

FDA Anti-Infective Drugs Advisory Committee  
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# U.S. and Global Tuberculosis Perspective on Drug Resistance and Prospects for Elimination

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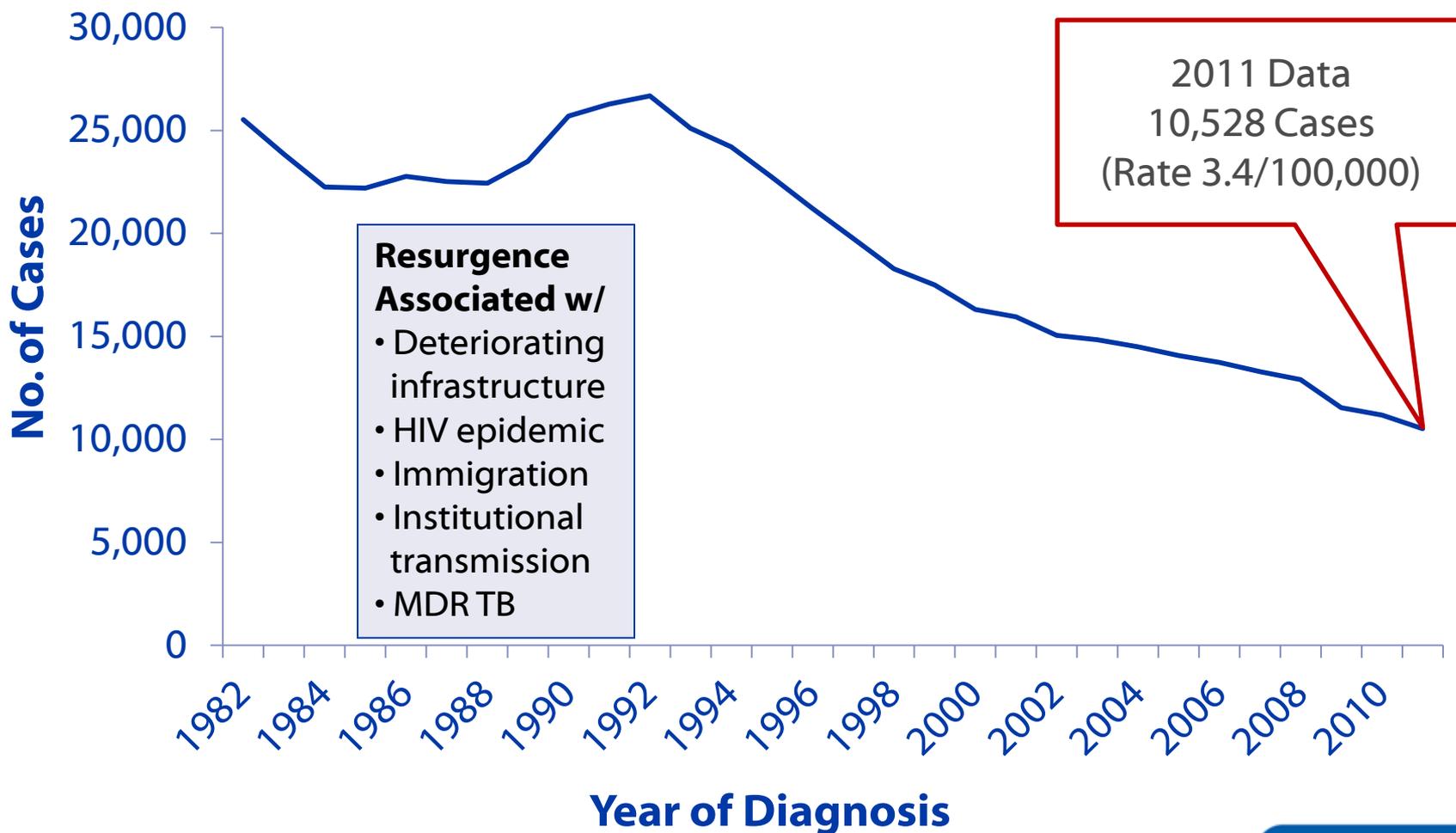
National Center for HIV/AIDS, Viral Hepatitis, STD & TB Prevention



# Challenge of Drug Resistant Tuberculosis

- ❑ **U.S. multidrug-resistant (MDR) TB outbreaks contributed to unprecedented resurgence in 1985–1992**
  - Massive HIV-associated epidemic with high mortality
  - Outbreaks in New York, California, Florida hospitals, hospices, prisons
  - Experience later replicated in Argentina, Italy, Spain, South Africa
- ❑ **Following the national response period, U.S. MDR TB incidence stable, 1.0–1.5%, mostly in foreign-born**
- ❑ **Global MDR incidence estimated 310,000 in 2011\***
  - Only 19% of MDR TB notified to WHO
- ❑ **Recognition of extensively drug-resistant TB in 2005 with worse mortality and treatment outcomes**
- ❑ **Increasing drug resistance patterns recently reported in India, Iran, and elsewhere**

# Reported TB Cases United States, by Year, 1982–2011\*

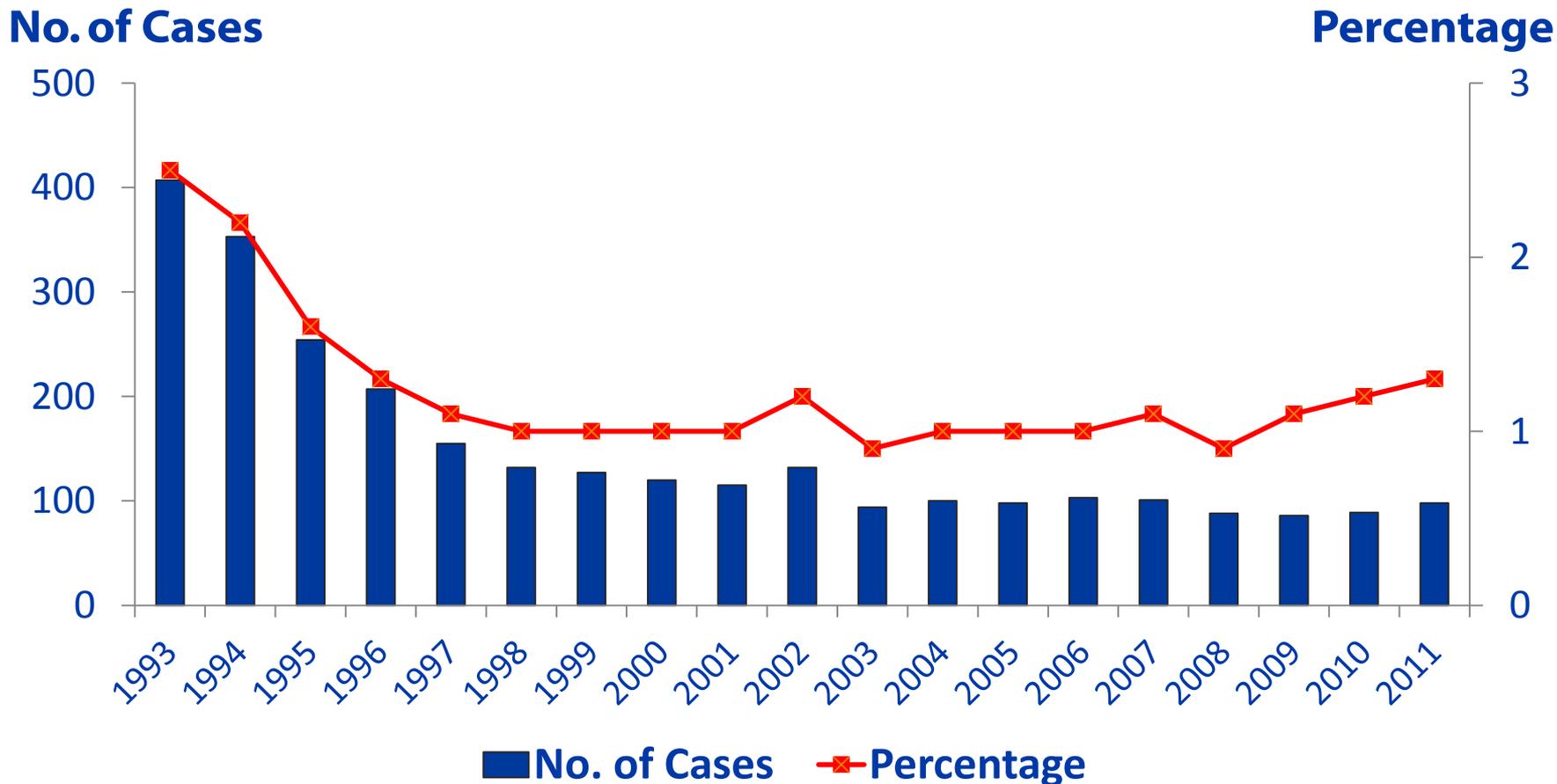


\*Updated July 2012



# Primary MDR TB

## United States, by Year, 1993 – 2011\*

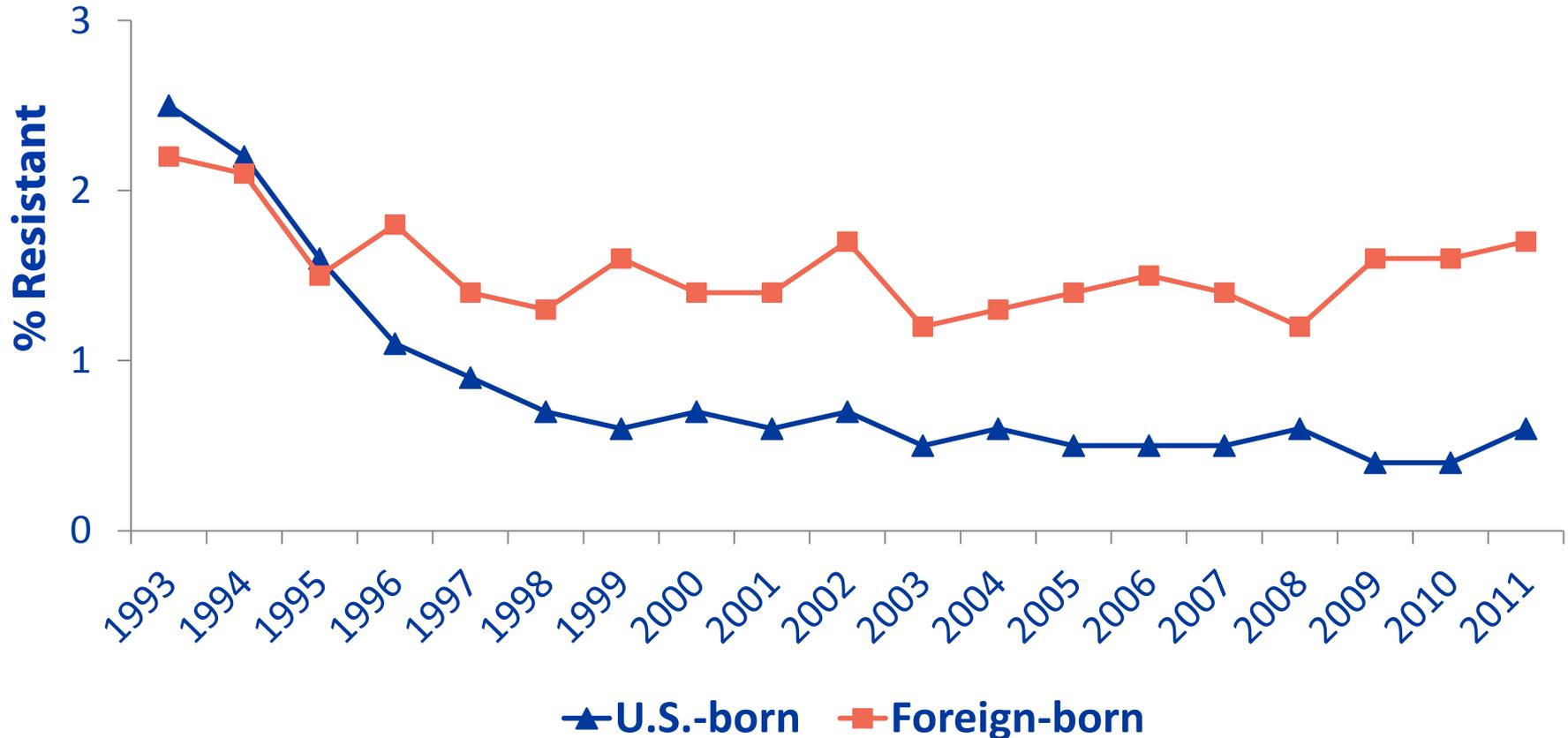


\*Updated as of June 25, 2012

Note: Based on initial isolates from persons with no prior history of TB. MDR TB defined as resistance to at least isoniazid and rifampin.



# Primary MDR TB in U.S.-born vs. Foreign-born Persons United States, by Year, 1993 – 2011\*

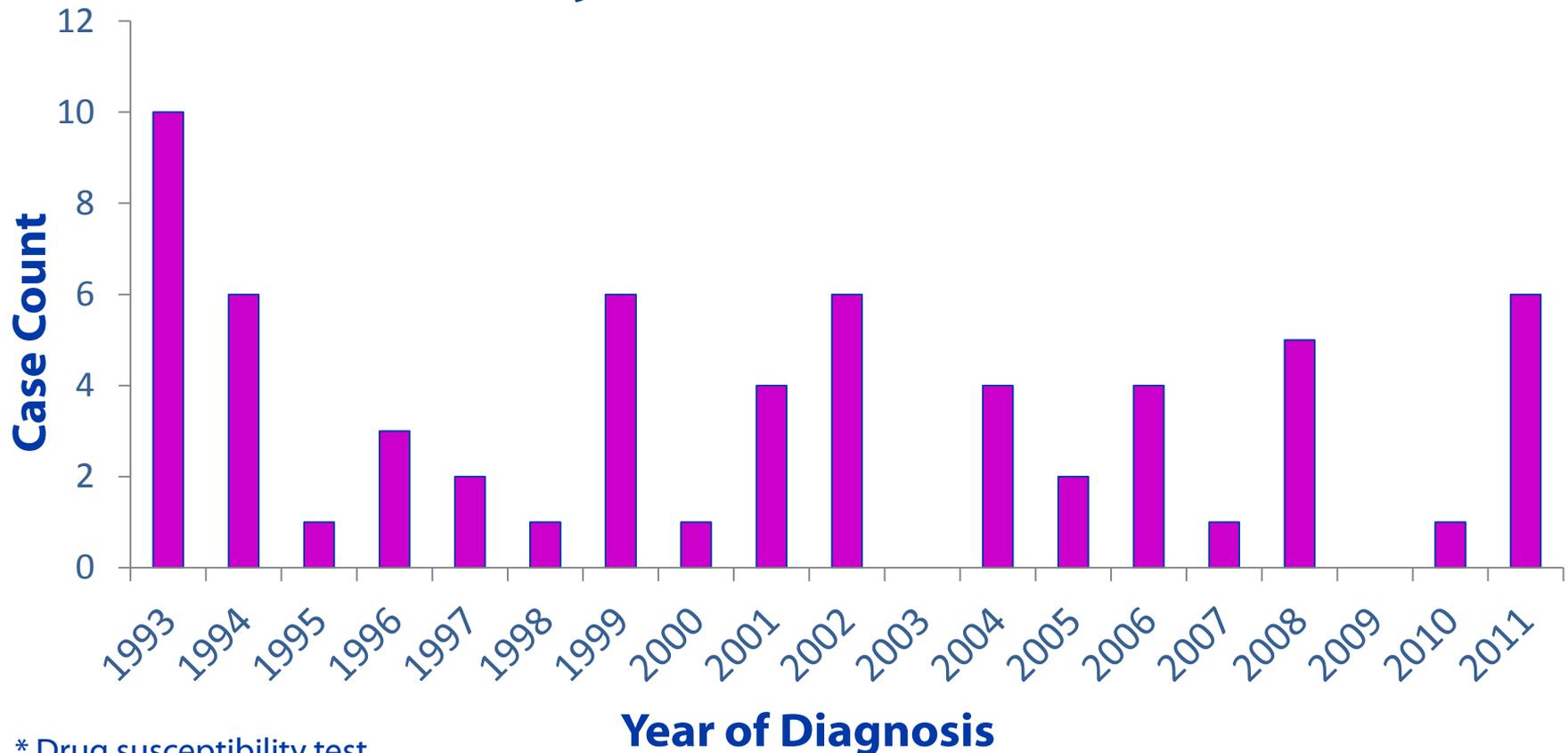


\*Updated as of June 25, 2012

Note: Based on initial isolates from persons with no prior history of TB. MDR TB defined as resistance to at least isoniazid and rifampin



# XDR TB Case Count Defined on Initial DST,\* by Year, 1993 – 2011\*\*



\* Drug susceptibility test

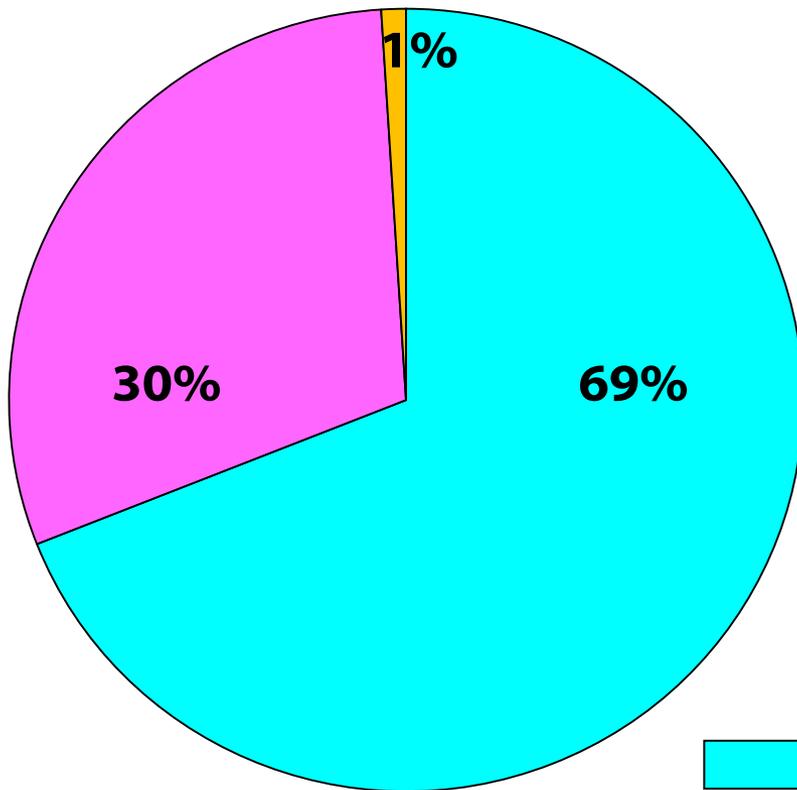
\*\* Updated as of June 25, 2012

Note: Extensively drug-resistant TB (XDR TB) is defined as resistance to isoniazid and rifampin, plus resistance to any fluoroquinolone and at least one of three injectable second-line anti-TB drugs

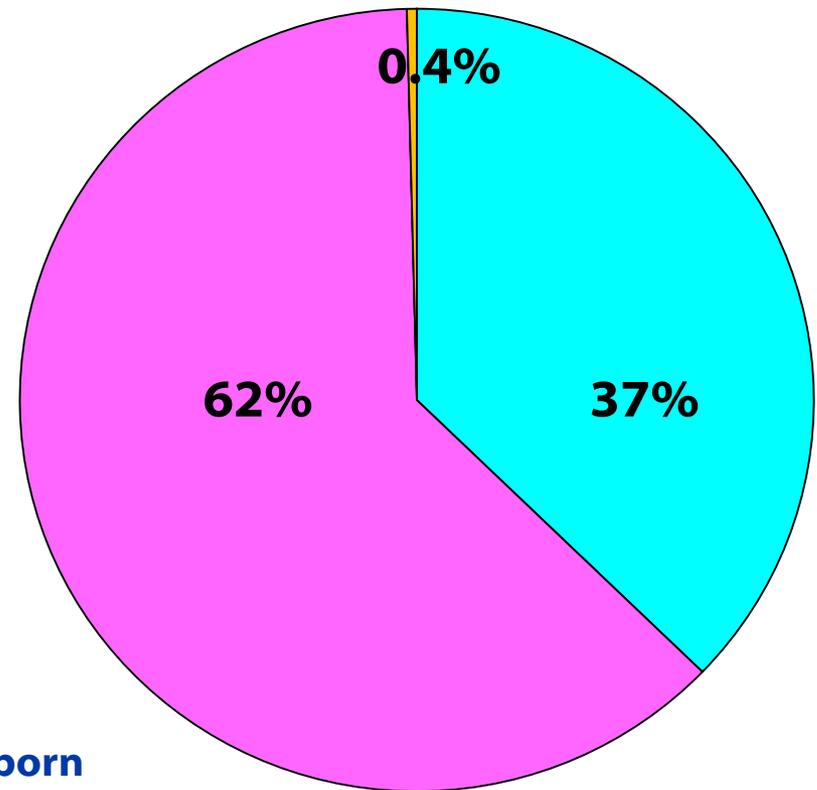


# Proportion of Reported U.S. TB Cases, by U.S.-born and Foreign-born\*

1993



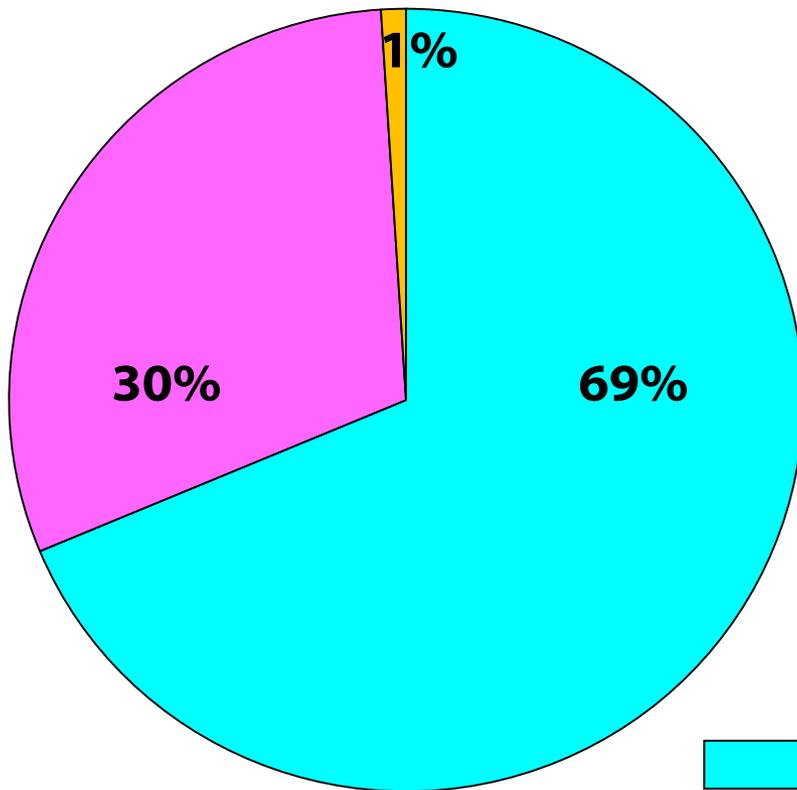
2011



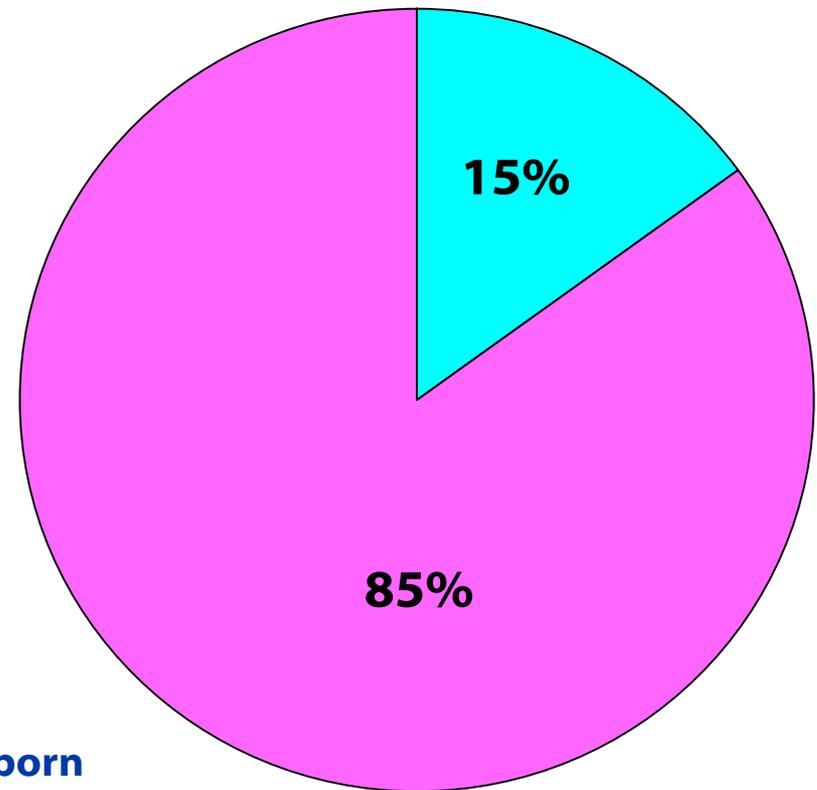
\*Reported to CDC by Year of Diagnosis

# Proportion of Reported U.S. MDR TB Cases, by U.S.-born and Foreign-born\*

1993



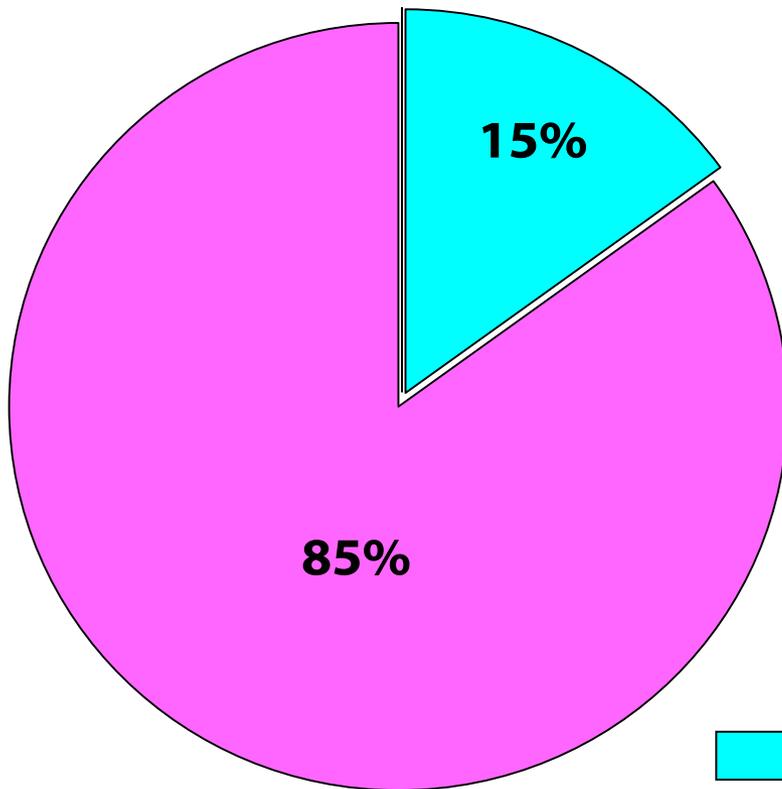
2011



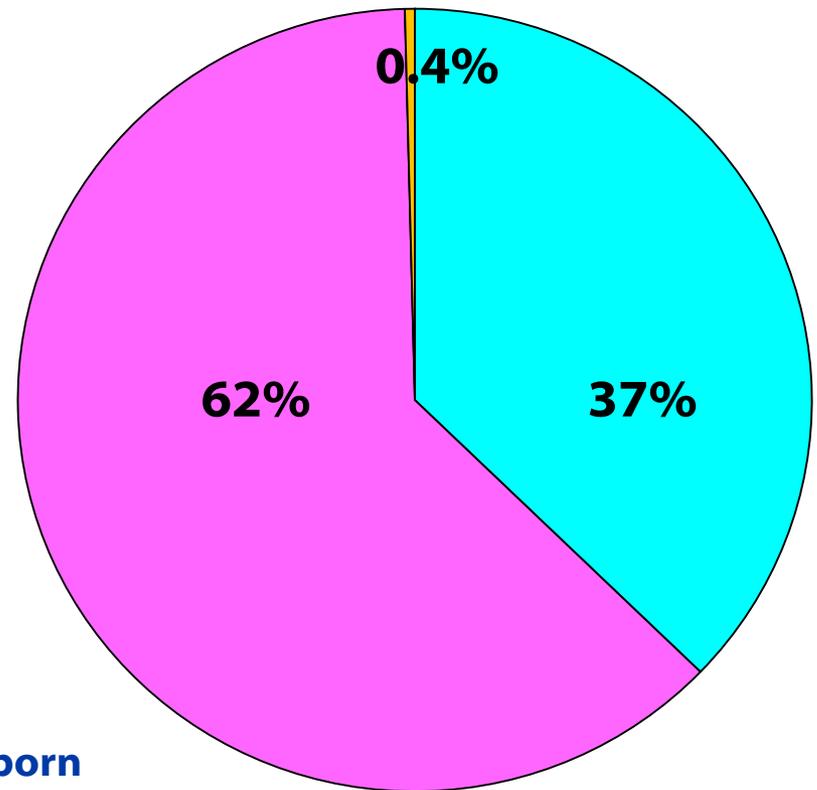
\* Reported to CDC by Year of Diagnosis

# Proportion of TB Cases Reported to CDC, 2011, by U.S.-born and Foreign-born

## MDR only



## Total



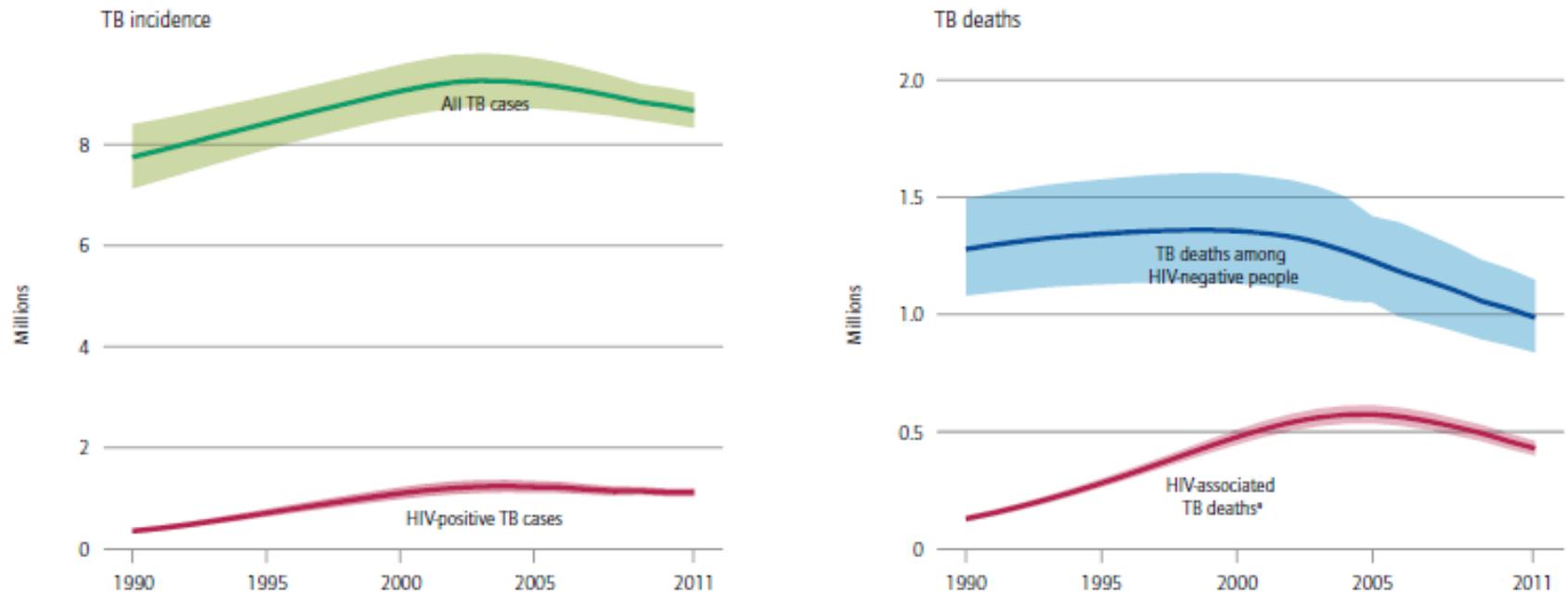
\* Reported to CDC by Diagnosis in 2011

Unknown/missing

# Global TB Situation\*

- ❑ **51 million persons cured; 20 million lives saved, 1995–2011**
- ❑ **8.7 million new cases ; 1.4 million deaths in 2011**
  - 1.13 million (13%) cases and 0.43 million deaths in HIV-infected

**FIGURE 2.4** Estimated absolute numbers of TB cases and deaths (in millions), 1990–2011



- ❑ **0.31 million with MDR TB (60% in India, China, Russia)**

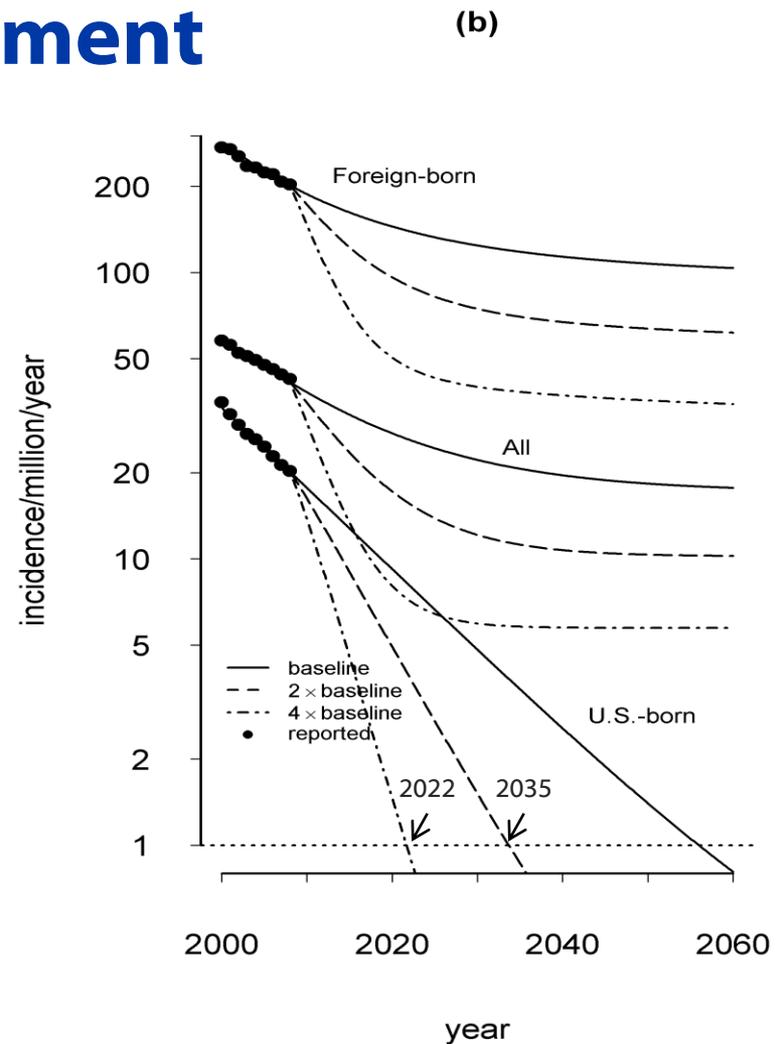
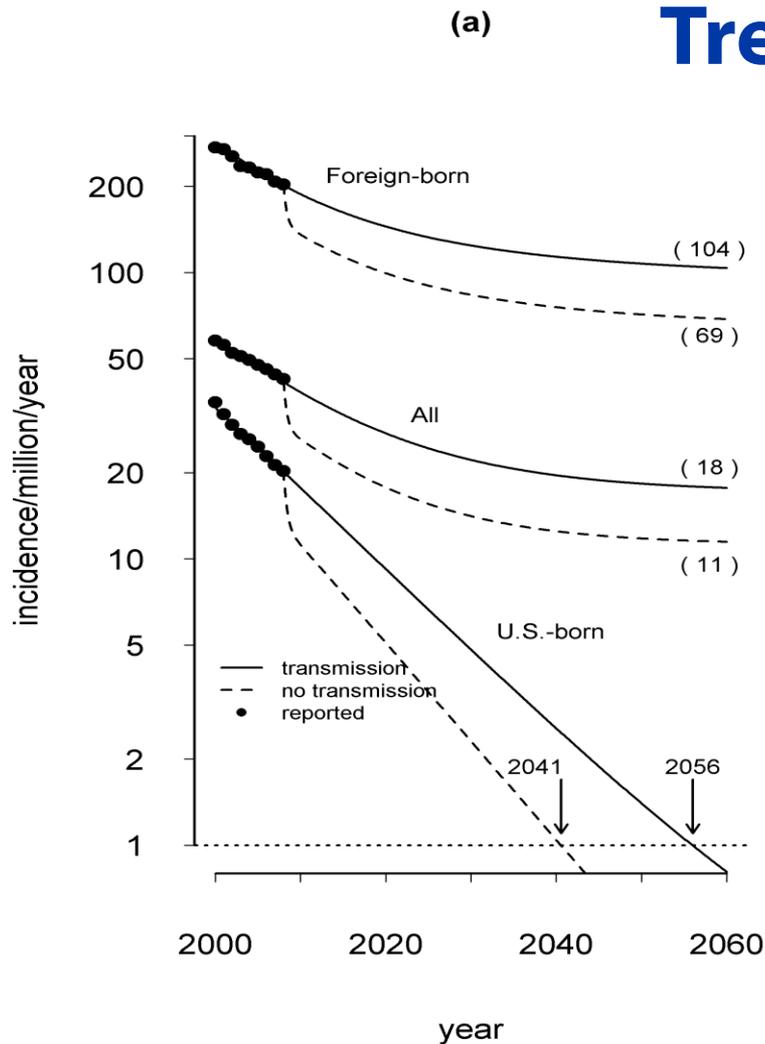
# **CDC's Support and Role in the Evaluation and Introduction of Novel Anti-mycobacterial Compounds**

- ❑ **TB Trials Consortium to study safety and efficacy of new drugs and regimens**
- ❑ **Passive surveillance system for serious adverse events from treatment of latent TB infection**
- ❑ **U.S. reference laboratory for drug susceptibility testing of *Mycobacterium tuberculosis***
  - **Includes rapid molecular methods**
  - **System and agreements to collect isolates nationally**
- ❑ **Development of national treatment guidelines in partnership with professional organizations**

# **CDC's Support and Role in the Evaluation and Introduction of Novel Anti-mycobacterial Compounds (2)**

- ❑ Collaboration with WHO in development of evidence-based policy and guidance for use of new drugs**
- ❑ Development and provision of training and education materials, both directly and through Regional Training and Medical Consultation Centers**
- ❑ Work with manufacturers and other stakeholders to facilitate closely-monitored introduction of new anti-TB drugs and regimens in U.S.**

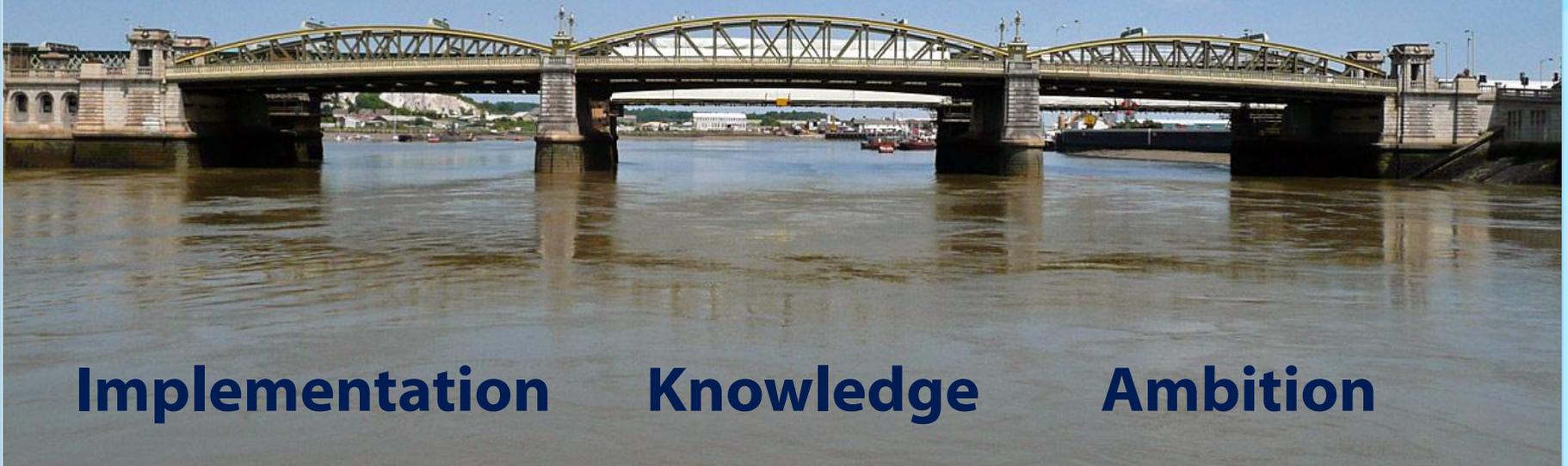
# TB Incidence Projections for (a) Eliminating Transmission and (b) Increases in LTBI Treatment



# Summary

- ❑ **U.S. recovery from devastating impact of MDR TB must be sustained; global situation constitutes a health threat**
- ❑ **Achieving TB elimination in U.S. and marked improvements in control globally will require new tools and novel approaches**
- ❑ **Novel and shorter regimens for both active TB and latent TB infection are crucial**
- ❑ **Success in development of new anti-TB drugs and regimens is essential**
- ❑ **Scientific impartiality in assessment of new candidate drugs and the independence of this FDA AIDA Committee process remains critically important**

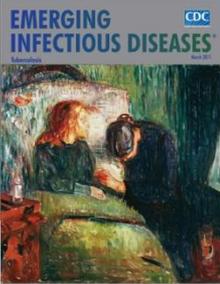
# TB Elimination Requires Bridging 3 Gaps ( $\leq 1$ case/ million population)



**Implementation**

**Knowledge**

**Ambition**



# Thank You

The findings and conclusions presented here do not necessarily represent the official position of U.S. Centers for Disease Control and Prevention