



Tuberculosis (TB) Basics

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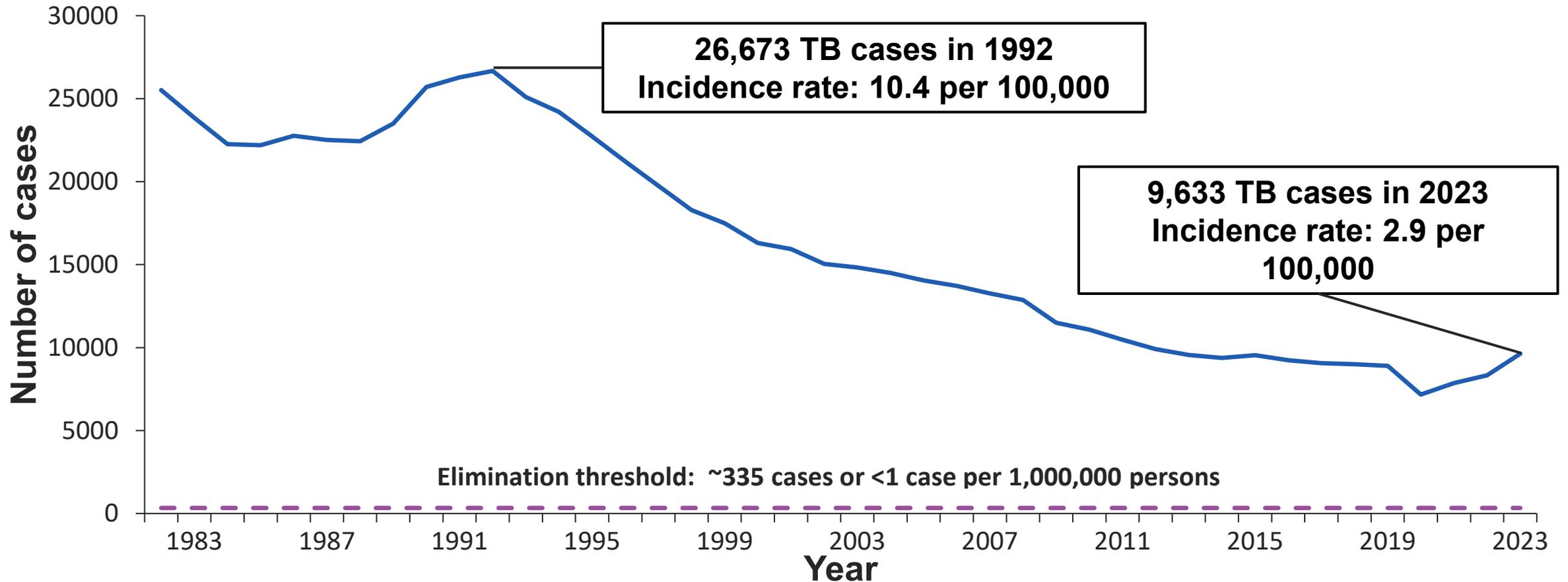
Professor of Medicine

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Learning Objectives

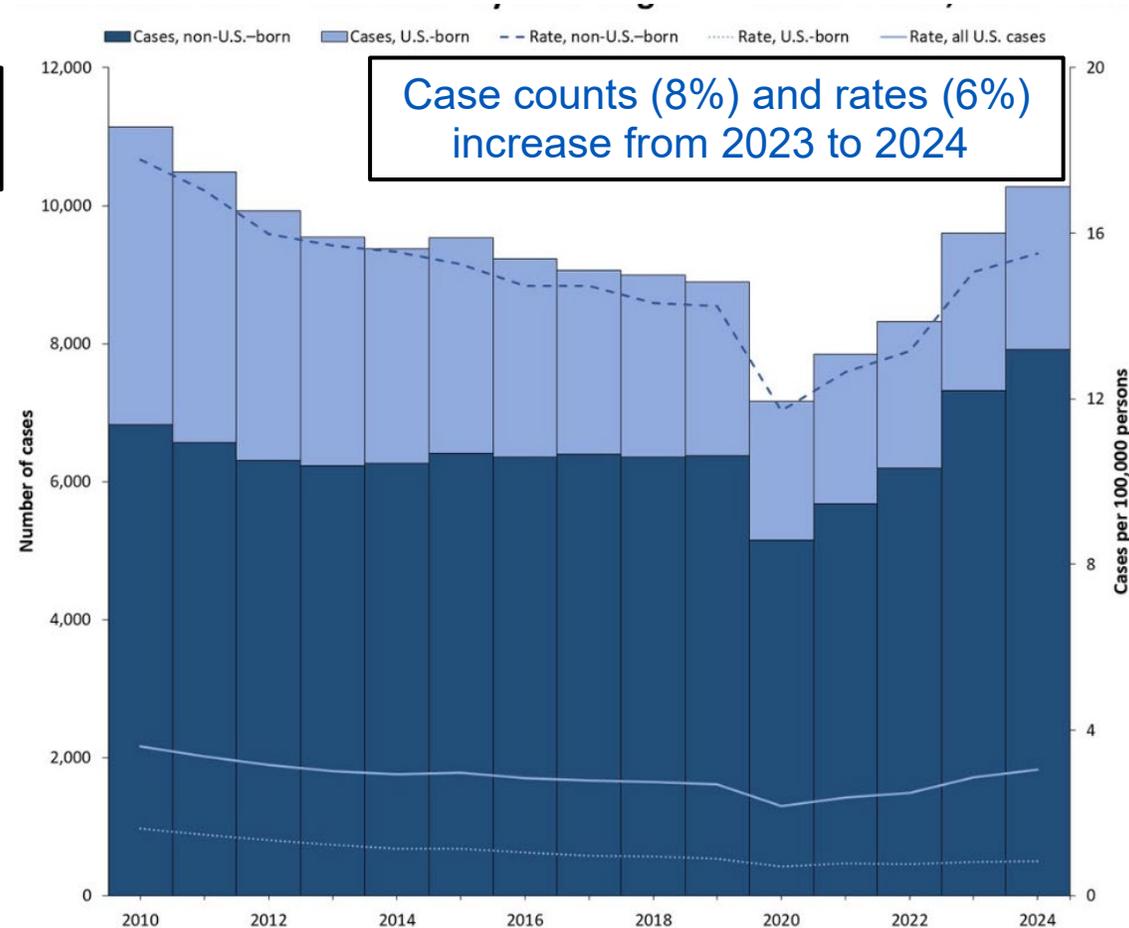
- Describe the burden of TB in the United States
- Recognize TB in the right clinical setting
- Describe the organization of TB services in the United States

Progress Towards TB Elimination, United States, 1982–2023



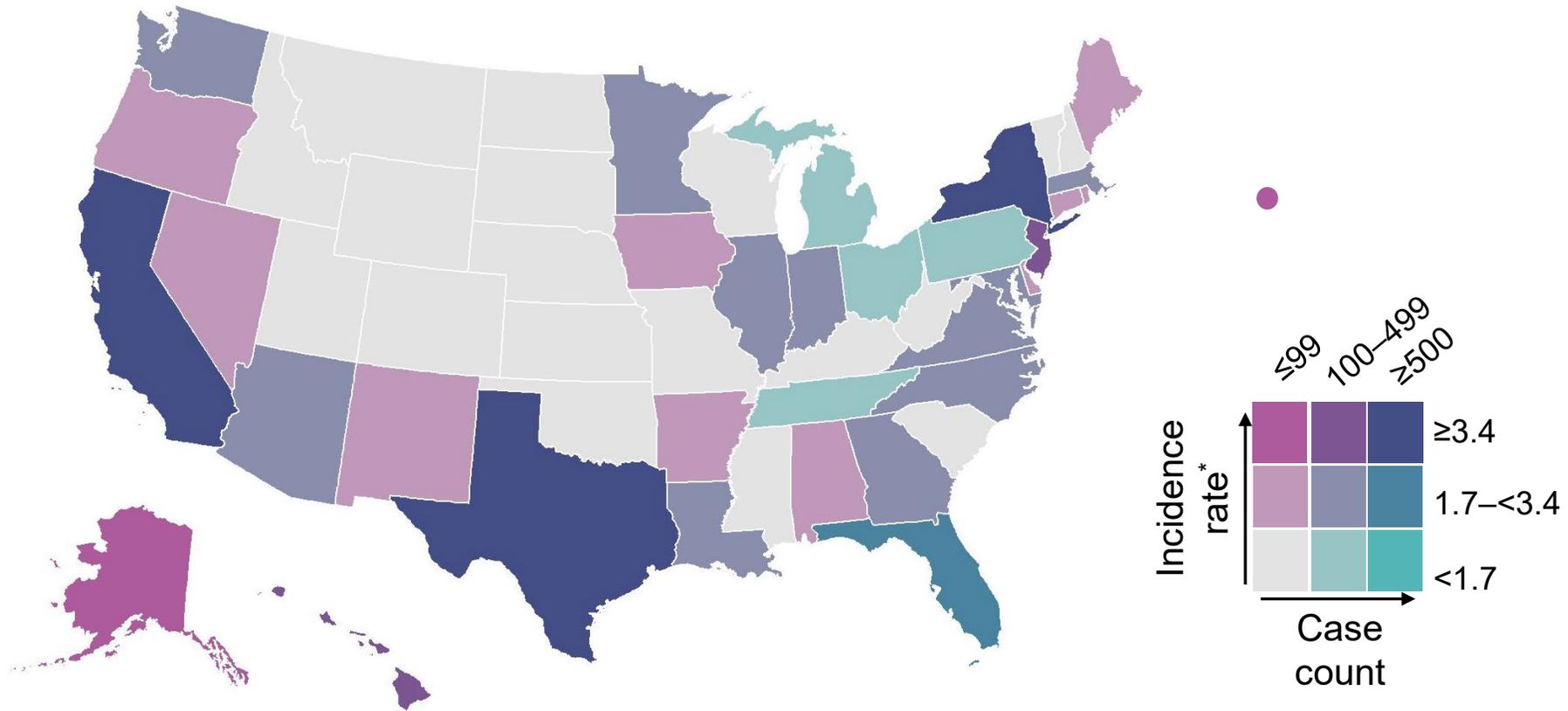
TB Cases* and Rates† by Birth Origin§ – United States. 2010-2024

In 2024, 10,347 TB cases; 3.0 cases per 100,000 population.



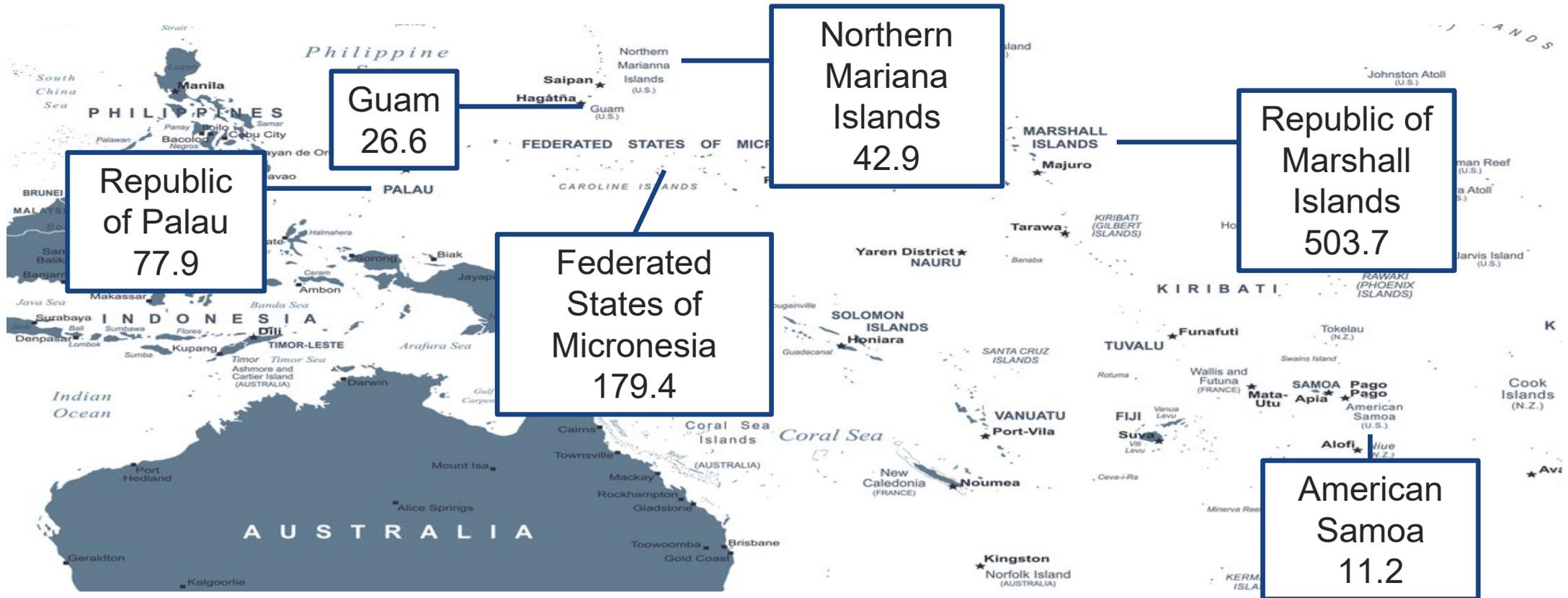
* Case counts are based on data reported to the National Tuberculosis Surveillance System as of March 4, 2025.
 † Annual tuberculosis rates were calculated as cases per 100,000 persons. Rates for all U.S. cases were calculated using midyear population estimates from the U.S. Census Bureau's 2010–2020 National Intercensal Population Totals and Vintage 2024 data; rates by birth origin were calculated using midyear estimates from the Current Population Survey.
 § Persons born in the United States or certain U.S. territories or elsewhere to at least one U.S. citizen parent are categorized as U.S.-born. All other persons are categorized as non-U.S.-born. Case counts for persons without a known origin of birth are not represented in the figure.

TB Cases and Incidence Rates* by Reporting Area, United States, 2023



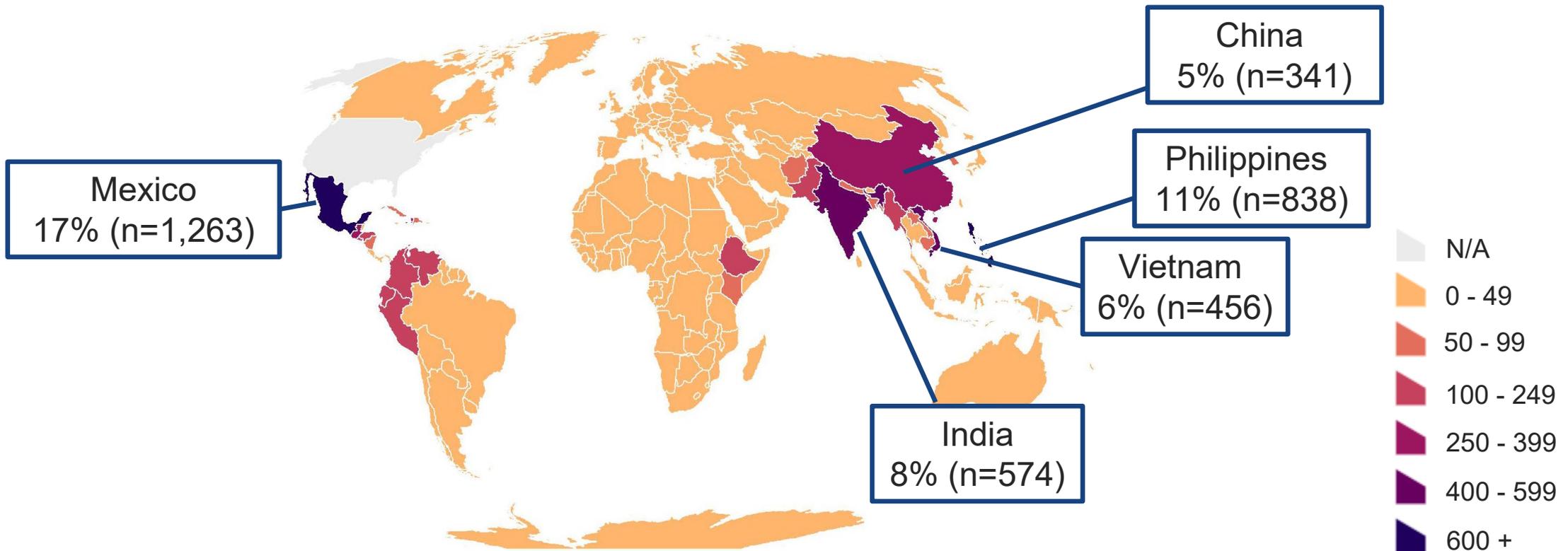
*Cases per 100,000 persons

TB Incidence Rates* by U.S.-Affiliated Pacific Islands, 2023



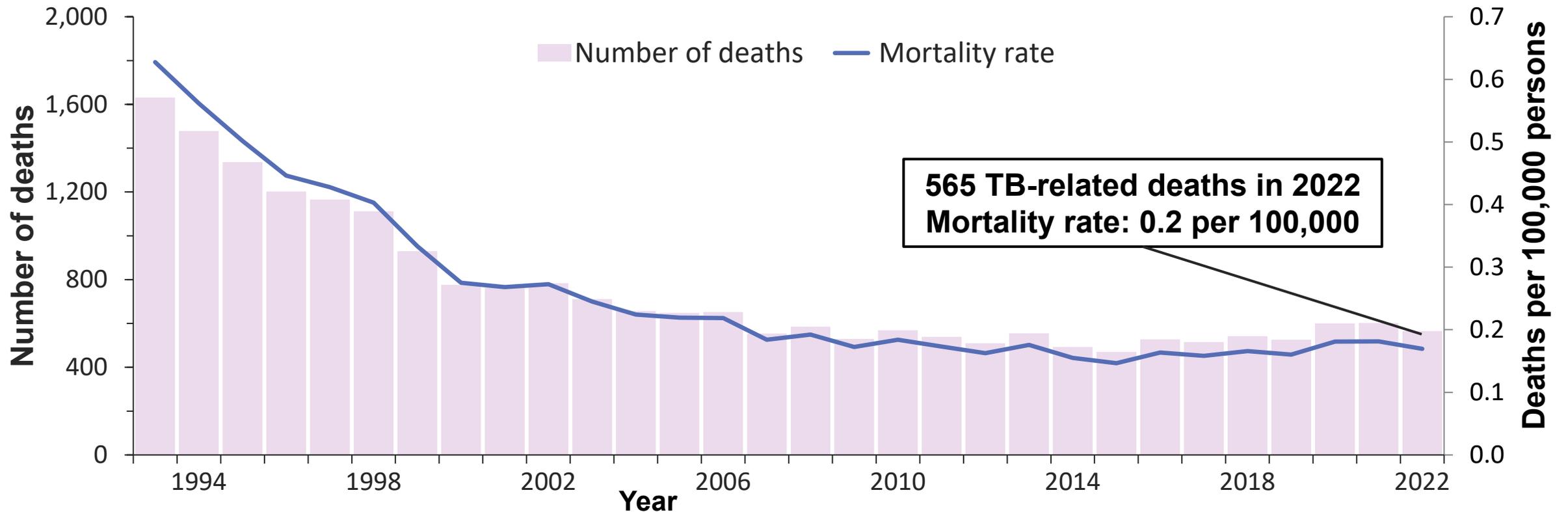
*Cases per 100,000 persons

TB Cases by Countries of Birth Among Non-U.S.–Born* Persons with TB, United States, 2023 (N=7,299)



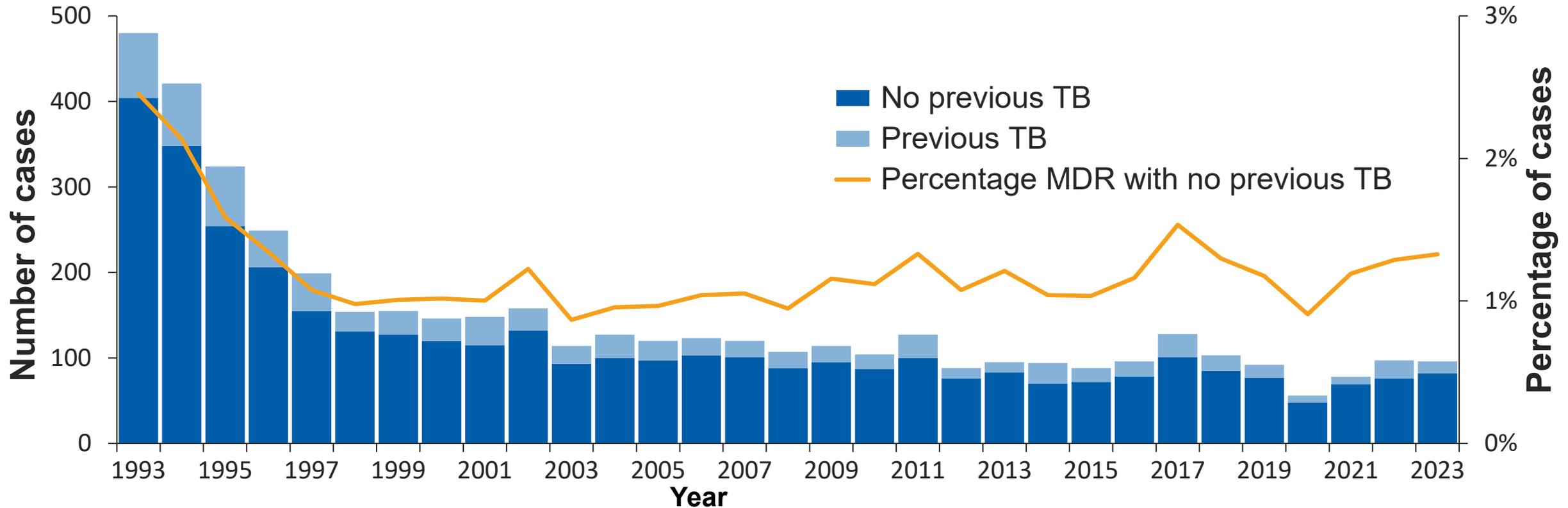
*Persons born in the United States, certain U.S. territories, or elsewhere to at least one U.S. citizen parent are categorized as U.S.-born. All other persons are categorized as non-U.S.–born.

TB-Related Deaths* and Mortality Rates, United States 1993-2022



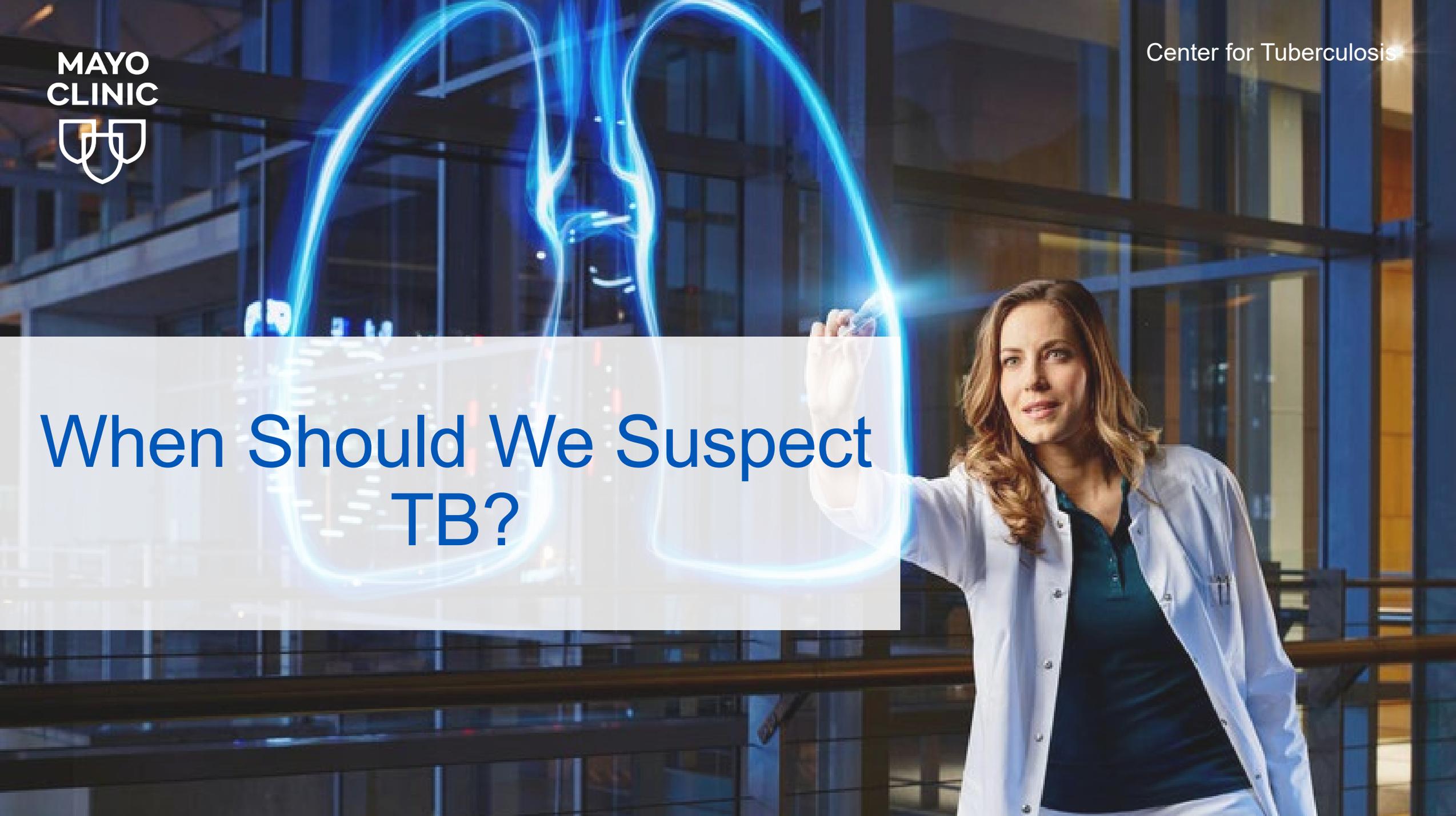
*National Vital Statistics System Underlying Cause of Death (based on deaths reported through 2022)

Number and Percentage of Multidrug-Resistant (MDR)* TB Cases by History of TB, United States, 1993–2023



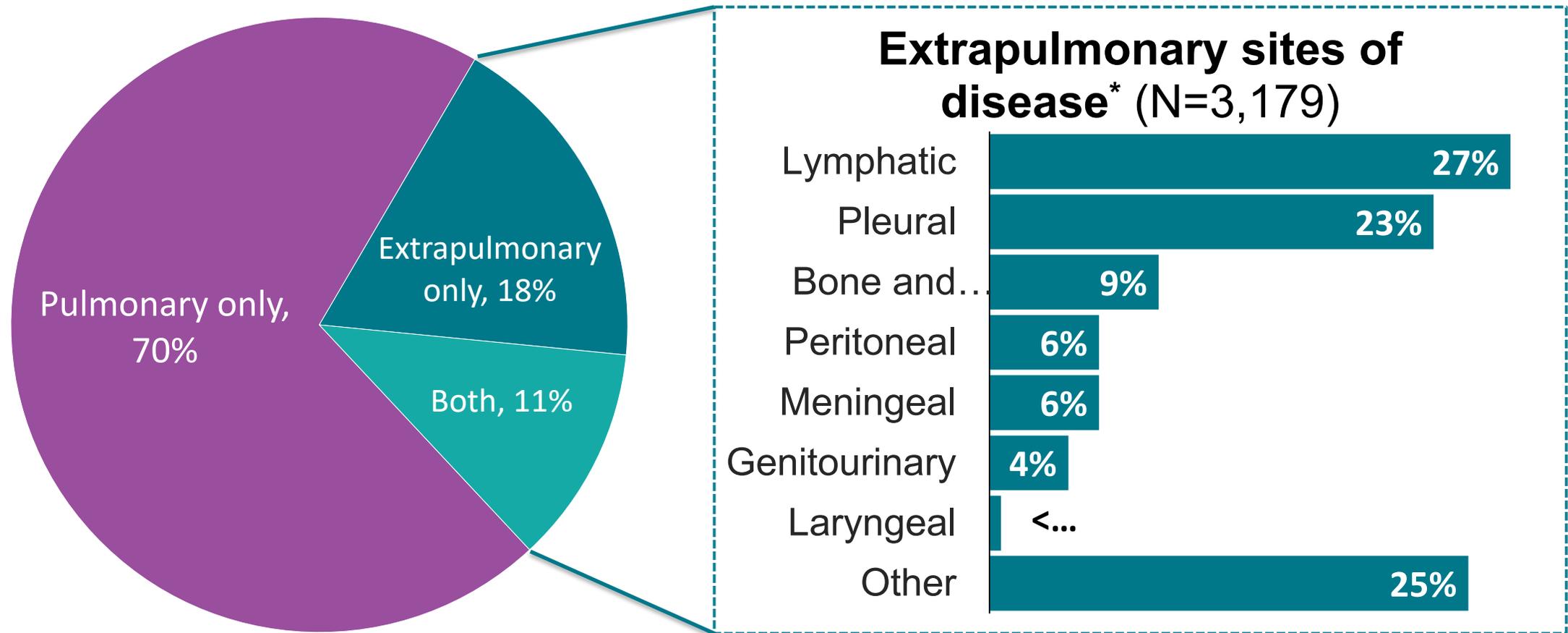
*Starting in 2023, information on drug resistance included results of molecular drug susceptibility testing in addition to growth-based susceptibility testing for isoniazid and rifampin. An isolate is considered resistant to isoniazid or rifampin if either the growth-based test or molecular test detects resistance.

†Excludes persons with unknown origin of birth.



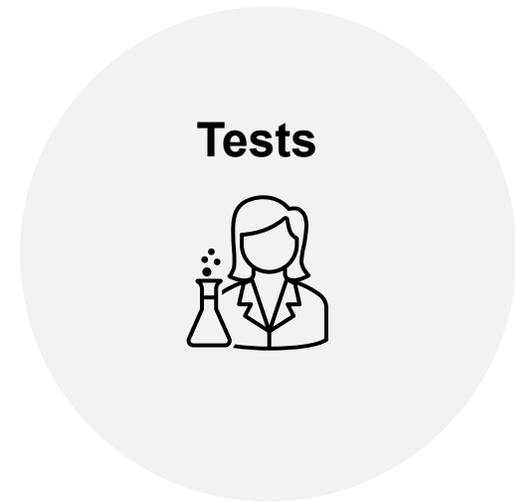
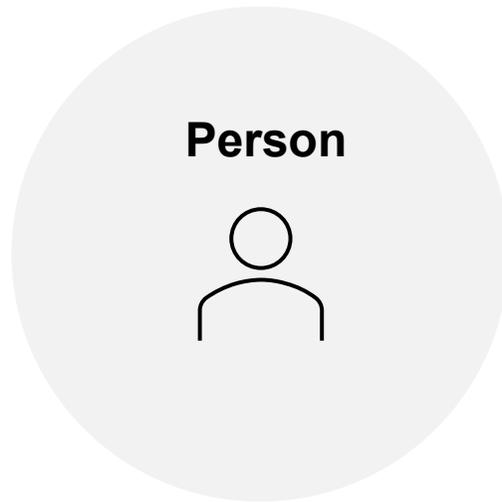
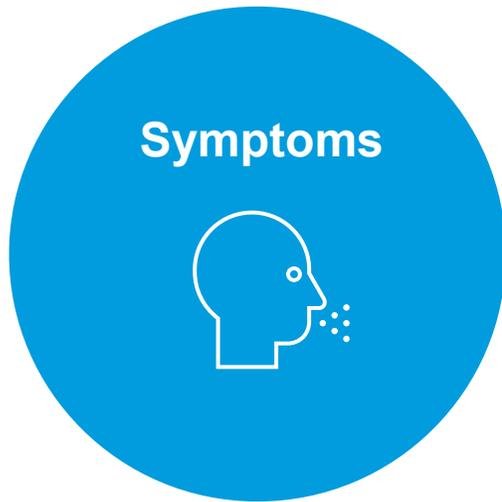
When Should We Suspect TB?

Percentage of TB Cases by Site of Disease, United States, 2023



* Persons might have more than one extrapulmonary site of disease.

When Should We Suspect TB?



Symptoms of Tuberculosis

Non-specific Constitutional Symptoms

- Loss of appetite
- Unexplained weight loss
- Night sweats,
- Fever
- Fatigue

Respiratory Symptoms

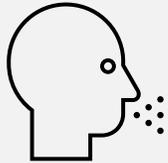
- Prolonged cough (3 weeks or longer)
- Shortness of breath
- Hemoptysis
- Chest pain

Symptoms of Possible Extra-pulmonary TB

- Blood in the urine (TB of the kidney)
- Headache/confusion (TB meningitis)
- Back pain (TB of the spine)
- Hoarseness (TB of the larynx)

When Should We Suspect TB?

Symptoms



Person



Tests



Persons at Risk for Developing TB Disease

1

Those who have an increased likelihood of exposure to persons with TB disease

2

Those with clinical conditions that increase their risk of progressing from LTBI to TB disease

Increased Likelihood of Exposure to Persons with TB Disease

Close contacts to person with infectious TB

Residents and employees of high-risk congregate settings (e.g., correctional facilities, homeless shelters, health care facilities)

Recent immigrants from TB-endemic regions of the world

Increased Risk for Progression to TB Disease

HIV-infected persons

Those with a history of prior, untreated TB or fibrotic lesions on chest radiograph

Children < 5 years with a positive skin test for latent tuberculosis

Underweight or malnourished persons

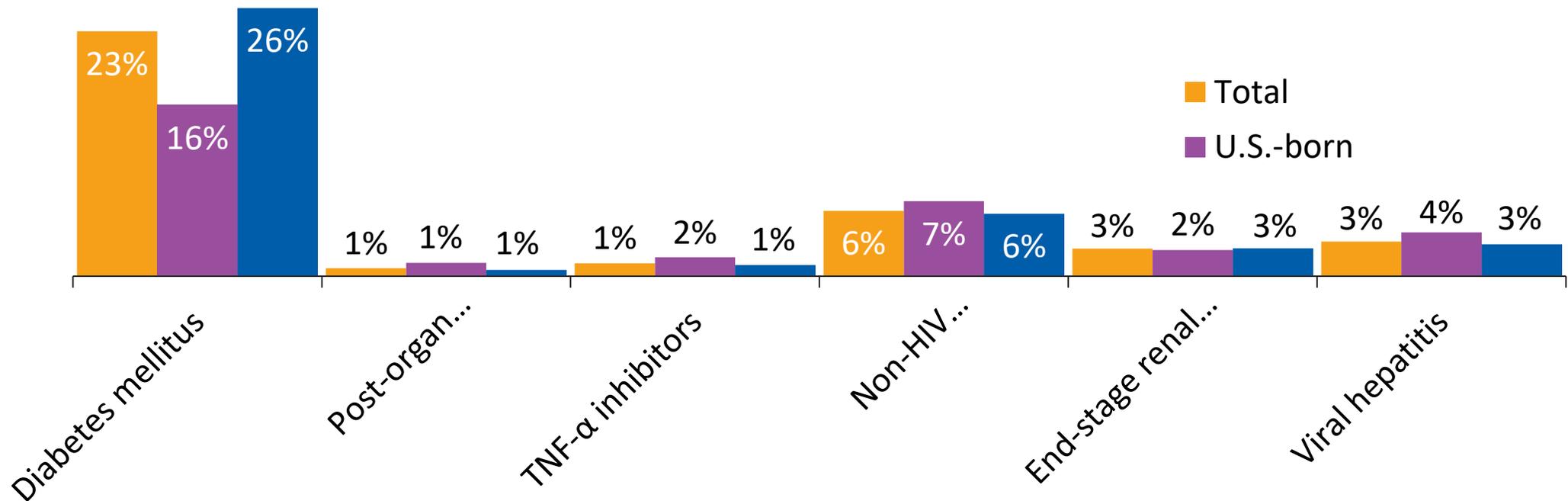
Substance abusers (such as smoking, alcohol abusers, or injection drug use)

Those receiving biologics

Those with certain medical conditions

- Silicosis
- Diabetes mellitus
- Chronic renal failure/hemodialysis
- Solid organ transplantation
- Carcinoma of head or neck
- Gastrectomy or jejunioileal bypass

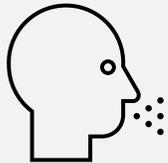
Percentage of Selected Risk Factors Among Persons with TB by Origin of Birth,* United States, 2023



*Persons born in the United States, certain U.S. territories, or elsewhere to at least one U.S. citizen parent are categorized as U.S.-born. All other persons are categorized as non-U.S.-born.

When Should We Suspect TB?

Symptoms



Person



Tests



Tuberculin Skin Test (TST)

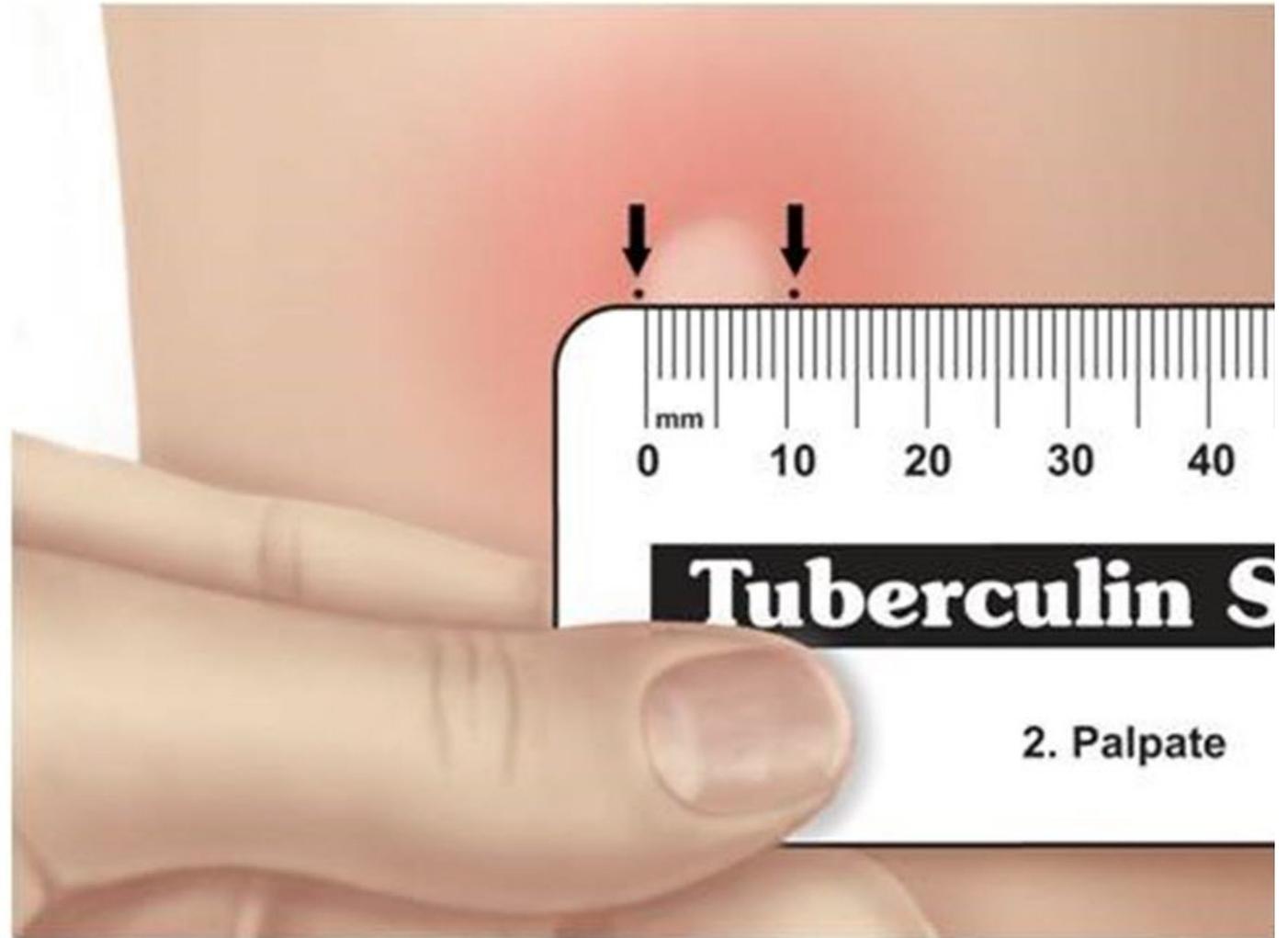
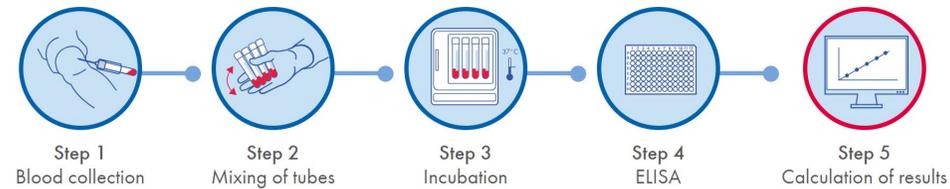


Image: Centers for Disease Control and Prevention. (2025, January 31). *Clinical testing guidance for tuberculosis: Tuberculin skin test*. U.S. Department of Health and Human Services. <https://www.cdc.gov/tb/hcp/testing-diagnosis/tuberculin-skin-test.html>

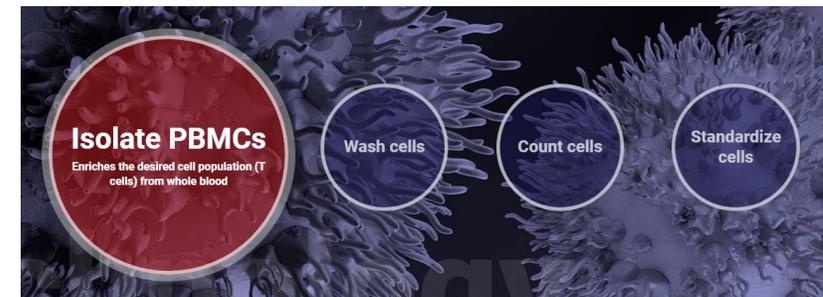
Interferon-Gamma Release Assays

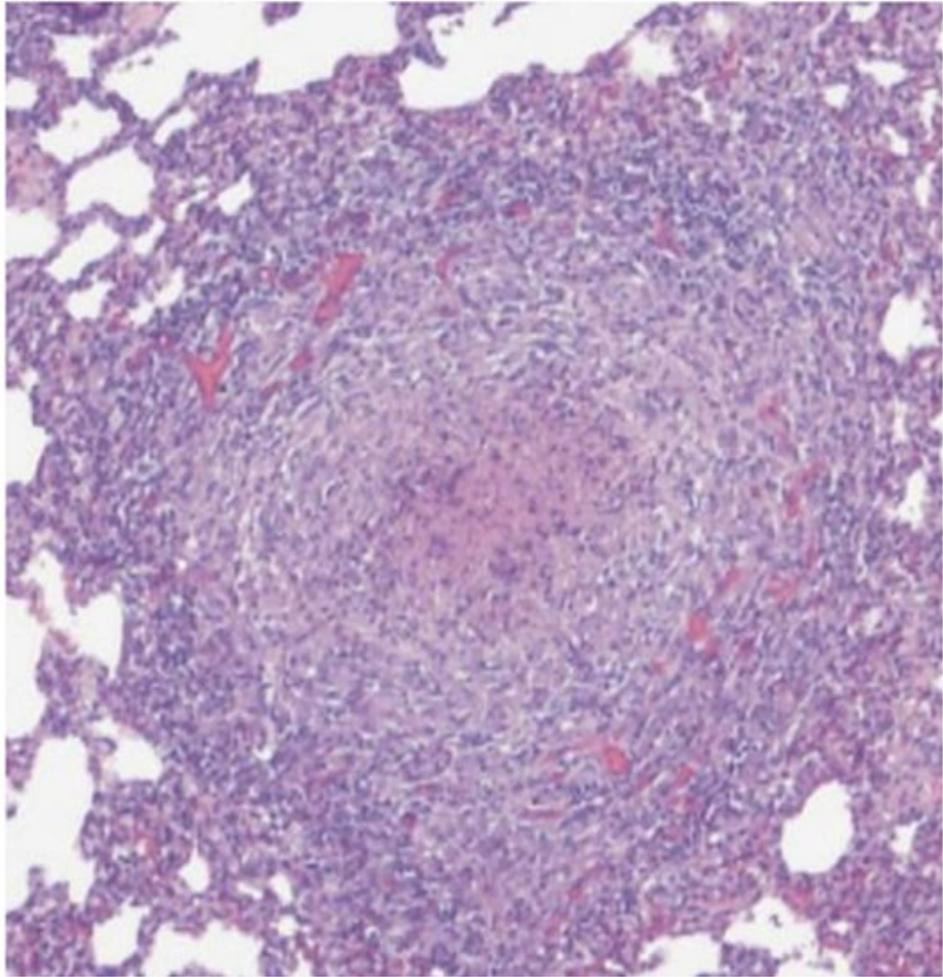
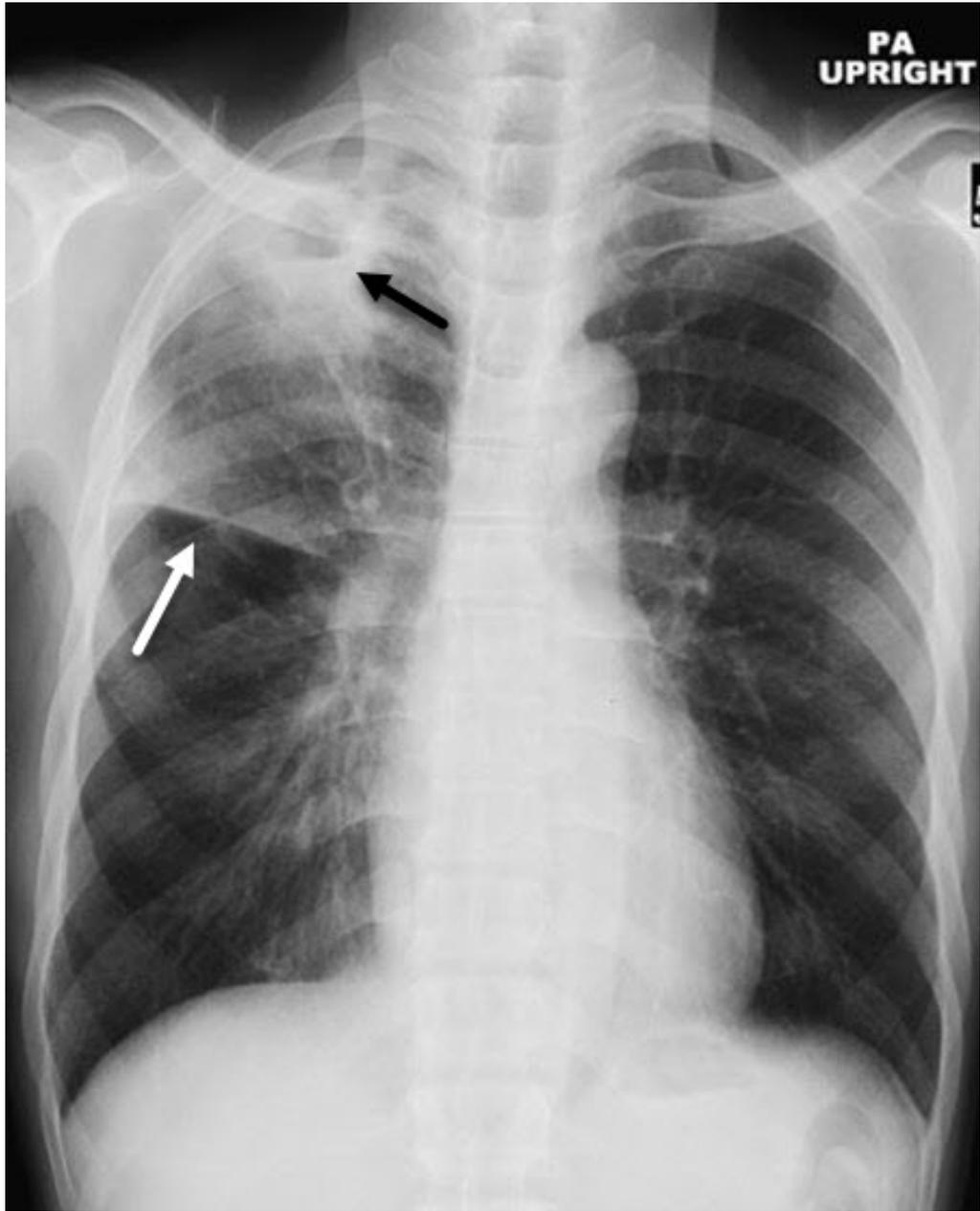
The QFT-Plus assay

The QFT-Plus assay is an in-vitro diagnostic laboratory test that aids in the indirect detection of infection with MTB. It uses human whole blood, with patented assay technology based on the measurement of Interferon-gamma (IFN- γ) secreted from stimulated T-cells previously exposed to MTB. It is a straightforward laboratory test that involves the following steps:

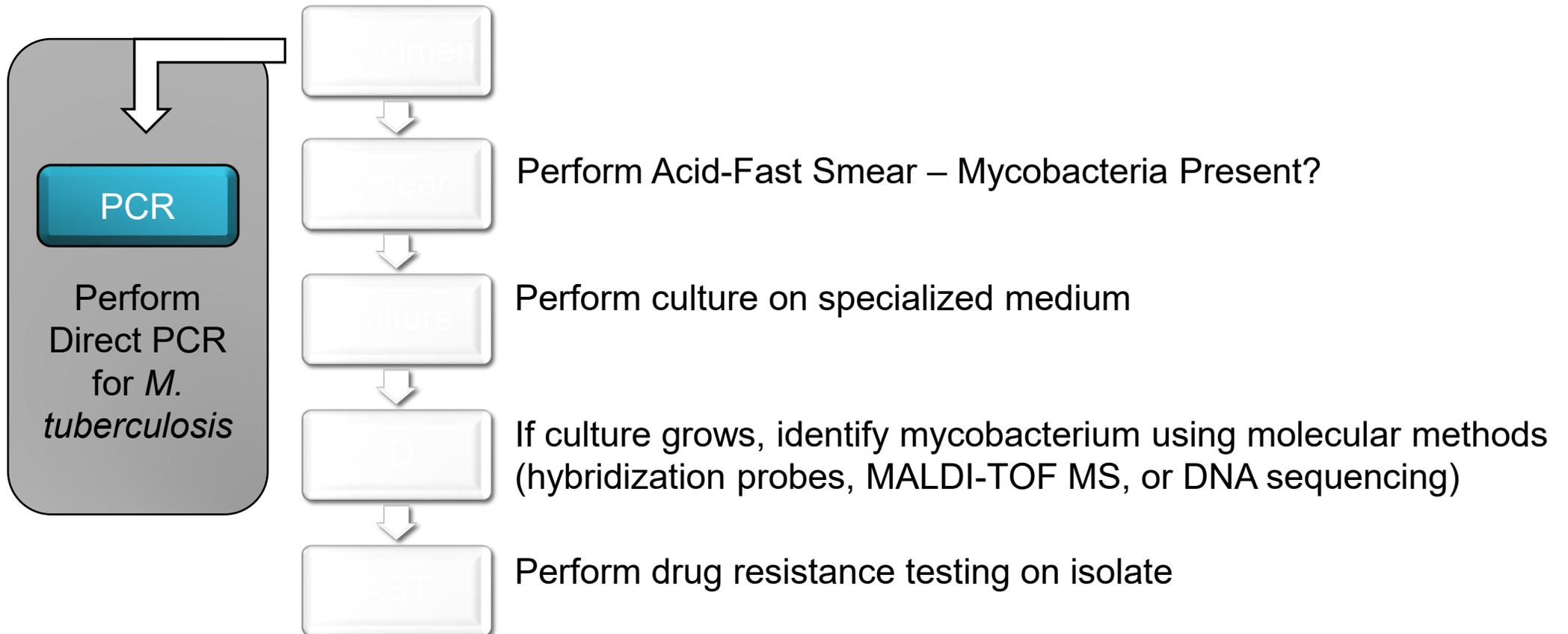


T-SPOT.TB





What Happens to the Patient's Specimen When It is Sent to the Lab?

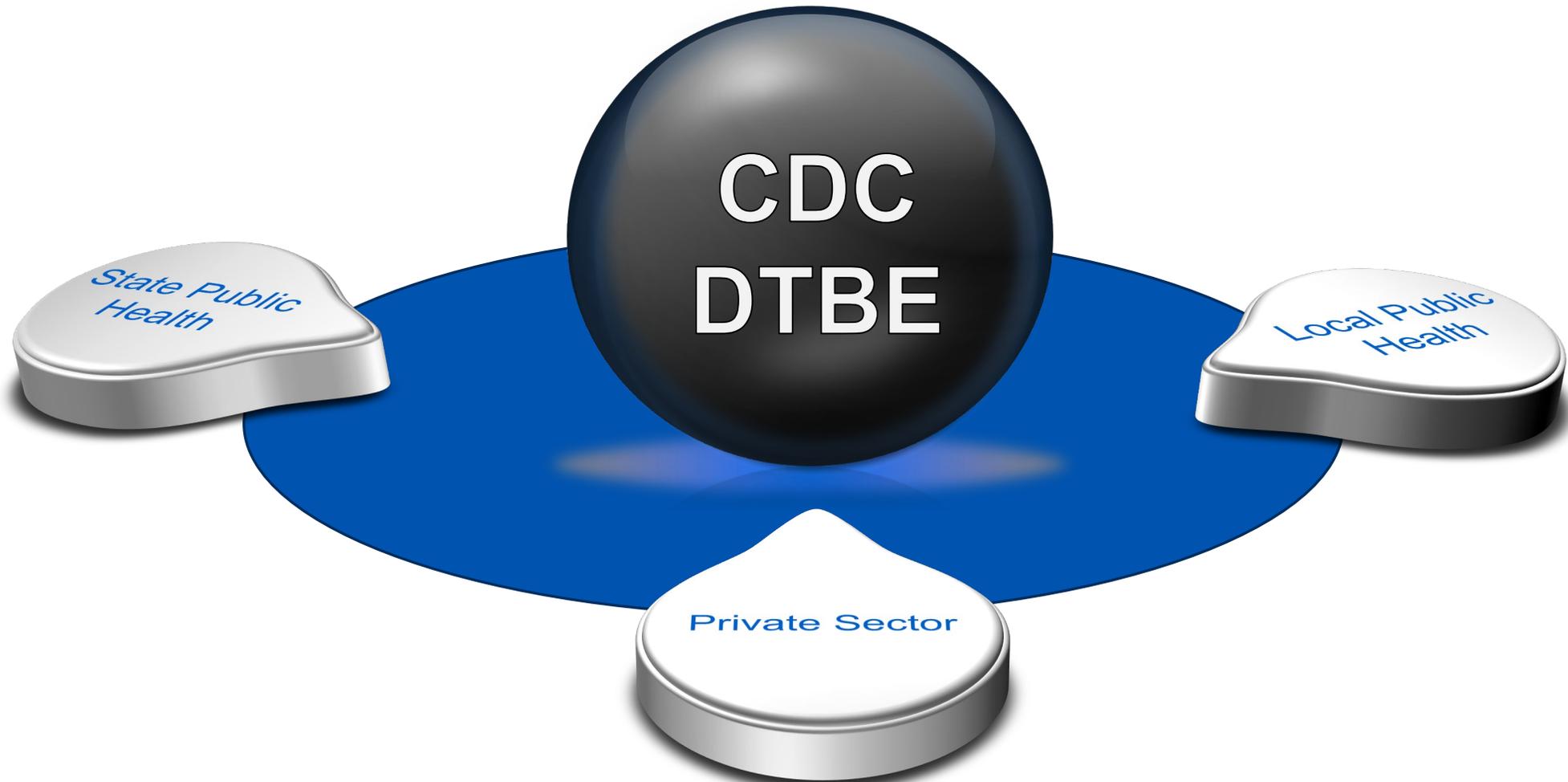




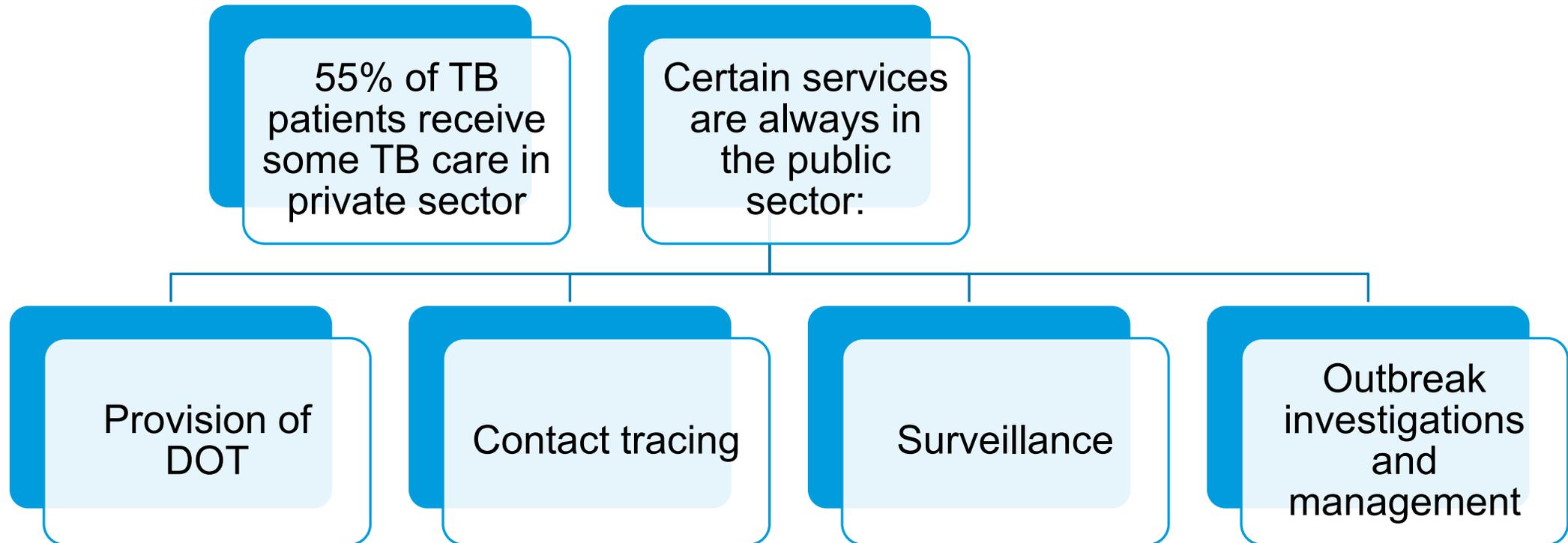
Organization of TB Services in the United States

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TB Services in the United States



Public VS Private Sector



Most core activities of the National TB Program are administered by or at CDC

- 50 States
- 5 territories
- 3 sovereign freely-associated nations
- 10 large cities
- 100+ metropolitan areas with 3,143 counties

**CDC
DTBE**

- National policies and guidelines
- National reference laboratory
- Epidemiologic, operational, and clinical research

- Overseas screening of immigrants and refugees
- Provides resources for training and education

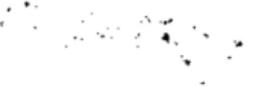
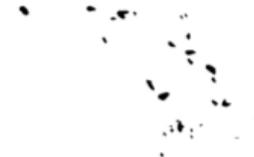
State TB Control Functions

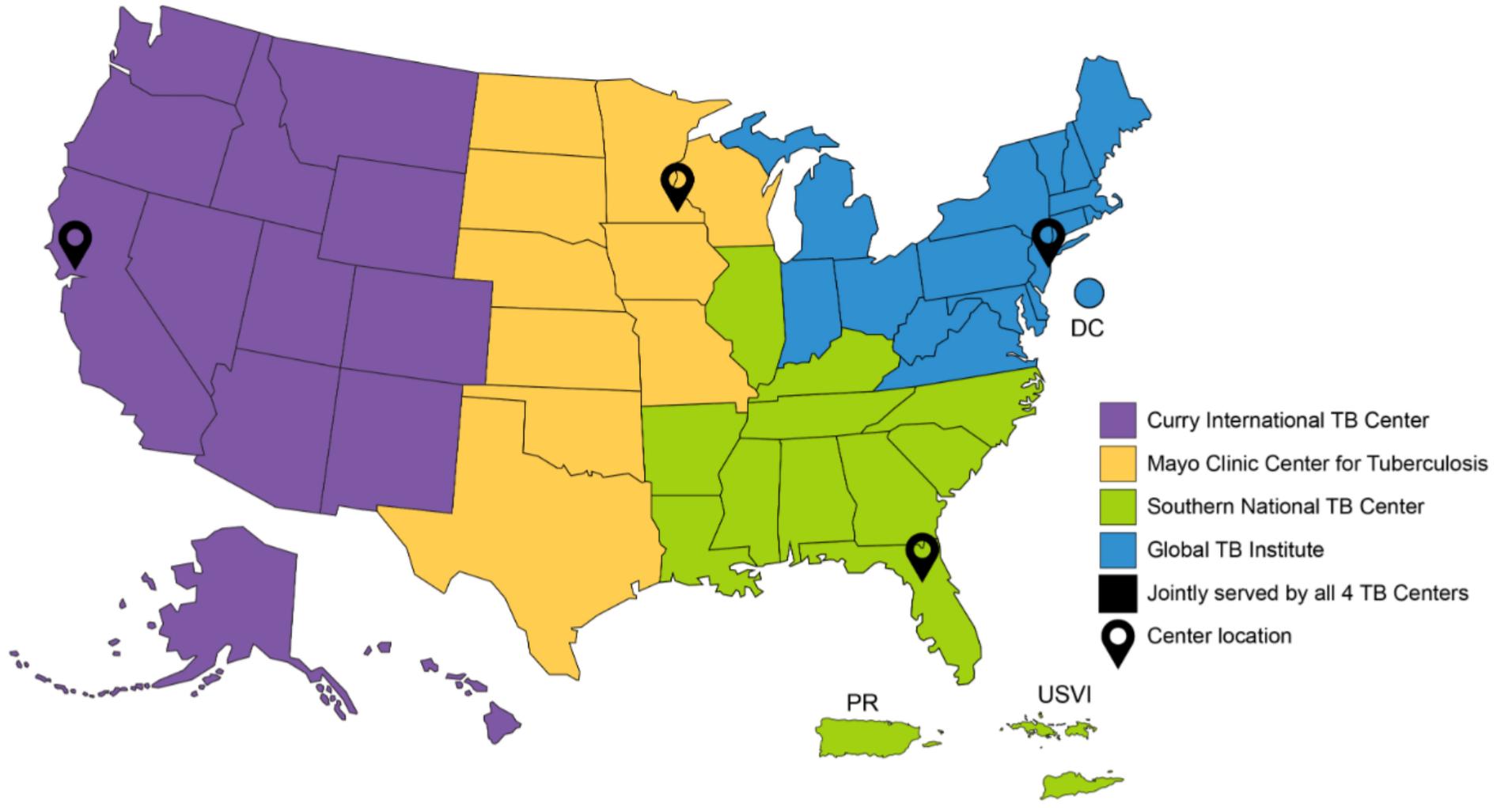
Support, oversight, evaluation
Develop policies, guidelines
Training, technical assistance
Public Health Laboratory
Surveillance

Case management
Contact investigations
Collaboration with private
medical providers
Direct medical care
Program evaluation
TB surveillance.

Local TB Control Functions

CDC TB Centers of Excellence

American Samoa	
Commonwealth of the Northern Mariana Islands	
Federated States of Micronesia	
Guam	
Republic of Palau	
Republic of the Marshall Islands	



TB Support

CDC and its domestic and international partners are working together to eliminate this deadly disease.

- [National TB Controllers Association](#)
- [Stop TB USA, We Are TB](#)
- [TB Elimination Alliance](#)
- [Stop TB Partnership](#)



Image: Alaska Department of Health. (n.d.). *Tuberculosis (TB)*.
<https://health.alaska.gov/en/education/tuberculosis/>



Thank you!