Understanding the Unique Social Dynamics of TB Treatment in the Four Corners Region: Fifty Years of Progress?

Durango, Colorado
November 4, 2015

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CDC Southwest Field Medical Officer
Goals

- Participants will develop an understanding of the historical challenges of TB care in the Four Corners region.

- Participants will be able to identify three primary social factors which either facilitate or hinder TB care in the region.
Disclaimers

- No conflicts to declare
- Opinions expressed are *not* those of the Centers for Disease Control or the Indian Health Service
Why 50 Years?

“Write what you know…”

- Mark Twain

“All I Really Need to Know I Learned in Kindergarten”

- Robert Fulghum
50+ Years Ago

Lieutenant (JG) Gerald C. Yost
50+ Years Ago

Sorry son. Just as this lake will fill up and solve all the water problems of the west, so will my generation solve all the region’s public health problems. You’ll need to find another career....
Kindergarten - 1966

- Place where skinny people went and died
- Hold your breath if you go near
- Government will chase you down and throw you in jail forever
Kindergarten - 1966

- Wasting disease with significant mortality
- Airborne contagion
- Federal government has a role and responsibility in the control of communicable diseases
TB is a tough disease to catch

Major association with alcohol, smoke and homelessness

The government may not always follow through on its responsibilities
Defining Social Determinants

“…those conditions that generate or reinforce social stratification in society. Social stratification in turn gives rise to an unequal distribution of determinants of health, including material living conditions and psychosocial circumstances as well as behavioral and biological risk factors.”

Risk Factors of Different Stages of TB Pathogenesis

EXPOSURE → INFECTION → DISEASE → ACCESS TO CARE AND CLINICAL OUTCOME

Risk Factors of Different Stages of TB Pathogenesis

- **EXPOSURE**
- **INFECTION**
- **DISEASE**
- **ACCESS TO CARE AND CLINICAL OUTCOME**

- Being male
- Age of infection source
- Community TB prevalence
- HIV population density
- Crowding
- Urban residence
- Poor home ventilation
- Indoor pollution

Risk Factors of Different Stages of TB Pathogenesis

EXPOSURE

INFECTION

DISEASE

ACCESS TO CARE AND CLINICAL OUTCOME

- Being male
- Increased age
- Race / Ethnic group
- Contact with source case
- Poverty
- Malnutrition
- Lack of BCG
- HIV
- Urban residence

Risk Factors of Different Stages of TB Pathogenesis

- Being male
- Increased age
- Race / ethnic group
- Poverty
- Malnutrition
- Lack of BCG
- Smoking, alcohol/drug abuse
- HIV and other immunosuppressive conditions
- Diabetes, cancer, silicosis
- Migration
- Urban residence

Risk Factors of Different Stages of TB Pathogenesis

- Geographic barriers
- Cultural barriers
- Weak healthcare systems
- Social stigma
- Lack of social protection
- MDR-TB
- Malnutrition
- HIV and other immunosuppressive conditions

Social Risk Factors in the Four Corners Region

- Homelessness
- Crowding / Air quality
- Alcohol / Substance abuse
- Geographic barriers / transportation
- Cultural barriers
- Weak healthcare systems
HOMELESSNESS IN NATIVE AMERICAN COMMUNITIES
Homelessness and TB in the United States

- 1% of persons experience homelessness in a given year
- 6% of persons with TB are homeless
- Homeless people represent a much larger proportion of persons who are involved in TB

Native Communities: A Learning Experience

**Known Contacts**
1. RD
2. AJ

**Housing List**
1. SD
2. CD
3. TR

**Sleeping Residents**
1. HT
2. JY
3. TY
4. WY
“From the time a baby draws its first breath, it is fully entitled to its fair share of any and all of that community’s resources, whatever that may entail. Overt hospitality is so deeply ingrained in nearly all Native cultures that it is not even talked about (or even thought about), it is acted upon. This level of hospitality is revered in most cultures around the world, but it can be a substantial barrier to getting and keeping housing.” (Martel 2012)
Homelessness: Challenges Quantifying

- AI/AN lands are significantly undercounted in the US Census
- Different manifestations in rural settings
  - Literal homelessness less likely
  - Substandard housing more common
  - Extended stays with family and relatives
    - Crowded conditions
    - Limited resources (transportation, etc.)
    - No tracking or reporting

Homelessness: Difficult Solutions

- Insufficient housing options on reservations and rural areas
- Housing conditions often not acceptable
  - Many homeless do not want jobs
  - Most lack credit
  - Restrictions on family sizes and visitors unacceptable
  - High alcohol addiction rates – unlikely to accept housing if drinking is not allowed
Homelessness: Challenges Investigating TB
CROWDING AND AIR QUALITY IN NATIVE AMERICAN COMMUNITIES
Housing Challenges: 2015

- Population
  - 173,000 on reservation (2010 census)
  - 39,400 electrical customers
  - 7,900 Natural gas customers
  - <200 solar customers

- Unmet needs
  - 15,000 families are without access to electricity
  - Many more homes and families without access to basic utility infrastructure, such as telephones, water, wastewater, and natural gas services.

Source: NTUA
Navajo household size is 30% larger than AZ average

16.5% of households have 6 or more people
Consistent evidence that tobacco smoking is associated with an increased risk of TB

More limited but consistent evidence for passive smoking and IAP as TB risk factors

Air Quality

Source: Southwest Indian Foundation Stove Assistance Program
Fig 1: Prevalence of wood/coal burning stove over time

Source: Personal communication: R Weatherholtz and L Hammitt – Johns Hopkins Center for Native American Health (9/2015)
# Smoking Patterns – 50 Years Ago

## Table 1—Comparison of cigarette usage among southwestern Indians, nonsouthwestern Indians and Caucasians, by race and sex

<table>
<thead>
<tr>
<th>Group</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
<th>Both</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total No.</td>
<td>Smokers No.</td>
<td>%</td>
<td>Total No.</td>
<td>Smokers No.</td>
<td>%</td>
</tr>
<tr>
<td>Regular use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General population*</td>
<td>18,697</td>
<td>12,447</td>
<td>66.6</td>
<td>24,371</td>
<td>8,093</td>
<td>33.2</td>
</tr>
<tr>
<td>NonSW Indians</td>
<td>18</td>
<td>10</td>
<td>55.6</td>
<td>24</td>
<td>11</td>
<td>45.8</td>
</tr>
<tr>
<td>SW Indians</td>
<td>361</td>
<td>114</td>
<td>31.6</td>
<td>470</td>
<td>60</td>
<td>12.6</td>
</tr>
<tr>
<td>Heavy use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(&gt;1 pkg/day)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General population*</td>
<td>18,697</td>
<td>6,009</td>
<td>32.1</td>
<td>24,371</td>
<td>2,919</td>
<td>12.0</td>
</tr>
<tr>
<td>NonSW Indians</td>
<td>18</td>
<td>6</td>
<td>33.3</td>
<td>24</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>SW Indians</td>
<td>361</td>
<td>16</td>
<td>4.4</td>
<td>470</td>
<td>5</td>
<td>1.3</td>
</tr>
</tbody>
</table>

*All data in this table are confined to those over 30 years of age because the general population was in this category in the study quoted, which is that of Hammond, E. C., and Garfinkel, L. Smoking Habits of Men and Women. J. Nat. Cancer Inst. 27:419–442 (Aug.), 1961.

Table 2 - Risk Factors in the RSV Efficacy Trial

<table>
<thead>
<tr>
<th>Site (N)</th>
<th>Anyone smoke</th>
<th>Wood/coal burning stove</th>
<th>Potential smoke exposure</th>
<th>Smoke during pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinle (234)</td>
<td>36 (15%)</td>
<td>175 (75%)</td>
<td>185 (79%)</td>
<td>11 (5%)</td>
</tr>
<tr>
<td>Fort D. (276)</td>
<td>53 (19%)</td>
<td>183 (66%)</td>
<td>199 (72%)</td>
<td>9 (3%)</td>
</tr>
<tr>
<td>Gallup (330)</td>
<td>59 (18%)</td>
<td>175 (53%)</td>
<td>198 (60%)</td>
<td>7 (2%)</td>
</tr>
<tr>
<td>Shiprock (511)</td>
<td>144 (28%)</td>
<td>211 (41%)</td>
<td>293 (57%)</td>
<td>39 (8%)</td>
</tr>
<tr>
<td>Tuba City (188)</td>
<td>40 (21%)</td>
<td>131 (70%)</td>
<td>146 (78%)</td>
<td>8 (4%)</td>
</tr>
<tr>
<td>Whiteriver (254)</td>
<td>70 (28%)</td>
<td>208 (82%)</td>
<td>218 (86%)</td>
<td>19 (8%)</td>
</tr>
<tr>
<td>Winslow (142)</td>
<td>28 (20%)</td>
<td>64 (45%)</td>
<td>81 (57%)</td>
<td>9 (6%)</td>
</tr>
<tr>
<td>DZ (11)</td>
<td>5 (45%)</td>
<td>3 (27%)</td>
<td>5 (45%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Crownpoint (78)</td>
<td>13 (17%)</td>
<td>35 (45%)</td>
<td>43 (55%)</td>
<td>6 (8%)</td>
</tr>
<tr>
<td>San Carlos (39)</td>
<td>17 (44%)</td>
<td>2 (5%)</td>
<td>17 (44%)</td>
<td>5 (13%)</td>
</tr>
<tr>
<td>Cibecue (63)</td>
<td>15 (24%)</td>
<td>60 (95%)</td>
<td>60 (95%)</td>
<td>8 (13%)</td>
</tr>
</tbody>
</table>

Source: Personal communication: R Weatherholtz and L Hammitt – Johns Hopkins Center for Native American Health (9/2015)
ALCOHOL USAGE PATTERNS
Alcohol Use – 1960s

- Alcohol prohibited on the reservation
- Bootlegging common from multiple border liquor outlets
Alcohol Use – 1960s

- Alcohol prohibited on the reservation
- Bootlegging common from multiple border liquor outlets
Alcohol Use – 1960’s

Comparison of Heavy Alcohol Usage by Tribe and Sex

### Progression of Alcohol Use

Table 1: The Prevalence of Alcohol Use in the mid-1960s and mid-1990s, by Type of Community of Residence and Sex (%)

<table>
<thead>
<tr>
<th></th>
<th>Rural Reservation</th>
<th></th>
<th>Agency Town</th>
<th></th>
<th>Border Town</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>A. Mid-1960s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life-long abstainer</td>
<td>5.0</td>
<td>37.5</td>
<td>0</td>
<td>64.3</td>
<td>11.1</td>
<td>66.7</td>
</tr>
<tr>
<td>Current abstainer</td>
<td>60.0</td>
<td>58.3</td>
<td>31.6</td>
<td>28.6</td>
<td>38.9</td>
<td>10.0</td>
</tr>
<tr>
<td>Current drinker</td>
<td>35.0</td>
<td>4.2</td>
<td>68.4</td>
<td>7.1</td>
<td>50.0</td>
<td>23.3</td>
</tr>
<tr>
<td>Number</td>
<td>20</td>
<td>24</td>
<td>19</td>
<td>14</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>B. Mid-1990s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life-long abstainer</td>
<td>7.6</td>
<td>36.4</td>
<td>3.7</td>
<td>33.0</td>
<td>10.0</td>
<td>6.9</td>
</tr>
<tr>
<td>Current abstainer</td>
<td>54.3</td>
<td>50.6</td>
<td>41.4</td>
<td>48.4</td>
<td>46.3</td>
<td>55.2</td>
</tr>
<tr>
<td>Current drinker</td>
<td>38.1</td>
<td>13.0</td>
<td>54.9</td>
<td>18.6</td>
<td>43.7</td>
<td>37.9</td>
</tr>
<tr>
<td>Number</td>
<td>289</td>
<td>77</td>
<td>162</td>
<td>97</td>
<td>80</td>
<td>29</td>
</tr>
</tbody>
</table>

Alcohol Use – Changes

- **Men**
  - Higher rates than women
  - Drink heavily largely in response to heavy drinking of those around them

- **Women**
  - Rates have increased more than in males
  - Excessive drinking is largely as a response to psychiatric disorders, depression, and domestic abuse

Alcohol Use – Changes and Challenges

- Prevalence of alcohol dependence still higher than in general U.S. population
- Alcohol use has been freed from the constraints imposed by both isolation and family obligations
- Ongoing efforts to control sales and distribution

Source: Kunitz SJ. Med Anthropology Quart, Vol 20(3) pp 279-296, 2006. Photo: Navajo Times
GEOGRAPHIC ISOLATION AND TRANSPORTATION
Until recently
Non Emergent Medical Transport (NEMT)

- AHCCCS covers medically necessary non-emergent patient transportation within certain limits as specified in Arizona Administrative Code (A.A.C.) RD 9-22-211.

- 70% of Navajo region is AHCCCS eligible

- In 2014-15 – Majority of TB cases in the region were AHCCCS covered
Non Emergent Medical Transport (NEMT)

- **Limitations**
  - Free transportation must not be available
  - Transportation provided to and from the nearest appropriate IHS/638 facility
  - <100 miles roundtrip doesn’t require a preauthorization

- **TB Care**
  - Active cases covered
  - LTBI covered
  - Screening may not be covered
AHCCCS NEMT

- 2014 – Tribes authorized to grant NEMT business licenses
- Proliferation of reservation based NEMT providers
  - 32 tribal
    - 23 Apache Cty
    - 10 Navajo Cty
    - 9 Coconino Cty

Source: AHCCCS Website - 10/1/2015
CULTURAL BARRIERS TO TB CARE
Early Cultural Challenges with TB

- Different understandings of the origin of TB
  - Caused by lightning
  - Not regarded as a contagious disease
  - Associated with disharmony between man and nature

- Predictive tests associated with witches

"Telling a patient that he has a reactive tuberculin test and that this means he may develop active tuberculosis in the future may mean to him that he has been cursed, that the physician has wished tuberculosis on him."

Program Modifications

- All NAIHS sites have traditional healers available to patients
- Traditional healing sites built on campus

Gallup Indian Medical Center
Program Modifications

- Standardized cultural awareness sessions for all new providers
- Weekly cultural sessions led by local healers

Pinon Health Center

Shiprock - Northern Navajo Medical Center
The NAIHS service area is comprised of the Navajo Nation and selected adjacent U.S. census tracts outside the reservation boundaries (not shown).
FEDERAL HEALTHCARE RESOURCES AND SUPPORT
Back in 1965…..

• >90% - of medical staff were USPHS Corps Officers

• <10% - Navajo region physician vacancy rates and <60 days to fill

• 35yo - average physician age

• TB experience the rule for staff

Not everything was great……..

“…. doctors take on the attitude that “government” (IHS) is a mass conspiracy solely invented to keep them from seeing their patients.”

- Kurt Deuschle “Some Problems of Physicians on the Navajo Reservation” (1958)

“Tuberculosis (mortality) is five times (national average)….and the proposed cutbacks will actually impair our ability to provide minimally acceptable health services.”

- LCDR Gerald Yost et al “Fort Defiance Doctors Call Navajo Health Situation Intolerable” – *Gallup Independent* (Jan 27, 1973)
### Provider Vacancy Rates*

<table>
<thead>
<tr>
<th>Professions</th>
<th>Indian Health Programs</th>
<th>Non-Indian Health Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>22%</td>
<td>11%</td>
</tr>
<tr>
<td>Nurses</td>
<td>16%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Dentists</td>
<td>20%</td>
<td>N/A</td>
</tr>
<tr>
<td>FNP's</td>
<td>19%</td>
<td>4.6%</td>
</tr>
<tr>
<td>PAs</td>
<td>7%</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

*Source: Merritt Hawkins IHS Survey 2011*
### Current Physician Characteristics

<table>
<thead>
<tr>
<th>Ages</th>
<th>Indian Health Programs*</th>
<th>All US Active Physicians**</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 or less</td>
<td>26%</td>
<td>31%</td>
</tr>
<tr>
<td>41-50</td>
<td>23%</td>
<td>33%</td>
</tr>
<tr>
<td>51-60</td>
<td>26%</td>
<td>31%</td>
</tr>
<tr>
<td>61 or older</td>
<td>25%</td>
<td>5%</td>
</tr>
</tbody>
</table>

TB experience now the exception for new medical staff at field sites

*Source: Merritt Hawkins IHS Survey 2011  
**Source: American Medical Association Physician Mater File
23rd Navajo Nation Council
Office of the Speaker

FOR IMMEDIATE RELEASE
June 16, 2015

Officials meet to discuss closure of Crownpoint Medical Center

WINDOW ROCK – Council Delegate Leonard Tsosie (Baca/Prewitt, Casamero Lake, Counselor, Littlewater, Ojo Encino, Pueblo Pintado, Torreon, Whitehorse Lake) on Monday, met with officials from Navajo Area Indian Health Services, Crownpoint Chapter, Thoreau Chapter, and community members to discuss how to resolve the recent closure of the emergency room, in-patient services, and obstetrics care unit at the Crownpoint Medical Center due to lack of medical personnel.
SUMMARY

- Homelessness
- Crowding / Air quality
- Alcohol Abuse
- Geographic Isolation / Transport
- Cultural Barriers
- Healthcare Systems
Pay attention in kindergarten son. Water problems may come and go, but the challenges of TB will always be there for you....
QUESTIONS?
What else happened 50 years ago?

- Miss Chinle contest

- Origin of the Navajo Taco
  - “A Navajo Bean Burro is basically chili beans wrapped snuggly in a piece of hot, fresh, Navajo fry bread.”
  - Selling as “fast as a cowboy’s rope” for 30 cents

- Actual Navajo taco invented by a Greek restaurant manager in Window Rock in 1966