Tuberculosis in Clark County

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Objectives

- Discuss the prevalence of tuberculosis in Clark County
- Describe factors influencing case characteristics in Clark County
Cases per 100,000.

<3.5 (year 2000 target)
3.6–3.8
>3.8 (national average)

*Cases per 100,000.
Nevada TB Cases By year
TB Rate per 100,000 Population

- Clark County, Nevada
- US Rate
<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Case Diagnosis</td>
<td>87</td>
<td>97</td>
<td>85</td>
</tr>
<tr>
<td>Foreign Born</td>
<td>71%</td>
<td>69%</td>
<td>73%</td>
</tr>
<tr>
<td>• 11% Mexico</td>
<td>• 14% Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 36% Philippines</td>
<td>• 22% Philippines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 other countries</td>
<td>54%</td>
<td>76%</td>
<td>77%</td>
</tr>
<tr>
<td>• 18% Mexico</td>
<td>• 25% Philippines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homeless</td>
<td>3%</td>
<td>9%</td>
<td>2%</td>
</tr>
<tr>
<td>Uncontrolled Diabetes</td>
<td>22%</td>
<td>19%</td>
<td>15%</td>
</tr>
<tr>
<td>HIV/AIDS Co-infected</td>
<td>3%</td>
<td>6%</td>
<td>2%</td>
</tr>
<tr>
<td>Children born in US with risk factors</td>
<td>8%</td>
<td>13%</td>
<td>4%</td>
</tr>
</tbody>
</table>
Reported TB Cases by Origin and Race/Ethnicity 2011

U.S.-born

- Hispanic or Latino (39%)
- Black or African American (17%)
- White (44%)

Foreign-born

- Hispanic or Latino (34%)
- Asian (50%)
- Native Hawaiian or Other Pacific Islander (2%)
- Black or African American (13%)
- White (1%)
Persons at Higher Risk for Exposure to and Infection With TB

- Close contacts of person known or suspected to have active TB
- Foreign-born persons from areas where TB is common
- Visitors to TB-prevalent countries
- Residents/employees of high-risk congregate settings
- Health Care Workers serving high-risk clients
- Children and adolescents exposed to adults at increased risk for infection or disease
A child with active TB disease indicates an unidentified, contagious adult/adolescent with active TB disease
  • Sentinel event
Children unlikely to yield positive smears/cultures
Need source case’s culture results for drug sensitivities to determine child’s treatment regimen
  • Also needed for genotyping
  • If high suspicion of drug resistance, gastric aspirate may also be helpful
Thorough contact investigation is critical to prevent further transmission!
Contact Investigation

- All cases of active TB were once contacts.
- The best way to reduce active TB cases is to identify and treat latent TB infection in those who are exposed.
- Pulmonary, laryngeal, and pleural active TB cases.
Contact Investigation

- Elicit contacts from index case
  - Household
  - Work/school
  - Social networks

- Site survey/field investigation

- Prioritize contacts
  - Household
  - Children <5 years of age
  - Immunocompromised
  - Duration and location of contact

- If contact less than 8 weeks ago, need 2nd test 8-10 weeks after last exposure
  - Window-period prophylaxis
    - Children & immunocompromised
### Contact Investigation

<table>
<thead>
<tr>
<th>Contacts to Sputum AFB smear-positive TB patients</th>
<th>2008 SNHD</th>
<th>2010 SNHD</th>
<th>2015 Goal</th>
<th>2008 National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent who are evaluated for infection and disease</td>
<td>92%</td>
<td>94%</td>
<td>93%</td>
<td>82%</td>
</tr>
<tr>
<td>Percent with newly diagnosed LTBI who start treatment</td>
<td>66%</td>
<td>77%</td>
<td>88%</td>
<td>74%</td>
</tr>
<tr>
<td>Percent who start LTBI treatment that complete treatment</td>
<td>62%</td>
<td>71%</td>
<td>79%</td>
<td>64%</td>
</tr>
</tbody>
</table>
66 cases for investigation
  - Average of 15 contacts per case
92 total sites for investigation
Spoligotyping and mycobacterial interspersed repetitive units (MIRU) analysis based on PCR
- Done on one culture positive specimen from each active case, regardless of disease site
TB Fingerprinting/DNA Genotyping

- TB outbreaks will be detected earlier and controlled more easily
- Can also be used to rule out an outbreak
- Unsuspected relationships between cases and new and unusual transmission settings can be discovered
- Transmission that occurs between patients in different jurisdictions can be detected more rapidly
Notified of pediatric TB case by local hospital
- MTB grew from ear fluid culture = likely disseminated tuberculosis

Characteristics of outbreak
- Primarily African-American
- Living below poverty level
- Claim strong gang affiliation
- History of incarceration
  - 55% of those found with LTBI

Epidemiologically linked to index case
- Spent significant amount of time inside child’s home
- Matching genotype
**Outbreak Epidemiologic Links**

1. **Source**
   - 2
     - Daughter of friend’s sister’s friend

2. **Daughter of friend’s sister’s friend**
   - 3

3. **Friend’s nephew; matching genotype**
   - 1

4. **Friend’s cousin; chronic renal insufficiency; incomplete LTBI therapy**
   - 6

5. **Friend’s sister’s friend**
   - 5

6. **Uncle**
   - 2010
   - Case

7. **Niece**
   - 2008
   - Case

8. **Daughter of friend’s sister’s friend**
   - 2009
   - Case

**Notes:**
- **Pansensitive**
- **100% resistant to INH**
- **No sample tested (all <5 years old)**
Nationally, TB is declining overall
High TB rates persist among some groups
Local epidemiology affects trends
- Cases have been seen all income levels and in most ZIP Codes
Targeted testing and treatment of high risk individuals is essential to TB prevention and control
- Contacts to active cases
- Immigrants from high burden countries
- Medical/social history indicators


