The Kansas Melting Pot of Tuberculosis

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Kansas Tuberculosis Controller
Objectives

- Basic Tuberculosis 101 in a small nutshell
- Describe Tuberculosis in Kansas
- Case study demonstration of the impact of Tuberculosis on a Kansas community
Tuberculosis Impact

- Approximately one-third of the world’s population is infected with M. tuberculosis.

- In the United States, it is estimated that 9-14 million people have TB infection.
How you get TB infection

- Exposed to someone who has **active** TB disease
- Tubercle bacilli (germs) are spread in the air by coughing, speaking loudly, singing etc.
- These germs are then inhaled by another person and deposited in their body
Transmission of TB

- The more prolonged and intense the exposure, the greater the likelihood that transmission will occur.
- TB occurs most commonly in lungs (85% of the time), but can occur in other parts of the body.
Other Factors that Determine TB transmission

- Infectiousness of the person with TB disease
- Environment in which exposure occurred
- Length of time spent with the infectious TB patient
- Virulence (strength) of the TB bacteria
Tuberculosis Infection

How do we determine TB infection?

- Positive skin test
- Normal Chest x-ray
- Asymptomatic
Before treating TB Infection

- Active disease should be ruled out
- Determine if there is a history of treatment for LTBI or disease
- Determine if there are contraindications to treatment
- Obtain information about current and previous drug therapy
- Recommend HIV testing if risk factors are present
How do we treat TB infection?

- Isoniazid 300 mg daily for 9 months
- Medication is free from KDHE TB Program
- Monthly monitoring from the local health department
Can TB infection be spread?

- No

- Someone who is infected can not spread tuberculosis
  - With treatment, an individual decreases their chance of going on and developing active disease by approximately 90-95%
  - Without treatment, an individual could live their entire life with the infection and never break down into active disease
Infection to Disease

- Some individuals do break down once infected and go on to develop active disease
  - Typically this is a long process and the individual has some other condition or a compromised immune system that enables this break down to occur
    - Diabetes, HIV, organ transplant, gastric bypass surgery, prolonged corticosteroid therapy, end stage renal disease, silicosis, cancer of the head or neck, etc.
TB Disease

- Occurs when the inactive tubercle bacilli become active in the body (the body’s immune system becomes weak and the bacilli wake up)
- May be infectious (TB of the lungs and throat)
- Usually have clinical symptoms and don’t feel well
Symptoms of TB Disease

- Prolonged cough (2-3 weeks)
- Chest pain
- Hemoptysis
- Fever
- Chills
- Night Sweats
- Fatigue
- Loss of appetite
- Weight loss/failure to gain weight
Other Clinical evidence

- How do we determine TB disease?
  - Usually have a positive skin test
  - Usually have an abnormal x-ray
  - Usually have one or more symptoms
How do we treat TB disease?

- Combination therapy of INH, RIF, PZA, EMB taken for 6-12 months

- Medication is free from KDHE TB Program

- Directly observed therapy to ensure that the patient is adhering to the prescribed treatment
Can TB disease be spread?

- Yes

  - Someone who has TB disease can spread the germ to others and cause them to have TB infection
Infectiousness of TB Disease

- Persons with active TB Disease of the lungs and throat are considered infectious if they:
  - Are coughing
  - Are undergoing cough-inducing procedures
  - Have sputum smears that are positive for Acid-fast bacilli and are not receiving therapy
  - Have just started TB therapy
  - Have poor clinical response to therapy
TB germs cannot be spread by:

- Brief contact
- Casual contact
- Sharing dishes and utensils
- Using towels and linens
- Handling food
If you have been exposed to TB disease

- One cannot take the germ home and expose his/her family and friends to the TB germ
- TB disease is preventable. If TB infection occurs after exposure one can take medicine to decrease the chances of developing disease.
- TB disease is curable.
<table>
<thead>
<tr>
<th>TB Infection vs. TB Disease</th>
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</thead>
<tbody>
<tr>
<td>Tubercle bacilli in body</td>
</tr>
<tr>
<td>TB skin test reaction</td>
</tr>
<tr>
<td>(usually positive)</td>
</tr>
<tr>
<td>Chest x-ray (usually</td>
</tr>
<tr>
<td>normal)</td>
</tr>
<tr>
<td>Sputum smear &amp; culture</td>
</tr>
<tr>
<td>negative</td>
</tr>
<tr>
<td>Asymptomatic</td>
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<tr>
<td>PERSON IS NOT INFECTIONIOUS</td>
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<tr>
<td>OFTEN INFECTIOUS</td>
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<td>BEFORE TREATMENT</td>
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</tbody>
</table>
Kansas Demographics

A five year review
Twenty Years of Case Counts

Year | Number of cases
--- | ---
1985 | 82
1986 | 72
1987 | 60
1988 | 58
1989 | 72
1990 | 78
1991 | 62
1992 | 56
1993 | 100
1994 | 83
1995 | 84
1996 | 89
1997 | 73
1998 | 78
1999 | 56
2000 | 69
2001 | 77
2002 | 80
2003 | 89
2004 | 75
2005 | 62
2006 | 60
Case Rate Comparing KS to US

Year

Rate/100,000
0 1 2 3 4 5 6 7 8 9 10

KS
US

8.7 8 7.4 6.8 6.4 5.8 5.6 5.2 5.1 4.9 4.8 4.6

3.1 2.6 2.7 1.9 2.3 2.6 3 3.3 2.8 2.3 2.2 2.2 3
Gender

![Gender Chart]

- Male
- Female

2002 2003 2004 2005 2006
Residential Risk Factors

- **2002**: Homeless - Long Term Care
- **2003**: Homeless - Long Term Care
- **2004**: Homeless - Long Term Care
- **2005**: Homeless - Long Term Care
- **2006**: Homeless - Long Term Care

Legend:
- Homeless
- Corrections
- Long Term Care
Clinical Risk Factors

2006
- IDU
- Non IDU
- ETOH Abuse
- HIV Positive

2005
- IDU
- Non IDU
- ETOH Abuse
- HIV Positive

2004
- IDU
- Non IDU
- ETOH Abuse
- HIV Positive

2003
- IDU
- Non IDU
- ETOH Abuse
- HIV Positive

2002
- IDU
- Non IDU
- ETOH Abuse
- HIV Positive
Disease Site

![Disease Site Chart]

- Pulmonary
- Extrapulmonary
- Both
Likelihood of Infectiousness

- 2002: 40% Infectious, 40% Unknown, 20% Not Infectious
- 2003: 30% Infectious, 30% Unknown, 40% Not Infectious
- 2004: 20% Infectious, 50% Unknown, 30% Not Infectious
- 2005: 10% Infectious, 60% Unknown, 30% Not Infectious
- 2006: 0% Infectious, 100% Unknown, 0% Not Infectious
Case Distribution

- Some predictability
- Many areas see cases only once in ten years
- Distribution may explain some of the diversity
2002 Case Distribution

- 1-5 cases
- 6 cases
- 12 cases
- 29 cases
2003 Case Distribution

- 1-5 cases
- 9 cases
- 14 cases
- 30 cases
2004 Case Distribution
2006 Case Distribution

Statewide Active TB Distribution 2006
The Melting Pot

- 50% - 63% of cases are foreign born individuals
- 36 countries of birth have been represented in Kansas in the past five years
- Most cases are diagnosed within two to five years of arrival in Kansas
Foreign Born vs US Born

- 2006: 50% Non-US Born, 32% US
- 2005: 31% Non-US Born, 29% US
- 2004: 35% Non-US Born, 27% US
- 2003: 44% Non-US Born, 31% US
- 2002: 45% Non-US Born, 40% US
Country Distribution (5 YR Total)

- Afganistan
- Bangladesh
- Cameroom
- Croatia
- El salvador
- Honduras
- Ireland
- Kazakhstan
- Malawi
- Nicaragua
- Panama
- Puerto Rico
- Russia
- Sierra Leone
- Somalia
- Tanzania
- Ukraine
- Thailand
- Vietnam
- Mexico
- Kenya
- India
- Philippines
- Guatemala
- Laos
- Ethiopia
- Nepal
- Korea
- Pakistan
- China
- Sudan
- Peru
- Cambodia
- Zimbabwe
- Zambia
- Venezuela
- Ukraine
- Thailand
- Somalia
- Siera Leone
- Russia
- Puerto Rico
- Panama
- Nicaragua
- Malawi
- Kazakhstan
- Ireland
- Honduras
- El salvador
- Croatia
- Cameroon
- Bangladesh
- Afganistan
Kansas Top Ten

The chart shows a breakdown of top ten countries by percentage from 2002 to 2006. Each bar represents a year, with the percentage for each country color-coded:

- **Ethiopia**
- **Guatemala**
- **India**
- **Kenya**
- **Korea**
- **Laos**
- **Mexico**
- **Nepal**
- **Philippenes**
- **Vietnam**

The countries are ranked from left to right in the following order:
1. **Vietnam**
2. **Mexico**
3. **India**
4. **Kenya**
5. **Guatemala**
6. **Laos**
7. **Korea**
8. **Phillippenes**
9. **Nepal**
10. **Ethiopia**
Lyon County, Kansas

Latent TB 2005 Compared to 2006 YTD

Unduplicated Users

Quarterly Report


2005 | 2006
Why Emporia Kansas?
Health Department Overview

- 1 RN Supervisor
- 4 Full-time Staff Nurses (RN)
- Walk-in Clinic
- Services Provided:
  - Immunizations, STI testing and TX, Communicable Disease Investigation, TB Screening and TX, Paternity Testing, HIV screening and counseling, Fluoride varnish application, Birth control refills, school nursing, Immigration lab work, Refugee Assessments, Bioterrorism, health screenings such as cholesterol, hearing/vision, pregnancy, lead
The First Wave.....

- February 28, 2006
  - Tyson Information Meeting
    - 70 Somalia Employee Transfers from Nebraska
  - One week later they arrived and were working at Tyson Fresh Meats.
Health Department Impact

- Word spreads regarding Tyson job opportunities in Emporia

- Tyson Health Nurse Pre-employment Physicals increase
  - Direct referrals to Health Department for immunizations and PPDs
  - Tyson does not require TB Skin tests
  - Nurse: completed verbal screening and referred to health department
Health Department Impact

- Interpreter Needs
  - Language Lines

- Front Desk
  - 20 show at time
  - Language barriers
  - Financial issues
  - Appointments/Understanding of time
    - Registration
Health Department Impact

- Longer wait times
- Longer Office Visits
- Slammed into new role
Health Department Impact

- Public Health Staff
  - Complexity of Office Visit
  - New Staff not familiar with Refugee Health Assessments/State process
  - Deciding if we are the Refugee Police?
  - Case Management Issues and Non-compliance
  - Turning patients away
Community Impact

RUMORS

HIV

Rape

Spreading Disease

Dining Facilities

Government Kick-backs

NURSE: TUBERCULOSIS RUMORS UNTRUE

BY SCOTT ROBERT

Rumors of several active cases among the Somali workers are untrue, Hively said.

"We only have one active case of tuberculosis and that is currently not a Somali," Hively said.

A majority of the workers who tested positive for the infectious disease were Somali, Hively said.

Exposure to tuberculosis is common in Third World countries.

Tyson spokesman Gary Mickelson said the company screens a number of its workers each year for tuberculosis.

Typically, Hively said, only about 5 percent of people with latent tuberculosis become active cases. That’s more likely in somebody with a weakened immune system, whose body has difficulty killing the bacteria that cause the disease.

The disease is spread through the air when a person with the active form coughs or sneezes.

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New Game Plan

- October, 2006 Emporia Refugee Resettlement Alliance (ERRA) formed
Game Plan

- Interpreters
- Appointments vs Walk-in
- Assigned one nurse to Case manage TB Program
  - Added 1 day of RN time
  - Recently add Certified Medication Aid
  - Utilizing Access Data Base vs Excel and white board
  - Built a TB network with other Primary Resettlement Cities (Health Departments)
Grand Slam January 5, 2007

- Tyson Accident

- Coroner Phone Call
  - Cavitary Lesion

- Index Case
  - Non-compliant
  - Foreign born
  - 2 years in USA
  - Normal chest x-ray x 2
  - Initially No signs and symptoms
  - Symptomatic 4 weeks prior to death
Grand Slam

- Began Preliminary Contact List
  - Waiting for green light

- Contacted State

- Set up Tuberculosis Education Session at Tyson (Jan. 18th) and Environment inspection

- Notified Jan. 17th – POSITIVE for Cavitary TB

- Jan. 19th official investigation began
Grand Slam

- Phone Call after Phone Call
- Blogs in Gazette
- TB In-service for school district and nurses and Wal-Mart Managers
- Car loads of people for chest x-rays
- 35-40 Contact interviews
Grand Slam

- Dedicated 120 hours to investigation
  - Does not include hours supplemental staff used
    - Answering questions from Community
    - Correspondence with Tyson during investigational period
  - Phone interviews regarding case
Game Plan

- Increased Tuberculosis Training
- Formal meeting end of March
  - Corporate Nurse for Tyson, Health Department TB Manager and Staff and State TB Controller
- Fact Sheets now in Somali
  - Minnesota State Health Department
- Translated other documents
  - Reminder post cards
  - Letters
  - Medication Instructions etc.
Contact Information

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