

Tuberculosis Mortality New Mexico

2013 ARIZONA INFECTIOUS DISEASE
TRAINING & EXERCISE

July 25, 2013

Phoenix, Arizona



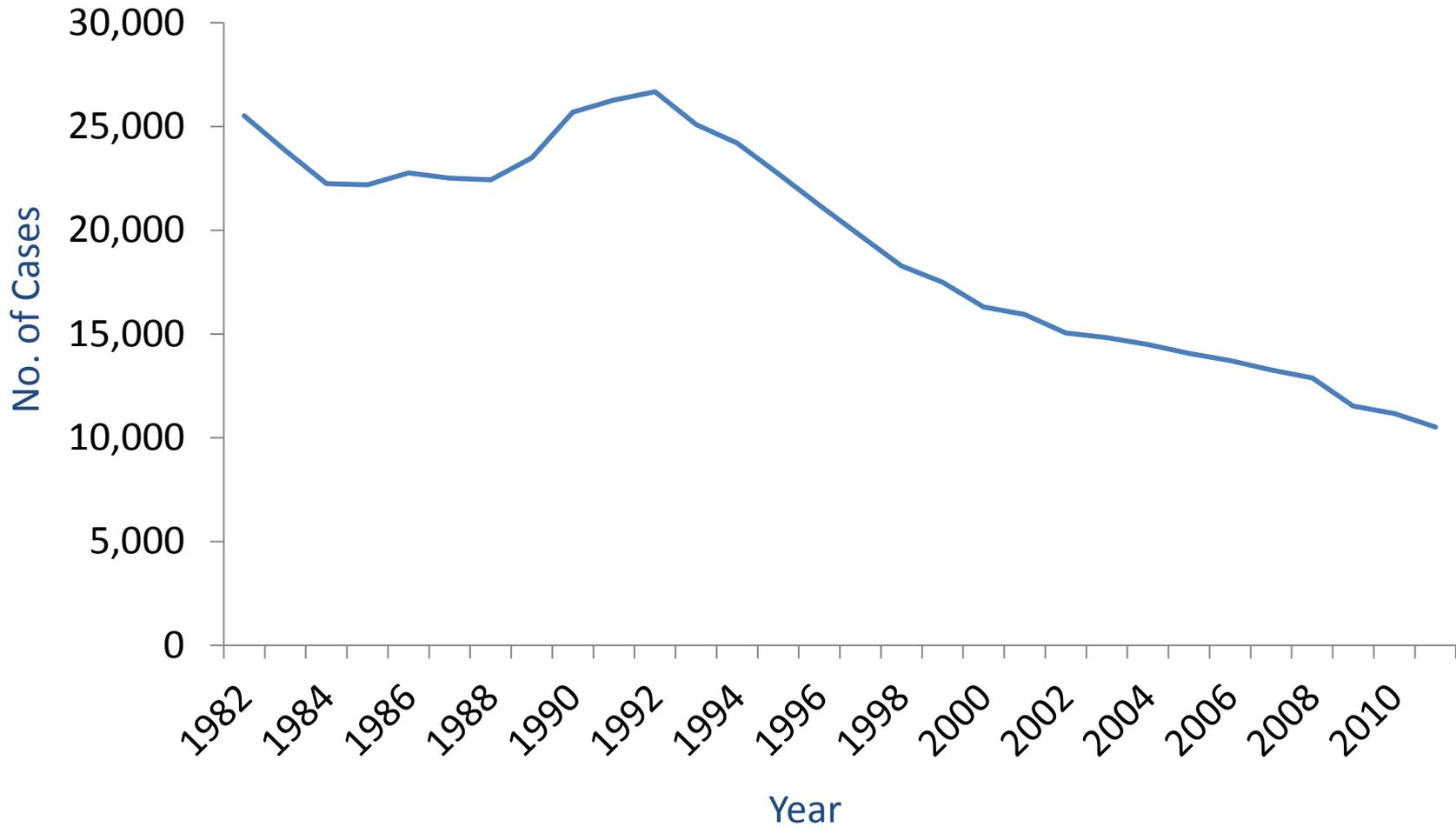
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Objectives

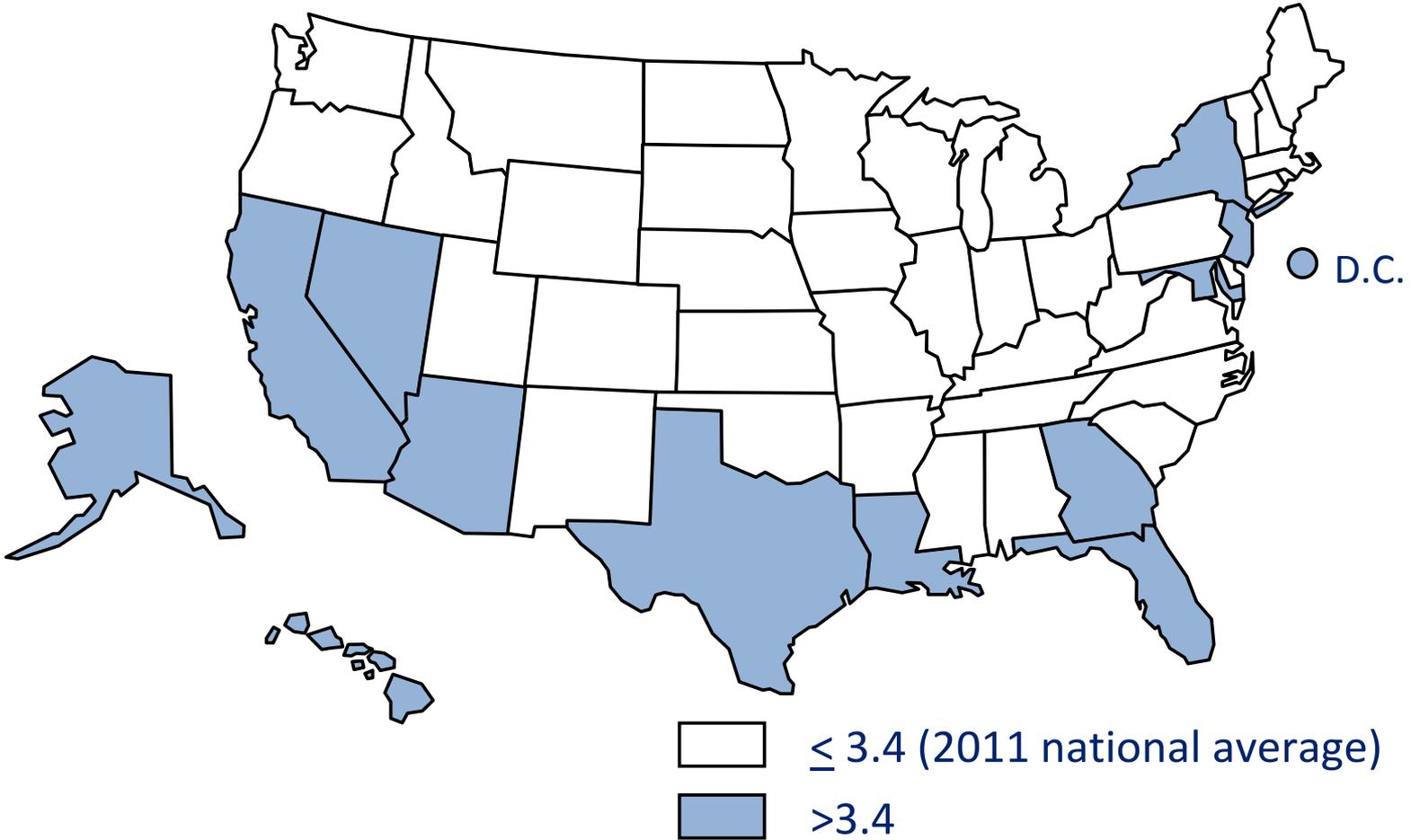
- Overview of the epidemiology
- Historical overview
- Epidemiology of TB mortality
- Retrospective cohort review study of TB mortality in New Mexico

Reported TB Cases United States, 1982–2011*



*Updated as of June 25, 2012.

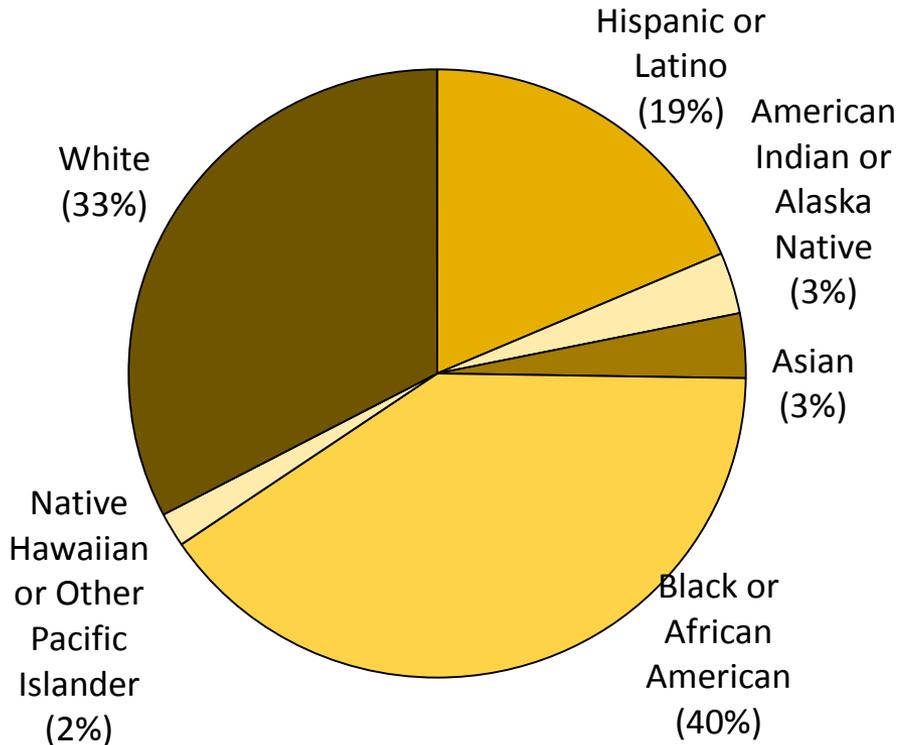
TB Case Rates,* United States, 2011



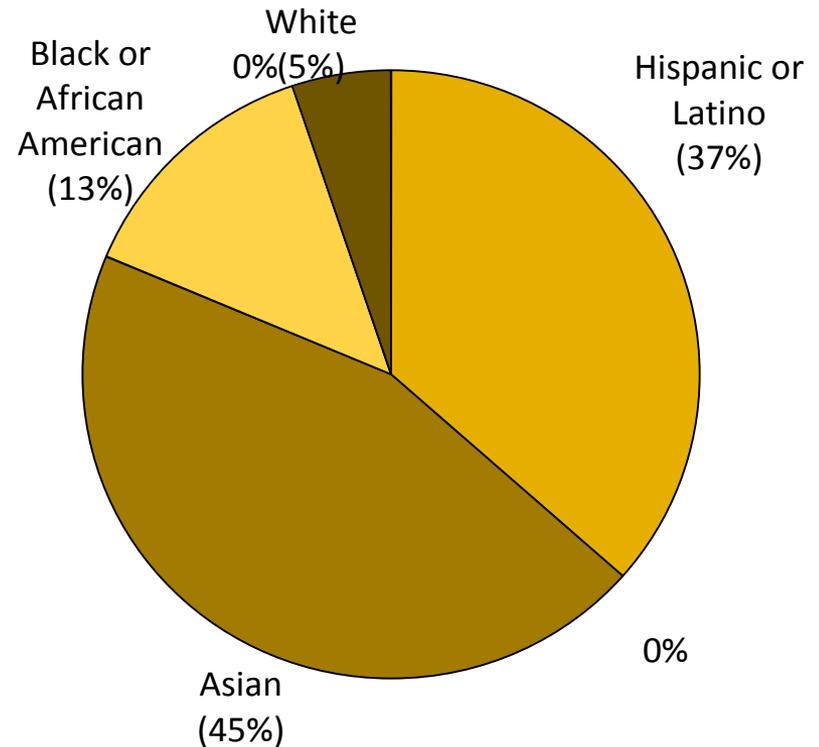
*Cases per 100,000.

Reported TB Cases by Origin and Race/Ethnicity,* United States, 2010

U.S.-born



Foreign-born**

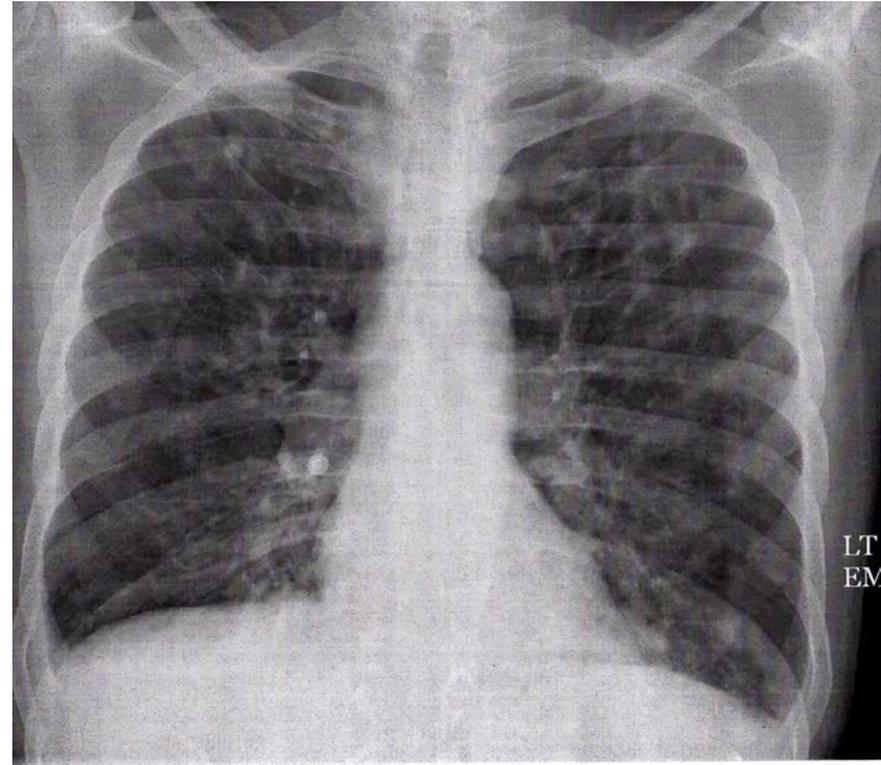


*All races are non-Hispanic. Persons reporting two or more races accounted for less than 1% of all cases.

** American Indian or Alaska Native and Native Hawaiian or Other Pacific Islander accounted for less than 1% of foreign-born cases and are not shown.

Case

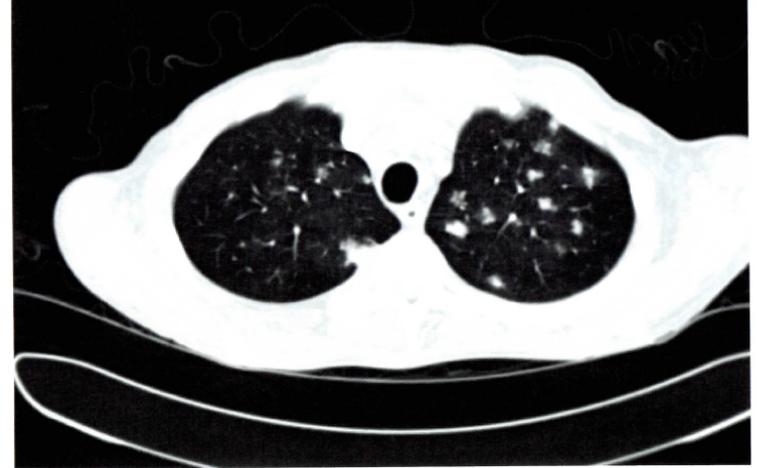
- 52 y/o male African American, with h/o, homeless, depresión, Hep C, CRI
- H/o of 6 month of cough, 60 pound weight loss, chills, night sweats, fever
- PE: cachectic looking male, left supraclavicular lymph node 3X2 cm
- Chest X ray: LLL infiltrate, multiple nodules



Case

CT chest, abdomen: multiple pulmonary nodules of different sizes & diffuse mediastinal and abdominal lymphadenopathy

Impression: Diffuse scattered nodules with thoracic & intra abdominal adenopathy, indicative of metastatic disease with pattern most suggestive of lymphoma



Case

- Pulmonary Consult: Lymphoma most likely diagnosis
 - “rule out TB with 3 AFB smears”
- 3 sputums for AFB smear were negative
- TST negative
- FNA of left supraclavicular node, necrotic cells
- Patient developed DIC, low BP, mental status changes, he was transferred to MICU
- ENT refused open biopsy given poor clinical condition
- 4 days after admission to MICU the patient passed away
- Cause of death per death certificate:
 - malignancy, sepsis, pneumonia

Diagnosis

- 2 weeks after sputums were collected, all specimens growing AFB bacillie
- Identification MTB complex
- Drug Susceptible to all primary drugs

Was the patient appropriately and completely assessed?

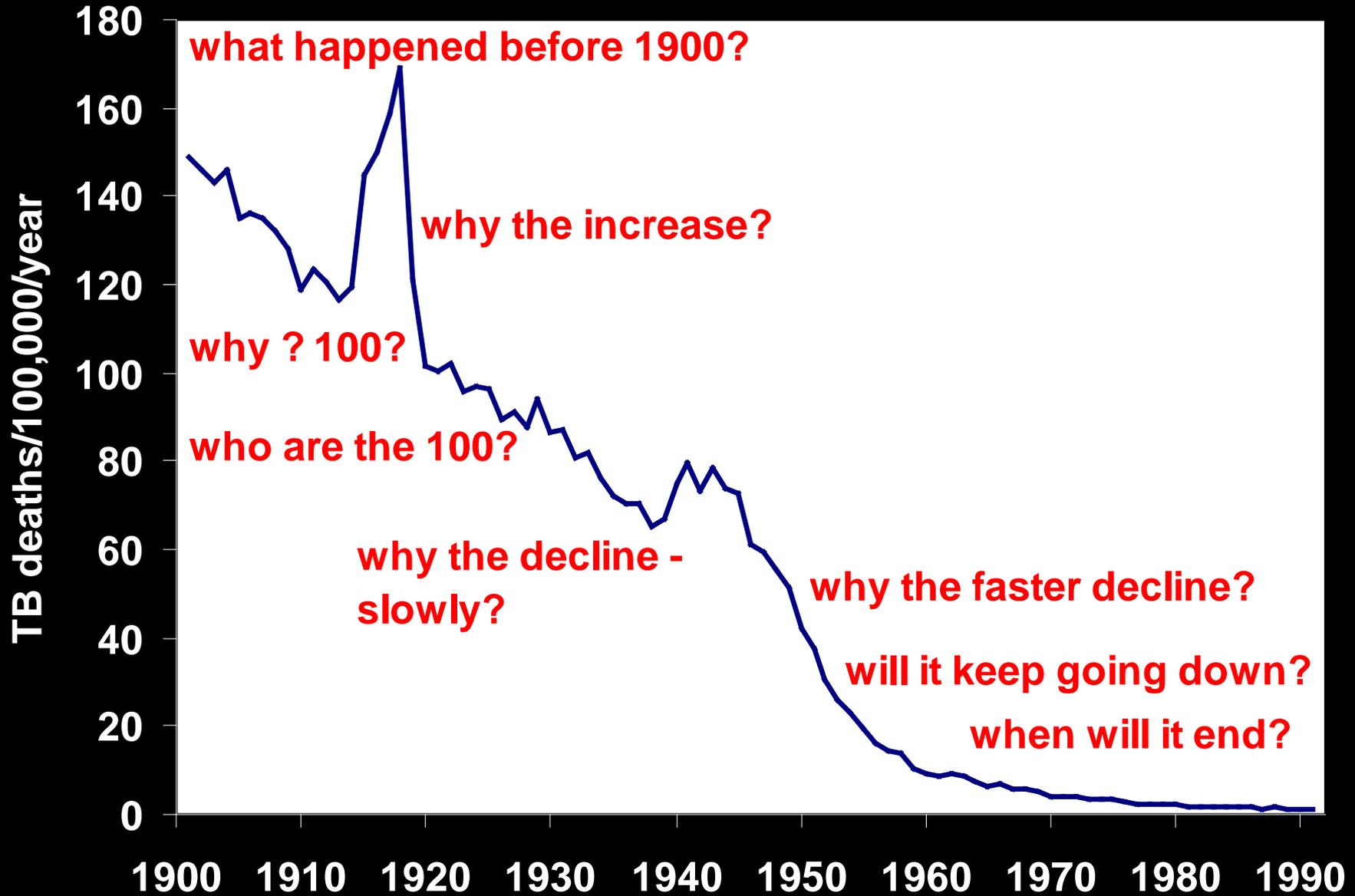
- The work up was geared towards cancer based on radiology and consultants impressions
- A complete infectious disease work up was not done
- A history of exposure to TB was not obtained
- 3 sputums were negative for AFB but the diagnosis of TB was not ruled out
- NAA testing was not performed

Guidelines for the Use of Nucleic Acid Amplification Tests

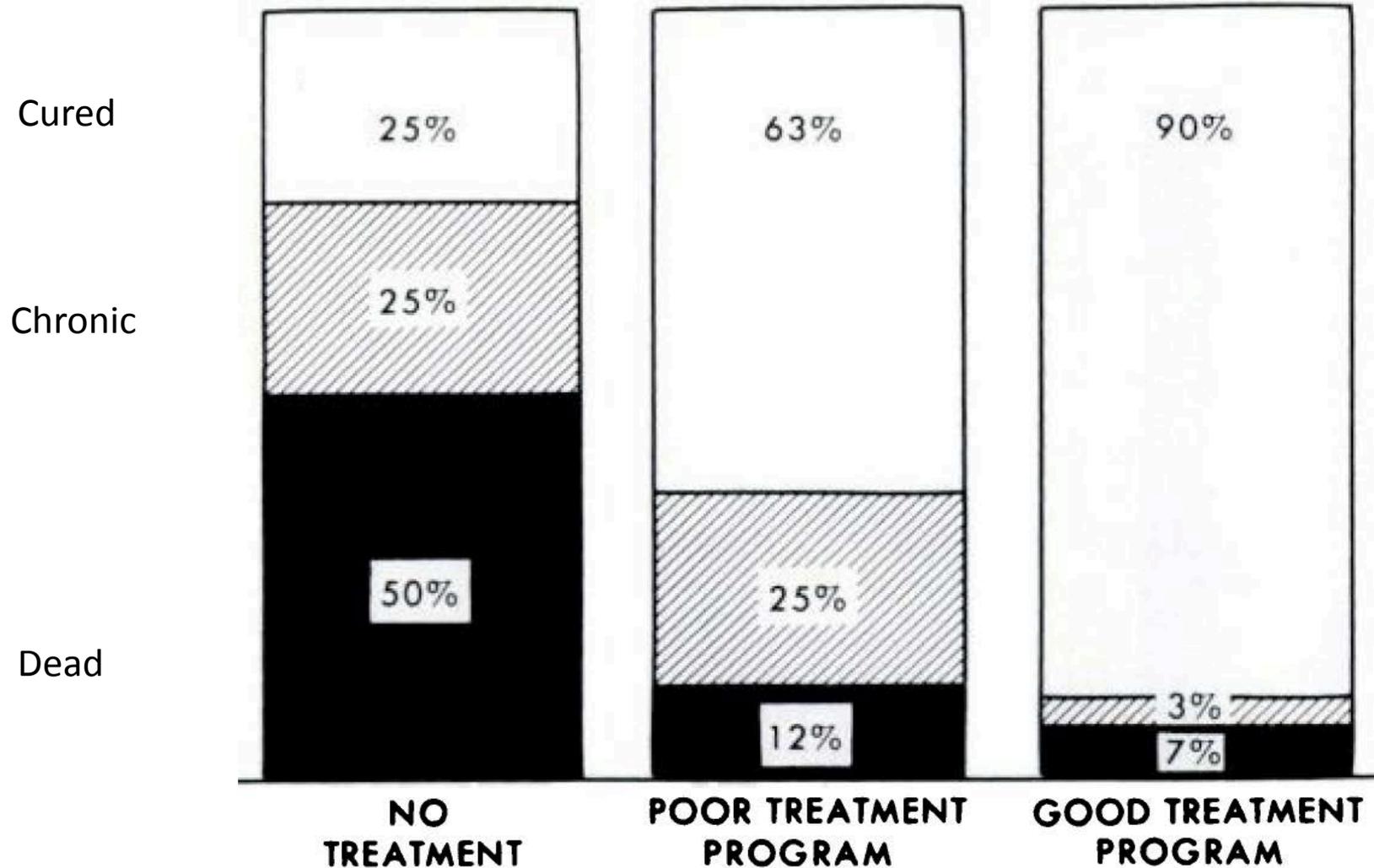
- NAA testing should be performed on at least one respiratory specimen from each patient with signs and symptoms of pulmonary TB

Updated Guidelines for the Use of Nucleic Acid Amplification Tests in the Diagnosis of Tuberculosis. MMWR; January 2009.

TB deaths in England & Wales, 1900-91



Outcomes of Pulmonary Tuberculosis



Epidemiology of TB Mortality

- Worldwide around 2 million people die with tuberculosis each year
- Of all new smear-positive pulmonary tuberculosis patients treated by the DOTS strategy worldwide, 4.6% died
- Prevalence of TB in the US 3.4 cases per 100,000 persons in 2011
- 1998 to 2008 153,000 cases diagnosed
- 3,708 (2.4%) deaths

Background

- New Mexico is designated as a low-incidence state
2.4 per 100,000 persons
- In 3 years 16% of New Mexico's TB patients died

Study Objectives

- Identify the cause of death and risk factors among New Mexico's tuberculosis population
- Identify missed opportunities in TB prevention, diagnosis, and treatment

Methods

- Retrospective study of patients who have died *with* tuberculosis between January 1, 2007, and June 30, 2009
- Review of available clinical information
- We utilized the California Tuberculosis Death Assessment Tool to identify the cause of death and any missed opportunities in diagnosis and prevention*

<http://www.cdc.gov/tb/publications/newsletters/notes/TB>; 2008*

**TB Mortality Rate in New Mexico:
Jan 1, 2007 – Dec 31, 2009**

Year	Total TB cases	Patients who died with TB	Mortality rate (%)
2007	51	8	16
2008	60	8	13
2009	48	10	21

Status at TB Diagnosis and Method By Which TB Was Diagnosed

All patients (N = 25)

Status at TB Diagnosis

Dead at TB diagnosis	5 (20)
Died before starting TB therapy	3 (12)
Died during TB therapy	17 (68)

Method By Which TB Was Diagnosed

Sputum culture	10 (40)
Lymph node or abscess aspirate	9 (36)
Bronchial washings culture	2 (8)
Bone biopsy and culture	1 (4)
Autopsy	1 (4)
Pleural fluid culture	1 (4)
Peritoneal fluid culture	1 (4)
Urine culture	1 (4)

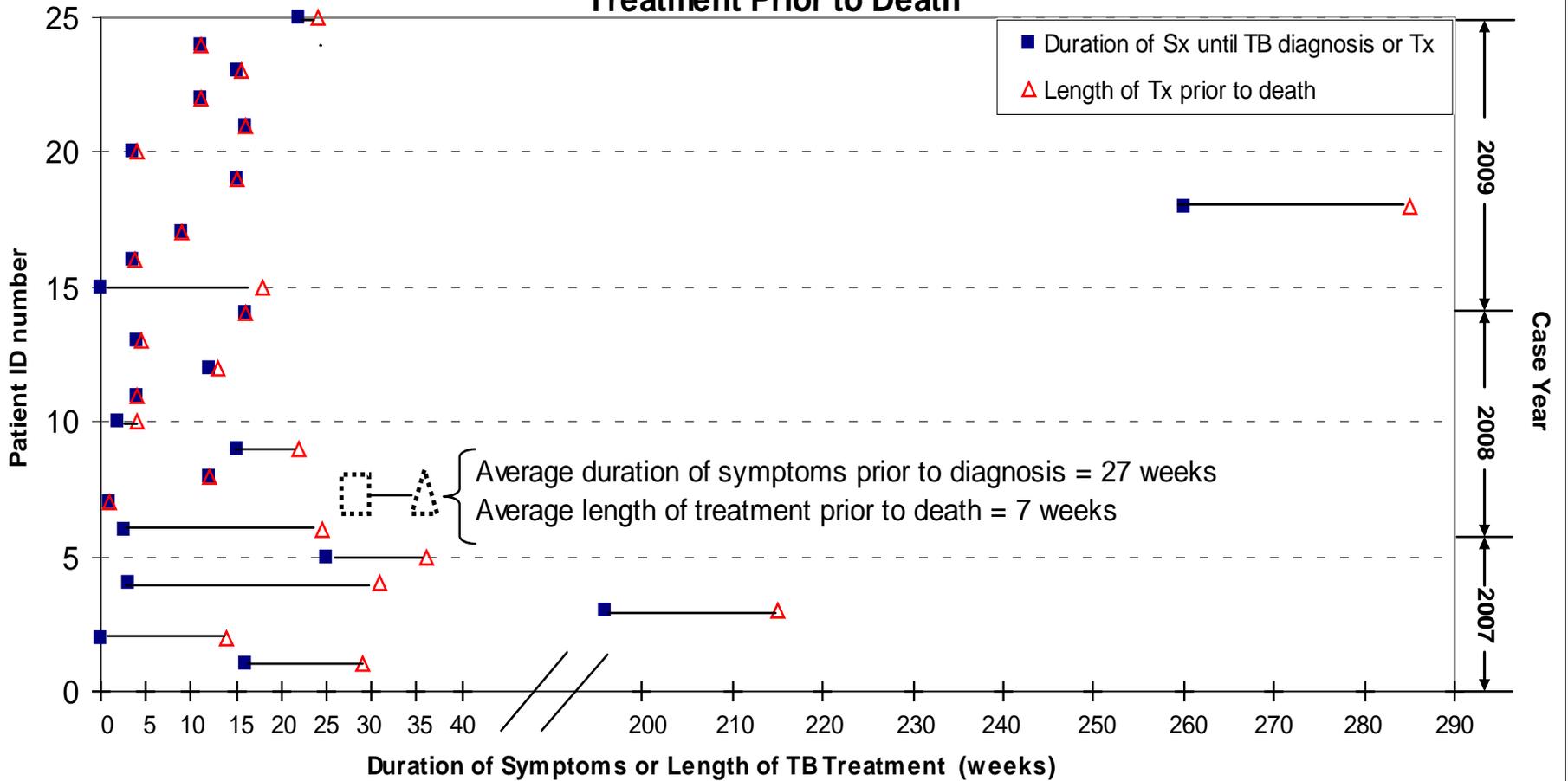
Demographic, Clinical & Microbiological Characteristics

Characteristic	All patients (N = 25)
Age, years	
Median (range)	74 (36-92)
Sex	
Male	11 (44)
Female	14 (56)
Race/ethnicity	
White, non-Hispanic	2 (8)
Black, non-Hispanic	1 (4)
Hispanic	10 (40)
Native American	10 (40)
other	2 (8)
Place of birth	
United States	13 (52)
Outside the United States	12 (48)
Mexico	10 (40)
Alcohol use/abuse	5 (20)
Prior treatment for TB	1 (4)
History of positive PPD	2 (8)
Pulmonary disease	8 (32)
Malignancy	3 (12)
Diabetes mellitus	7 (28)

Demographic, Clinical & Microbiological Characteristics

Characteristic	All patients (N = 25)
HIV positive	3 (12)
ESRD	2 (8)
Hypothyroidism	9 (36)
Cavitary infiltrate on CXR	3 (12)
Miliary infiltrate on CXR	6 (24)
Site of disease	
Pulmonary only	10 (40)
Pulmonary and extrapulmonary	11 (44)
Extrapulmonary only	4 (16)
Site of extrapulmonary disease	
Lymphatics	4 (16)
Renal	3 (12)
Bone	2 (8)
Hepatic	1 (7)
CNS/Meningeal	1 (7)
Blood/bacteremia	1 (7)
Gastrointestinal	2 (8)

(1) Duration of TB Symptoms Prior to Diagnosis or Treatment and (2) Length of Treatment Prior to Death



TB-Relatedness of Deaths

TB-relatedness of death category	All patients (N=25)
Definitely TB-related	14 (56)
Possibly TB-related	3 (12)
Unlikely TB-related	7 (28)
Definitely Not TB-related	1 (4)
Unknown TB-related	0 (0)

Seventeen (68%) of the deaths were due to TB-associated disease

Missed Opportunities in Prevention & Diagnosis

	Number of missed opportunities (% of patients)			
	Definitely TB-related	Possibly TB-related	Unlikely TB-related	Total
<hr/>				
<i>Case Detection</i>				
Provider delay in diagnosis	10 (40)	2 (8)	3 (12)	15 (60)
Patient delay in diagnosis	8 (32)	1 (4)	3 (12)	12 (48)

Discussion

- We confirmed a high TB-related mortality in a low-incidence state
 - 68% of deaths due to TB-associated disease
- Disease often presents in the elderly often in a disseminated form
- Foreign-born from Mexico and Native Americans most commonly affected

Possible Interventions to Help Reduce Future Deaths in New Mexico

- Provide feedback to private providers regarding diagnostic standards for TB
- Increased provider education of the signs and symptoms of TB
 - High index of suspicion for patients with certain risk factors
 - Lower threshold for the use of empiric TB therapy
- Ask providers to report TB suspects
- Provide TB education to the public

Have you noticed a change in your...

Harmony? Breath? Energy?



IT MAY BE TBI!

505-722-1589



Limitations of the study

- Descriptive retrospective study
- Inadequate medical documentation could result in inaccurate conclusions
- Only 3 years of data
- New Mexico's experience in assessing TB deaths may not be representative of other programs

Acknowledgments

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