

M. bovis: A Clinical Perspective



James Sunstrum, M.D.

TB Consultant

Michigan Dept. of Community Health



Department of
Community Health



AMERICAN LUNG ASSOCIATION
of Michigan

■ Just published.....

- “Human Tuberculosis due to *Mycobacterium bovis* in the United States, 1995-2005”

■ Clinical Infectious Disease

2008:47, 168-175

- Hlavsa MC, Moonan PK, Cowan LS, Navin TR, Kammerer JS, Morlock GP, Crawford JT and Lobue PA.

■ 2008 *M. bovis* article...

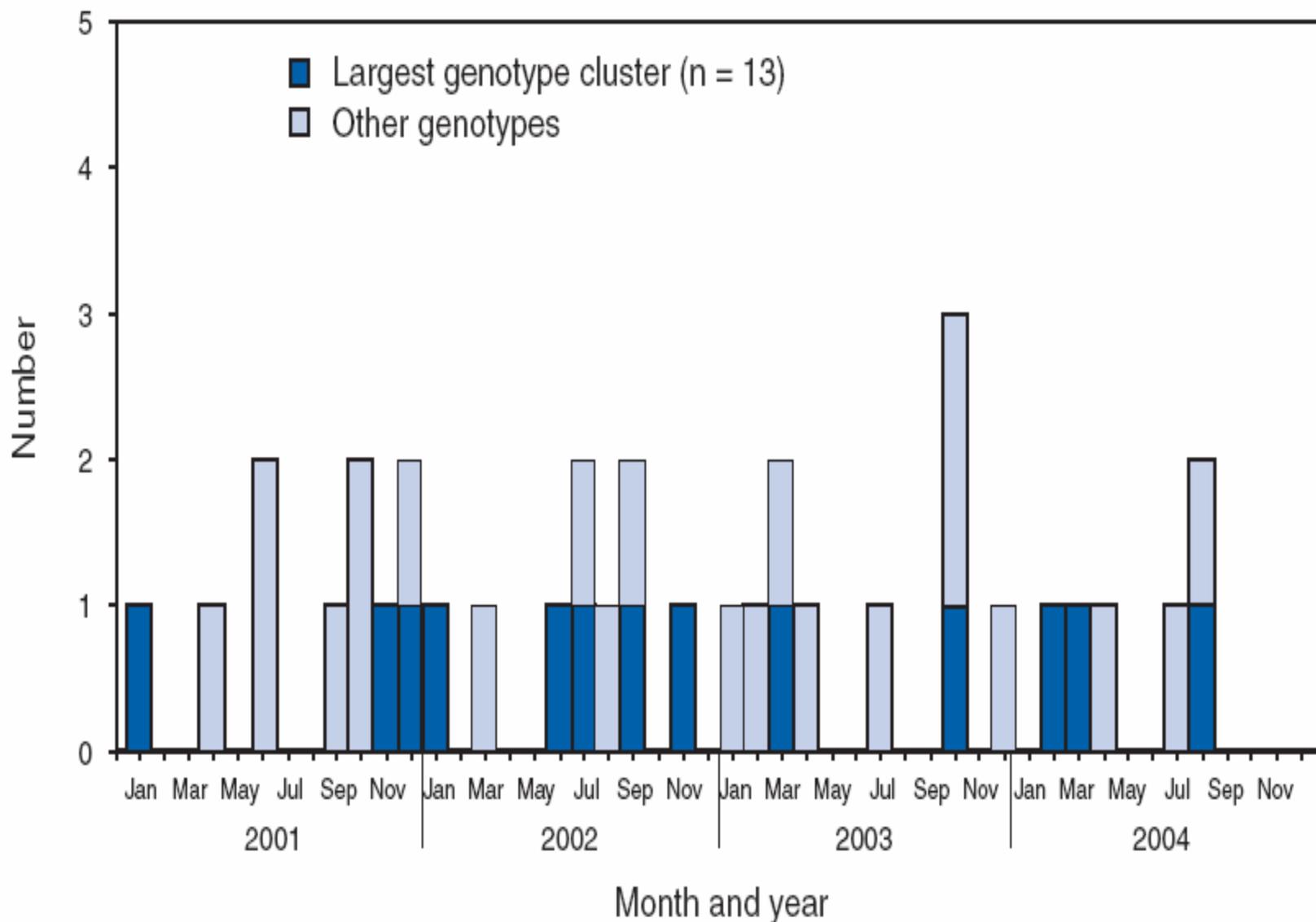
- 1.4% (165 cases) of human TB cases in USA 1995-2005
- National TB Genotyping Service permits systematic identification

■ MMWR June 24, 2005

Human Tuberculosis Caused by *Mycobacterium bovis* — New York City, 2001–2004

In March 2004, a U.S.-born boy aged 15 months in New York City (NYC) died of peritoneal tuberculosis (TB) caused by *Mycobacterium bovis* infection. *M. bovis*, a bacterial species of the *M. tuberculosis* complex, is a pathogen that primarily infects cattle. However, humans also can become infected, most

FIGURE. Number* of reported *Mycobacterium bovis* cases, by month and largest genotype cluster† — New York City, 2001–2004§



Our TB Clinic....

January 2005

- 34 Mexican male
- Bilateral neck swelling
- 8 weeks fever, weight loss
- Occasional dry cough
- Meds: none
- Physical exam
- Temp 101
- Bilateral indurated cervical nodes
- Lungs clear
- WBC 7.2
- Hgb 14
- Platelets 161,000

January 2005

- PPD 15 mm
- CXR clear
- Cervical node biopsy “caseating granulomas”
- AFB in tissue sections
- HIV antibody ++
- CD4 186
- HIV RNA 440,000

Medications January 2005

■ TB Meds

■ INH

■ Rifampin

■ Pyrazinamide

■ Ethambutol

■ Vitamin B6

■ HIV Meds

■ Combivir

■ Sustiva

■ TMP/SMX

■ February 2005

- Massive enlargement of neck nodes
- Fluctuant 10 cm L neck abscess
- Spontaneous drainage R neck abscess
- CXR remains clear
- Extensive rash on forearms

Immune Reconstitution Syndrome (IRIS)

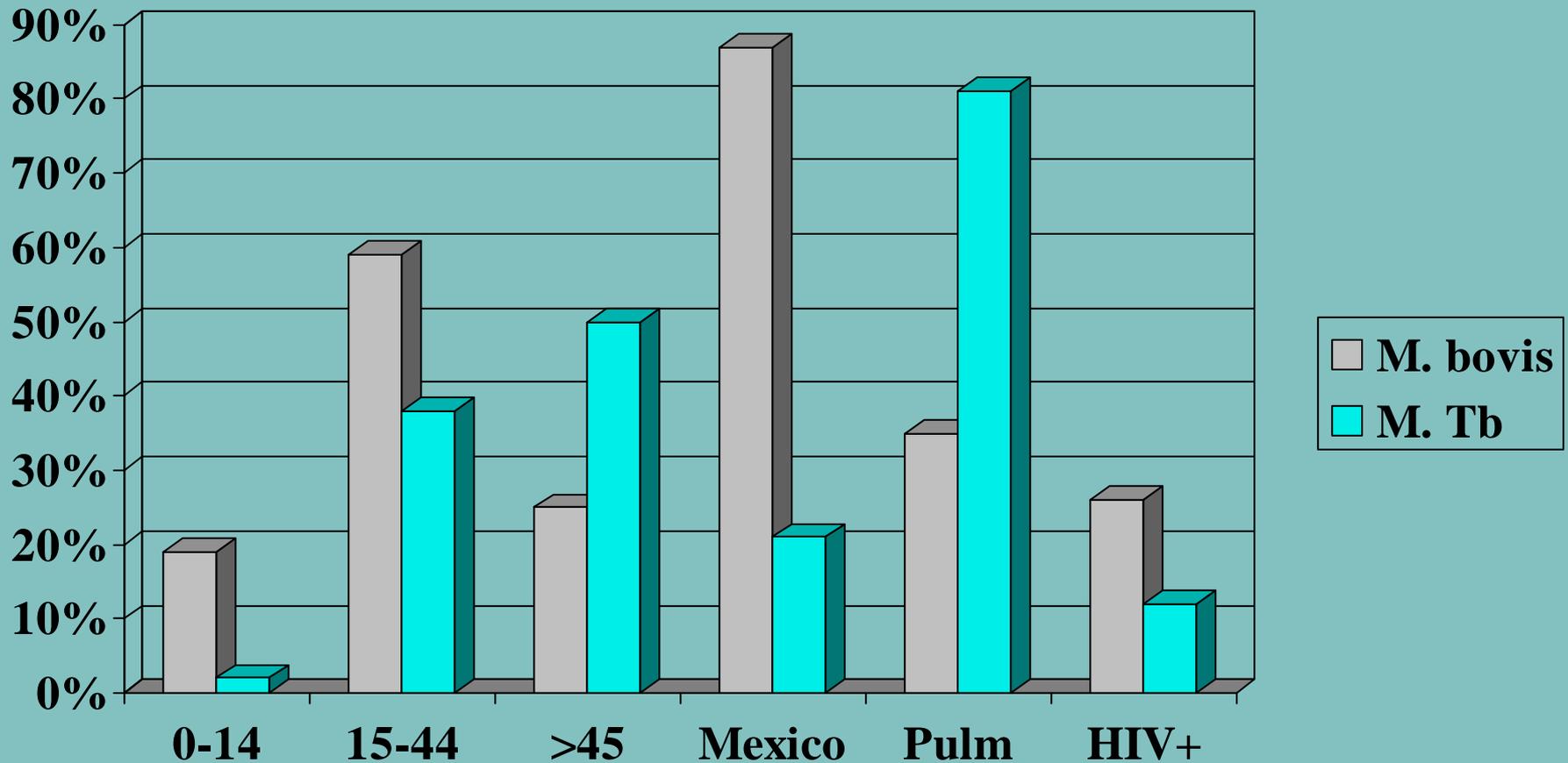
Appearance of a new infection, or worsening of an infection, following initiation of anti-retroviral therapy. Usually in initial 3 months of HIV therapy.



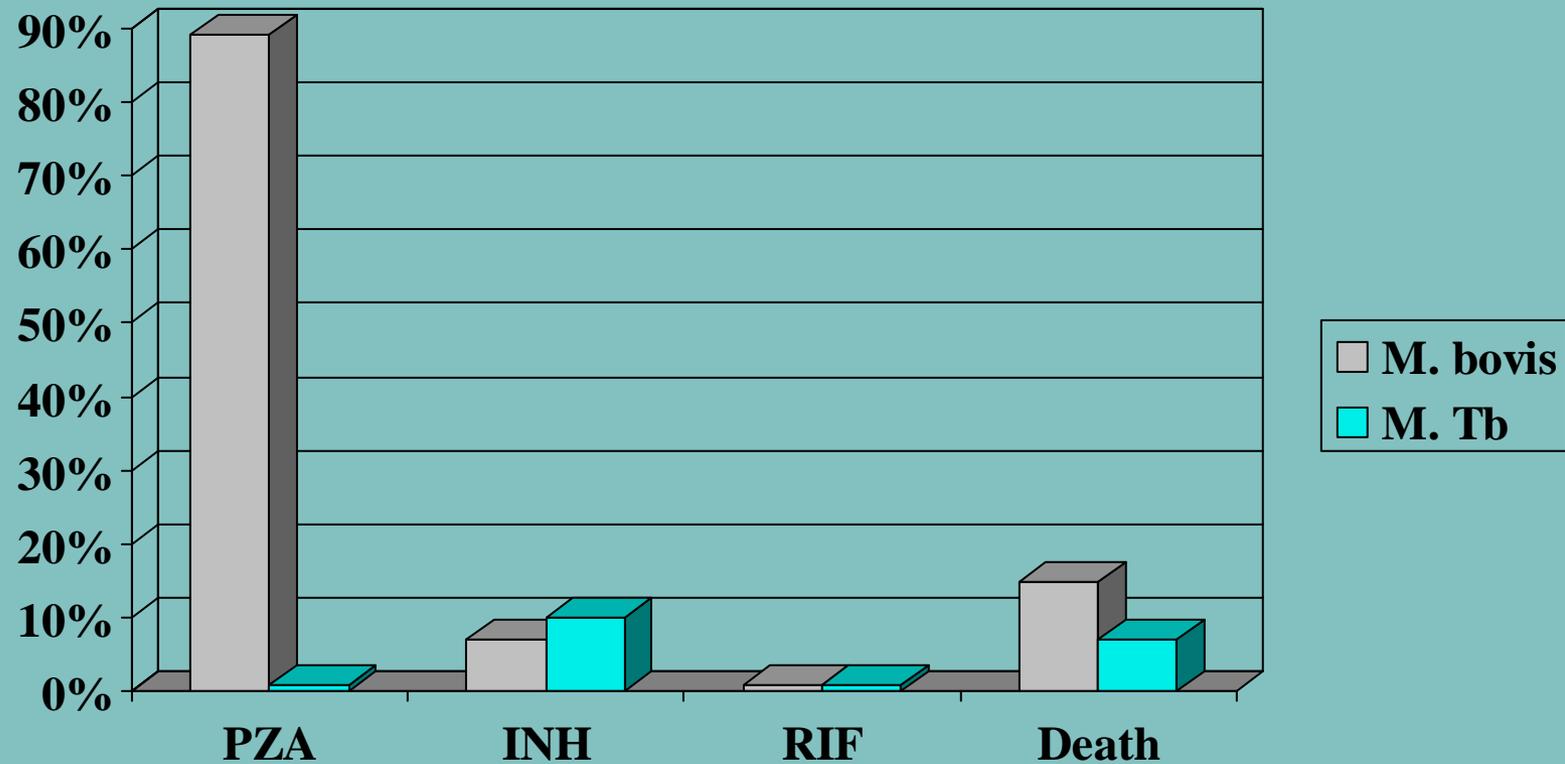
■ April 2005

- MDCH reports organism R to pyrazinamide (PZA)
- *Mycobacterium bovis*
- PZA treatment shortens duration from 9 months to 6 months

Clinical Differences between *M. bovis* and *M. tuberculosis*



Drug resistance. Does it matter?



M. Bovis Transmission

- Unpasteurized dairy products
- Readily available in Baja and San Diego County
- Mexican dairy herds have *M. bovis*
- Potential for airborne transmission of pulmonary *M. bovis*

Pasteurization of Dairy Products

- 1938: 25% of infection outbreaks in USA were Milk-borne
- *Brucella spp.*
- *M. bovis*
- *Salmonella spp*
- Q fever
- Streptococci; Staphylococci
- Diphtheria

Mycobacterium bovis in the 3rd World

- What is role of *M. bovis*?
- What is extent of pasteurization?
- What dairy herd controls for *M. bovis* exist?
- HIV is unmasking *M. bovis*

Nobel Peace Prize Plaza, Cape Town



Lutuli 1960

Tutu 1984

**DeKlerk &
Mandela 1993**

GLOBAL MARCH FOR TB

JOIN THE GLOBAL MARCH ON TB & HIV
CALLING FOR

EDUCATION, PREVENTION,
TREATMENT AND CURE

8 NOV AT 4 PM

ST. GEORGES
CATHEDRAL

M. Bovis Symposium at IUATLD International TB
Conference
Capetown, South Africa
November 2007

- Mexico: 30% of milk is not pasteurized
- Bovine TB control does not compensate ranchers
- Most labs do not identify *M. bovis*
- Survey of tertiary hospital (HIV care) found 19% of active TB cases due to *M. bovis*

References:

- “Epidemiology of *M. bovis* disease in San Diego County, 1994-2000. Int. J. Tuberc Lung Dis 2003; Feb. 7:180-5
- “Treatment of *M. bovis* infected tuberculosis patients: San Diego County, California, United States 1994-2003: Ibid 2005: March. 9:333-8
- “HIV/AIDS and its implications for the control of animal tuberculosis” Br. Vet J. 1993; 149:405-417
- “*Mycobacterium bovis* tuberculosis: from animal to man and back. Int. J. Tuberc. Lung Dis 2004; 8:903-904