Disclosures

• No relevant financial relationships
• No off-label investigational uses
Objectives

• Describe challenging case management tuberculosis cases occurring in North Dakota
• Review epidemiology of TB cases in North Dakota
• Identify needs for TB Prevention and Control in North Dakota
The Past

2012 - TB Outbreak
Outbreak
TB Disease

2010 – 2
2012 – 20
2013 – 5
2014 – 4
2015 – 1
# TB Screening

**Number Tested**
- 2012 – 1650
- 2013 – 60
- 2014 – 89
- 2016 - 1
- Total Screened - 1800

**TB Infection**
- 2012 - 69
- 2013 - 13
- 2014 – 5
- 2016 - 1
- Number of LTBI – 88

In 2012, **53.7% of Named Contacts were LTBI**

Unable to screen **19 high-medium risk contacts, lost to follow-up**
Lessons Learned

• GOOD Contact Investigation
  • Name based
  • Location based

• Working with LPHU

• Compliance Orders

• Therapeutic Drug Levels

• Extended Treatment Regimens
The Past

2013 - One Health Approach
Mycobacterium bovis

- Coordinated efforts with the North Dakota Department of Agriculture
- Developed brochure
The Past

2014 - Multidrug Resistant Tuberculosis (MDR)
Identification and Case Management

• Importance of a quick diagnosis - MDR results
• Partnership with Mayo TB Center
• Cost of Medications
  • Medicaid Expansion
    • No Coverage for 3-4 months
    • 340B Pricing
• Contact Investigation
  • Local
  • Division of Global Migration and Quarantine (DGMQ)
    • Airline Passengers
    • Home Country Contacts
• DOT twice a day - Skype
The Present

Surveillance
Number of Active TB Cases in North Dakota, 2000 - Present

The chart shows the number of active TB cases in North Dakota from 2000 to 2016. The y-axis represents the number of cases, and the x-axis represents the year of diagnosis.

Key observations:
- The number of cases has fluctuated over the years.
- In 2012, there was a significant increase in cases, reaching 26.
- The overall trend shows a decrease in cases from 2000 to 2011, with a notable spike in 2012.
- The data includes cases from 2000 to 2016, with a note for 2016 indicating a potential change or update.
Number of Active TB cases
US Born/Foreign Born, 2011-Present

<table>
<thead>
<tr>
<th>Year of Diagnosis</th>
<th>US Born</th>
<th>Foreign Born</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>2013</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>2014</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>2015</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>*2016</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>
Number of Active TB Cases by Gender, 2011 to Present

- 2011: Male 2, Female 3
- 2012: Male 15, Female 6
- 2013: Male 5, Female 7
- 2014: Male 11, Female 4
- 2015: Male 6, Female 3
- *2016: Male 7, Female 4
Number of Active TB Cases by Race, 2011 - Present

- 2011: 5 (Asian), 2 (American Indian), 4 (Black), 5 (White)
- 2012: 7 (Asian), 15 (American Indian), 2 (Black), 2 (White)
- 2013: 4 (Asian), 3 (American Indian), 5 (Black), 4 (White)
- 2014: 7 (Asian), 4 (American Indian), 4 (Black), 3 (White)
- 2015: 2 (Asian), 2 (American Indian), 3 (Black), 4 (White)
- *2016: 3 (Asian), 3 (American Indian), 5 (Black), 3 (White)
Tuberculosis incidence rates by race, 2011-2015
Number of Active TB Cases by Site of Disease, 2011 - Present

- Pulmonary
- Extra-Pulmonary
- Both

Year of Diagnosis:
- 2011: 4 (Pulmonary), 3 (Both)
- 2012: 22 (Pulmonary), 4 (Both)
- 2013: 7 (Pulmonary), 5 (Both)
- 2014: 7 (Pulmonary), 3 (Extra-Pulmonary), 3 (Both)
- 2015: 3 (Pulmonary), 2 (Both)
- *2016: 1 (Extra-Pulmonary), 1 (Both)
Homeless Workgroup

- Establish recommendations for screening
- Education for staff
- Education for residents
- Improve air quality
- Defining TB risk in the shelters
The Future

What to look forward to
TB Prevention and Control

• Provide TB education
• Evaluate populations at risk for TB
• Improve delivery of TB medications
• Enhance TB Surveillance
• Continue to be a resource for everything TB
North Dakota TB Update: Past, Present and Future

1) The One Health Approach links
   a) Human, animal and environmental health
   b) Human, plant and environmental health
   c) Human, mineral and environmental health

2) In 2012, what percent of contacts linked to the outbreak were LTBI?
   a) Less than 5%
   b) 25%
   c) Greater than 50%

3) The number of active TB cases to date in 2016 is
   a) Less than number of cases in 2015
   b) Equal to the number of cases in 2015
   c) Greater than the number of cases in 2015
Questions

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North Dakota TB Update
Past, Present and Future