI Male
Pulmonary, AFB-
Reported 2-18-2015
Clinical – No Genotype

TB Case H
6 y/o AI Male
Pulmonary, AFB-
Reported 4-17-2015
Clinical – No Genotype

TB Case I
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

TB Case J
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case K
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

Slight genetic mutation noted

Clinical – No Genotype

Tribal School student not directly linked to outbreak
Clinically dx again 6-2015
Summary of TB Outbreak
Contact Investigation as of June 2015

• ~606 contact identified
• 63 newly infected contacts identified
• Majority of newly infected contacts started on treatment for latent TB infection including some on 3HP.
• Multiple exposure sites identified including:
  tribal school, public school, 2 tribal colleges, 2 private employers, 2 private hospitals, 3 Indian Health Service units and a community screening
October 2015

TB Case A
78 y/o AI Male
Pulmonary, AFB+, cul+
Reported 11-9-2007
PCR00256

TB Case B
17 y/o AI Female
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case C
2 y/o AI Male
Pulmonary, AFB-, cul-
Reported 5-1-2008
Clinical – No Genotype

TB Case D
1 y/o AI Female
Pulmonary, AFB-, cul+
Reported 12-3-2014
PCR05048

TB Case E
16 y/o AI Male
Pulmonary, AFB+, cul+
Reported 2-11-2015
PCR05048

TB Case F
68 y/o AI Male
Pulmonary, AFB+, cul+
Reported 2-13-2015
PCR05048 (DIED)

TB Case G
69 y/o AI Male
Non-pul, (lymph), cul+
Reported 4-20-2012
PCR00022

TB Case H
67 y/o AI Female
Non-pul, (lymph), cul+
Reported 8-18-2006
PCR00057

TB Case I
72 y/o AI Female
Non-pul, (bone), cul+
Reported 9-29-2005
PCR02931

Slight genetic mutation noted

TB Case J
25 y/o AI Male
Pulmonary, AFB-, cul-
Reported 4-17-2007
PCR02397

TB Case K
49 y/o AI Female
Pulmonary, AFB+, cul+
Reported 8-12-2013
PCR02397

TB Case L
20 y/o AI Female
Pulmonary, AFB+, cul+
Reported 1-30-2015
PCR02397

TB Case M
31 y/o AI Female
Pulmonary, PCR+, AFB+ (+4)
Culture +, Genotype pending
Reported 10-13-2015
18 contacts <15 yrs

TB Case N
78 y/o AI Male
Pulmonary, AFB+, cul+
Reported 4-17-2007
PCR02397

TB Case O
49 y/o AI Female
Pulmonary, AFB+, cul+
Reported 8-12-2013
PCR02397

TB Case P
49 y/o AI Female
Pulmonary, AFB+, cul+
Reported 8-12-2013
PCR02397

TB Case Q
20 y/o AI Female
Pulmonary, AFB+, cul+
Reported 1-30-2015
PCR02397

TB Case R
6 y/o AI Male
Pulmonary, AFB
Reported 12-3-2014
PCR05048

TB Case S
19 y/o AI Male
Pulmonary, AFB-, cul-
Reported 2-20-2015
Clinical – No Genotype

TB Case T
6 y/o AI Male
Pulmonary, AFB
Reported 12-3-2014
PCR05048

TB Case U
19 y/o AI Male
Pulmonary, AFB+, cul+
Reported 10-6-2014
PCR05048

Clinical – No Genotype

TB Case V
18 y/o AI Male
Pulmonary, AFB+, cul+
Reported 10-6-2014
PCR05048

TB Case W
2 y/o AI Male
Pulmonary, AFB
Reported 12-3-2014
PCR05048

TB Case X
6 y/o AI Male
Pulmonary, AFB
Reported 12-3-2014
PCR05048

TB Case Y
6 y/o AI Male
Pulmonary, AFB
Reported 12-3-2014
PCR05048

TB Case Z
68 y/o AI Male
Pulmonary, AFB
Reported 12-3-2014
PCR05048

Clinical dx again 6-2015

Tribal School student not directly linked to outbreak

18 contacts <15 yrs

18 contacts <15 yrs
New TB Case Summary

- +4 AFB X 3 (very infectious), PCR +, culture positive, genotype pending
- During interview named TB Case #3 but reported exposure AFTER he was non-infectious.
- 30+ contacts identified living in the same house, 18 of which are children less than 15 years of age:

```
<table>
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<tr>
<th></th>
<th>1-2 weeks</th>
<th>1-2 yrs</th>
<th>3-4 yrs</th>
<th>5-10 yrs</th>
<th>11-15 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
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- Infants less than 1 have a 30-40% risk for developing pulmonary disease and a 10-20% risk of developing meningeal TB. This is the most severe complication of TB and has a high mortality rate.

- Two child contacts (1 y/o and 2 y/o) are currently receiving inpatient care to collect gastric aspirates. Both had abnormal chest X-rays.

- Two contacts are pregnant.

- One contact is a 2 y/o who was diagnosed with active TB in December and just completed treatment.

- One contact has had a cough X 1 year but refuses to provide sputum samples. Chest X-ray was negative.

- Patient worked at a restaurant and attends class at a tribal college every day.
South Dakota 2014-2015 TB Outbreak
(Ziebach and Dewey Counties)

- 2005: 1
- 2006: 1
- 2007: 1
- 2008: 2
- 2009: 1
- 2010: 1
- 2011: 1
- 2012: 1
- 2013: 2
- 2014: 6
- 2015: 1
- 2016: ?

Legend:
- Yellow: Outbreak case in another county
- Red: Outbreak case
- Green: Non-outbreak case

Mayo Clinic Center for Tuberculosis
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- Jannette Dewell, RN – SD Department of Health Field DIS
- Indian Health Service
- Tribal Health Office and Tribal Health Field Nursing Staff
Question 1

What is the 2015 TB case rate for the 2 South Dakota counties where the TB outbreak occurred?

a) 3.0  
b) 36.5  
c) 86.5  
d) 90.5  
e) None of the above
Question 2

What health care options exist for American Indians in the tribal area where the TB outbreak occurred?

a) Private physicians
b) Indian Health Service
c) Tribal Health Office
d) South Dakota Department of Health
e) B and C
f) A, B & C