Tuberculosis in Alaska
Brief History and Current Epidemiology

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State of Alaska
True or False

- TB is the number one cause of death for Alaskans
- TB causes 20% of all deaths in Alaska
- 90% of third graders in YK are infected with TB
- Alaska has the highest rate of TB in the U.S.
2013 TB Incidence – “Top” States

- Alaska: 9.6
- Hawaii: 8.2
- District of Columbia: 6
- California: 5.7
- Texas: 4.6
Figure 3. Tuberculosis incidence rates, 1952–70

Figure 4. Cases of active tuberculosis by diagnostic category, all races, Alaska, 1964–69

Incidence of TB in Alaska by Region

Cases/100,000

Objectives

- Historical context
- The Battle
  - Lessons learned
- TB Control in Alaska today
AD 400 – probable TB – St. Lawrence Island
1500’s – probable TB – Pt. Barrow
1700’s – Russian explorers and traders

Map showing the exploration routes of Russian explorers and traders in Alaska during the 1700s. The map highlights towns such as Barrow, Nome, Fairbanks, Anchorage, Bethel, King Salmon, Kotzebue, and Juneau. The map also indicates regions for Aleut, Eskimo, and Indian culture and language areas.
1800’s – Gold/fish/whales

Map 1-2 Alaska’s Native Languages and Cultures

North

0 200 Kilometers

0 200 Miles
POPULATION OF ALASKA, 1880-1953

CIVILIAN WHITE AND OTHER

NATIVE

MILITARY

1880 1890 1900 1910 1920 1930 1940 1950 1953

YEARS
Native Health = Bureau of Education - 1930

Territory - 1912

Organic Act - 1884
POPULATION OF ALASKA, 1880-1953

- Organic Act - 1884
- Territory - 1912
- Native Health = Bureau of Education - 1930
- 1931 - Alaska Native Service
- First Health Commissioner - 1945
- 1880 - 1953

CIVILIAN WHITE AND OTHER

NATIVE
Native Health = Bureau of Education - 1930

USPHS - IHS - 1955

1931 - Alaska Native Service

First Health Commissioner - 1945

Territory - 1912

Organic Act - 1884

CIVILIAN WHITE AND OTHER

NATIVE
1926-1930
AK Native
TB death rate
655/100,000

1930-1936
AK Native
TB death rate
810/100,000

1943
2,000-4,000 active TB cases
70 beds

1952
1,823/100,000
TB Incidence
AK Native

1880
1953
PERCENTAGE POSITIVE TUBERCULIN REACTORS AMONG 5- AND 8-YEAR OLD CHILDREN. ALASKA, 1948-1951

(89%)
“Perfect Storm” – 1800-1940’s

• Neglected Territory
  • Influx/exploitation

• Geography
  • Remote/expensive/harsh

• No health infrastructure
  • Territory vs. Federal obligations

• New diseases
  • Smallpox, measles, influenza

• Change in Native lifestyle
  • Settlement, exploitation, schools, crowding
“There is a Tide” – 1940-1950’s

- Interest in Alaska
- War
- C. Earl Albrecht
- Chemotherapy
- Parran Report
Interest in Alaska

- Financial
  - Gold
  - Fish/Whales
  - Minerals
War

- National Security
- Infrastructure
  - Roads
  - People
  - Landing strips
- Empty bases → Sanatoria/hospital beds

“The role of war as the great destroyer is familiar to everyone, but less has been said of war as the great constructor.” - Ernest Gruening – Alaska Governor, 1951
C. Earl Albrecht

- FDR – New Deal - Mat Su – 1935
- Army hospital
- 1st Commissioner of Health
- Singular determination
Chemotherapy

- Streptomycin – 1948
- PAS – 1951
- Isoniazid – 1952
Parran Report – 1953-1954

- Alaska’s Health: A Survey Report
- Resounding critique
  - “Century of official neglect”
- Detailed recommendations

“Tuberculosis is the Alaskan Scourge”

It still shows “the scars of an exploited colony.”
- “Health conditions...are deplorable”

“We must help Alaskans to help themselves.”
- “..disgraceful burden of disease” in our own country
- “...Alaska is our Achilles heel...”
Parran Report - “Two Worlds”

- **White Alaska**
  - “young, vigorous, urbanized”
  - “life-expectancy as favorable as...states.”

- **Native Alaska**
  - “sickness, crippling conditions, premature death”
  - “...a degree exceeded in very few parts of the world.”
Parran Report - “Two Worlds”

- 1953 – active TB registry
  - White: 222/100,000 (US: 151/100,000)
  - Alaska Native: 6,474/100,000 (6%)
“without effective manpower...Alaska is our Achilles heel.”
Parran Report – Achilles heel

- Alaska National Guardsman - 1953
  - 200 random x-rays
    - 10% active tb
  - 40% tb
- Scout battalions – 1954
  - 10% unfit due to active TB
“Alaska's health and well-being is purchasable.”

“Only by a crash attack...”
“There is a Tide” – 1940-1950’s

- Interest in Alaska
- War
- C. Earl Albrecht
- Chemotherapy
- Parran Report
Figure 3. Tuberculosis incidence rates, 1952–70

Figure 4. Cases of active tuberculosis by diagnostic category, all races, Alaska, 1964–69

How the war was “won”
How the war was “won”

- Social and economic improvements
- Education
- Collaboration
- Volunteers
How the war was “won”

- Vigorous case finding
- Treatment
- Isolation/beds

1953 – 400 bed hospital in Anchorage – Alaska Native Service
How the war was “won”

- Ambulatory Chemotherapy Program - 1953

- Bethel Prophylaxis Study – 1957
  - Approximately 70% reduction in risk of active TB
  - Peak benefit when 70% of annual dose taken
  - No increased benefit with 200% of annual dose
  - Benefit at least for 15 years, ‘probably lifelong”

- Isoniazid dosing study
  - 5mg/kg vs. 1.25 mg/kg
How the war was “won”

- Mass X-ray surveys
- Village “sweeps” – Hot Spot Team
  - Dog sleds
  - Mobile Health Unit
- Marine units
- Community Health Aides
How the war was “won”

- **Money**
  - 1946 - 10% of entire budget – TB

- **Centralization**
  - Bureau of Education
  - Alaska Native Service
  - USPHS

- Alaska Department of Health
Role of BCG, 1949-1951 (1956)

• “no significant part of the reduction in tuberculosis can be attributed to BCG”
TB in Alaska today

“...roaming free and quietly stalking its prey once more.” – R. Fortuine, 1998 (author of “Must We All Die?”)
TB in Alaska today

• Less interesting
• Less money
• Less expertise
• Less collaboration
TB in Alaska today

- Less interesting
- Less money
- Less expertise
- Less collaboration

Same challenges
- Geography, travel, remoteness, cost, health infrastructure, disparities

New challenges
- Homeless, prisoners, travel, drug resistance, recrudescence, HIV/AIDS, priorities
2013 TB Incidence – “Top” States

- Alaska: 9.6
- Hawaii: 8.2
- District of Columbia: 6
- California: 5.7
- Texas: 4.6
TB in Alaska - Tomorrow

- Collaboration
  - Epi/TB Control
  - PHN
  - Providers
  - Villages

- Creativity

- Interest
TB in South Africa – abstract

- “All trends are upward...”

“TB is largely a public health issue and will only be controlled when the problems of abject poverty such as malnutrition, overcrowding and early access to medical care are improved”
What can you do locally?

- Be aware –
  * Symptoms, go get checked
  * Where is the next outbreak?

- Encourage collaboration and communication
  * Screening/sweeps
  * Take medications/keep appointments
  * One noncompliant case can affect an entire village
  * Everybody take ownership/play a part
Acknowledgements

- All those involved in Alaska’s historic battle with TB

- State of Alaska, Division of Public Health
  - Infectious Disease Program
  - Public Health Nursing
  - State Public Health Laboratory

- Municipality of Anchorage
- Front line providers
- Community Health Aides
- Volunteers
- Centers for Disease Control and Prevention
Supplemental
AK TB Cases by Median Age

\[ y = 0.7t + C \]

\[ R^2 = 0.54 \]

\[ p = 0.001 \]
## Pediatric TB Cases, 1993-2008

<table>
<thead>
<tr>
<th>State or District</th>
<th># TB Cases</th>
<th>% TB Cases</th>
<th>Incidence*</th>
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<tbody>
<tr>
<td>Alaska</td>
<td>133</td>
<td>12.5</td>
<td>5.3</td>
</tr>
<tr>
<td>Washington, D.C.</td>
<td>59</td>
<td>4.1</td>
<td>3.9</td>
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<tr>
<td>California</td>
<td>4,313</td>
<td>7.5</td>
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<tr>
<td>Georgia</td>
<td>778</td>
<td>7.9</td>
<td>2.7</td>
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<tr>
<td>Texas</td>
<td>2,073</td>
<td>7.2</td>
<td>2.6</td>
</tr>
<tr>
<td>Arkansas</td>
<td>222</td>
<td>8.3</td>
<td>2.5</td>
</tr>
<tr>
<td>All others</td>
<td>9,924</td>
<td>5.9</td>
<td>1.4</td>
</tr>
<tr>
<td>Overall U.S.</td>
<td>17,502</td>
<td>6.3</td>
<td>1.8</td>
</tr>
</tbody>
</table>

* Time-averaged rate per 100,000

Data courtesy of CDC
AK Pediatric TB Cases, 2002-2011

<table>
<thead>
<tr>
<th>Year</th>
<th># cases</th>
<th>Rate/100,000</th>
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<tbody>
<tr>
<td>2002</td>
<td>5</td>
<td>3.1</td>
</tr>
<tr>
<td>2003</td>
<td>7</td>
<td>4.3</td>
</tr>
<tr>
<td>2004</td>
<td>6</td>
<td>3.7</td>
</tr>
<tr>
<td>2005</td>
<td>7</td>
<td>4.4</td>
</tr>
<tr>
<td>2006</td>
<td>7</td>
<td>4.4</td>
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<td>2007</td>
<td>4</td>
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<td>2008</td>
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<tr>
<td>2010</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>2011</td>
<td>6</td>
<td>3.8</td>
</tr>
</tbody>
</table>
AK Foreign-Born TB Cases by Country of Origin, 2002-2011

% Foreign-Born Population
% Foreign-Born TB Cases

- Philippines
- Laos
- Mexico
- Korea
- China
- Thailand
AK Drug-resistant TB Cases 2002-2011

# of Cases

# INH Resistant

# MDR

Year

PERCENTAGE OF DEATHS CAUSED BY DIFFERENT COMMUNICABLE DISEASES - ALASKA 1945