

Tuberculosis Update

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Learning Objectives

- Discuss TB epidemiology worldwide, in the US and Wisconsin.
- Discuss reporting requirements for latent TB infection (LTBI).
- Discuss a targeted testing and treatment program.

Global TB



CDC'S Fight Against GLOBAL TUBERCULOSIS



2 BILLION

PEOPLE INFECTED WITH TB
(1/3 OF WORLD POPULATION)



9.6 MILLION
SICK WITH ACTIVE TB



480,000
NEW CASES OF
MULTIDRUG-RESISTANT TB
(MDR TB)



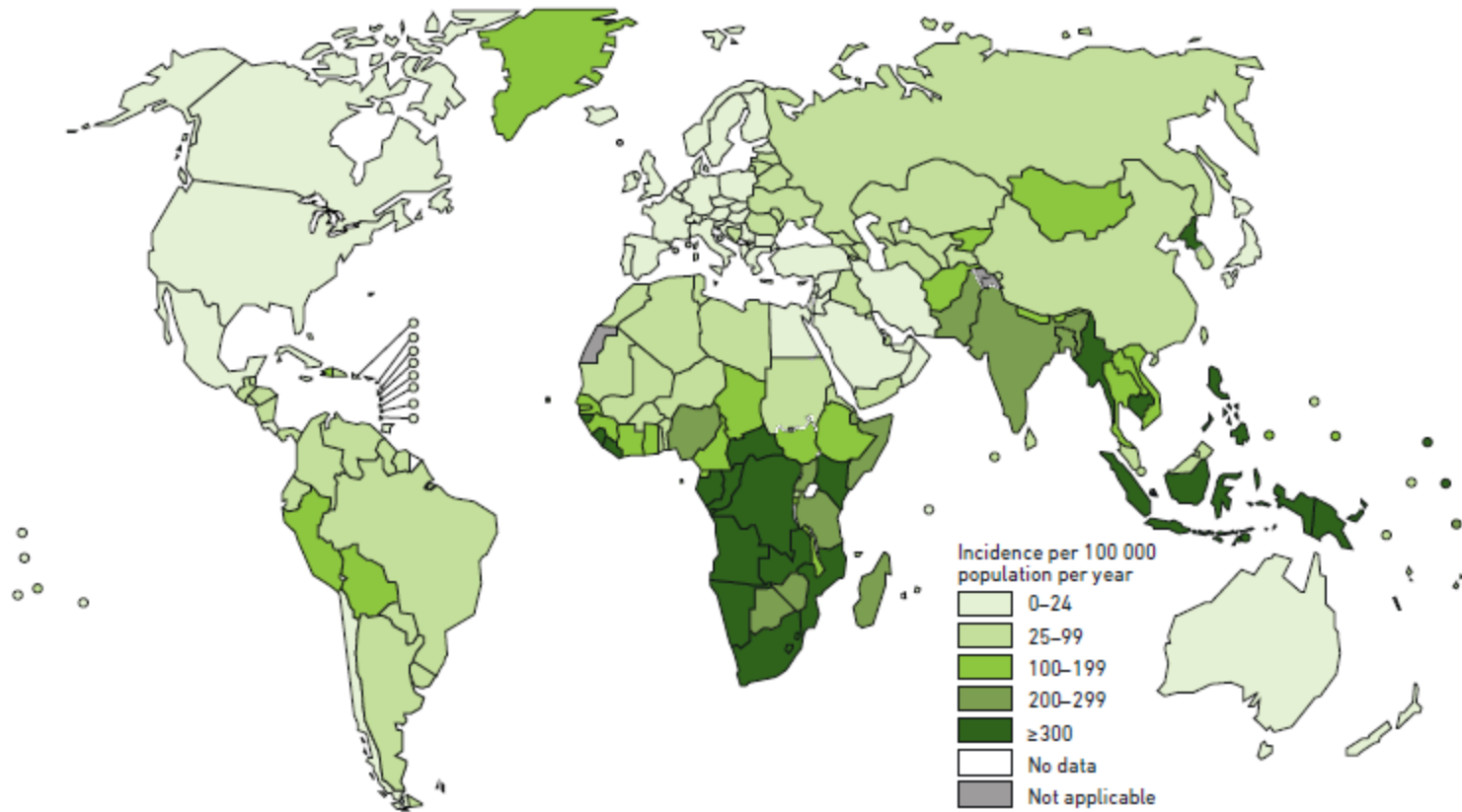
1.5 MILLION
DEATHS

EVERY YEAR

The Global Burden of TB 2017

FIG. 3.4

Estimated TB incidence rates, 2017



Source: WHO Global Tuberculosis Report 2018

The Global Burden of MDR-TB 2017

FIG. 3.22

Estimated incidence of MDR/RR-TB in 2017, for countries with at least 1000 incident cases



TB in the United States

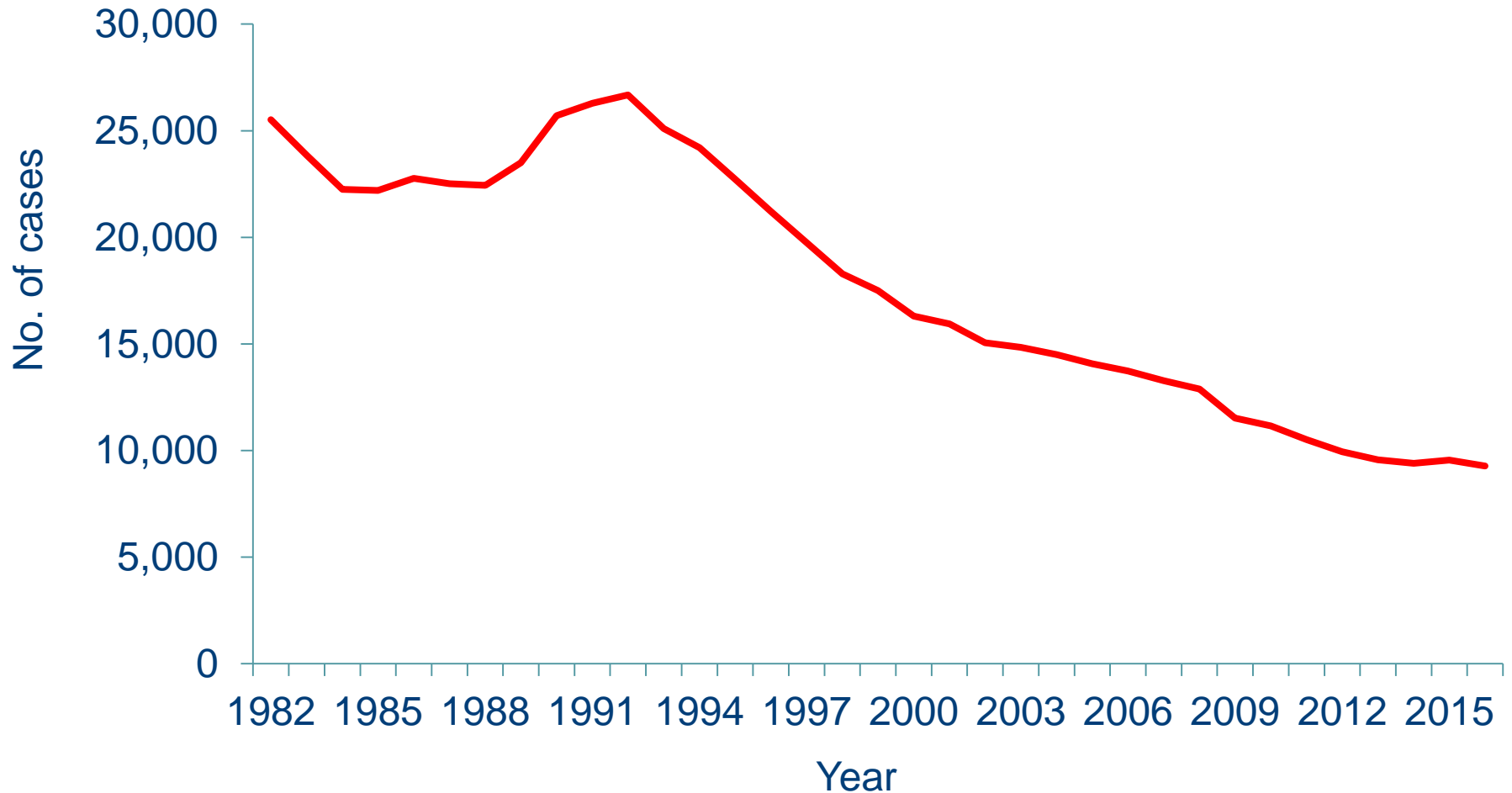


Trends in TB

What is the provisional number of people identified with tuberculosis in the United States for 2017?

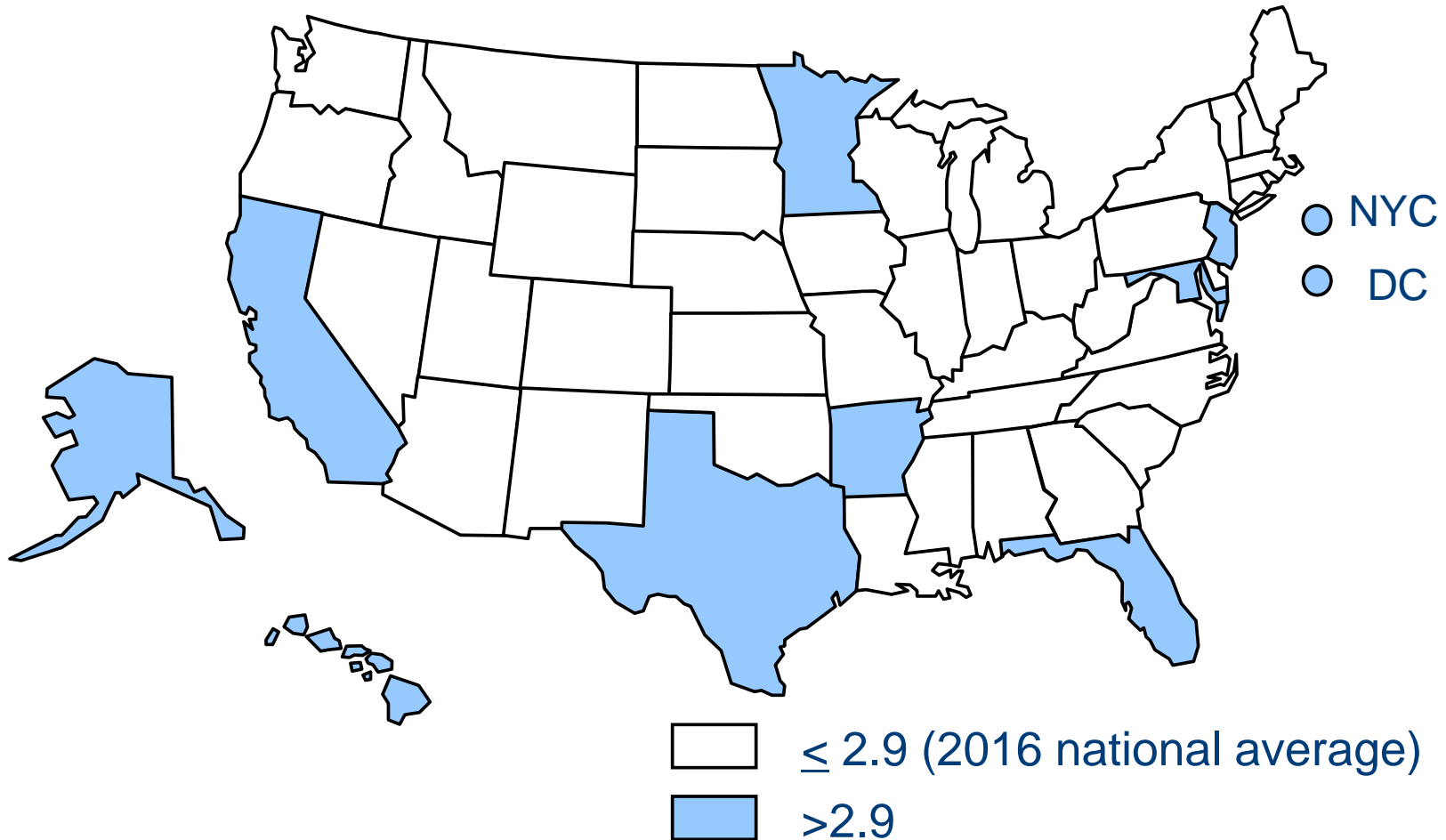
- A. 9,093
- B. 15,994
- C. 5,443

Reported Tuberculosis (TB) Cases United States, 1982–2016*



*As of June 21, 2017.

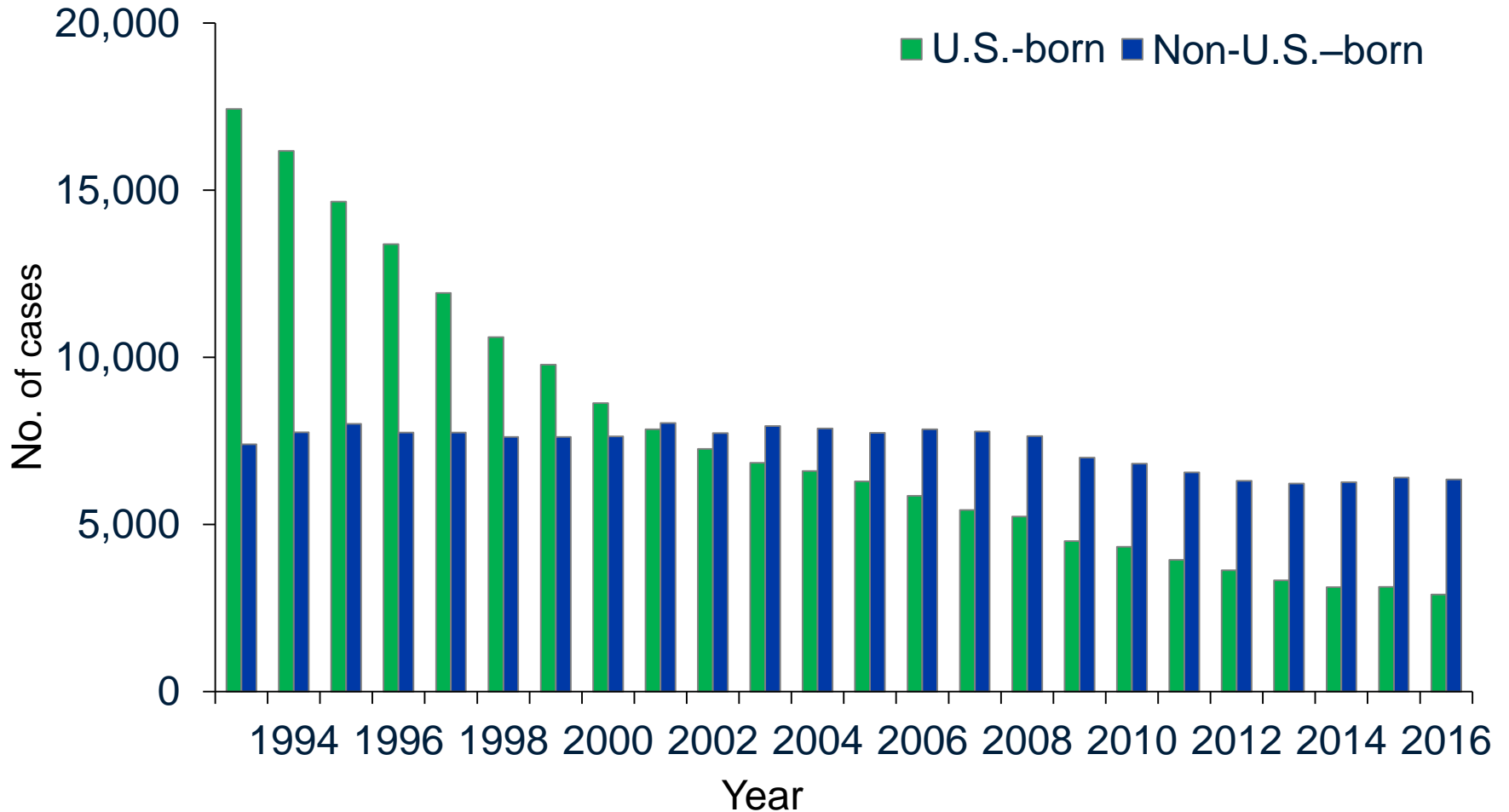
TB Case Rates,* United States, 2016



*Cases per 100,000; As of June 21, 2017

DC, District of Columbia; NYC, New York City (excluded from New York state)

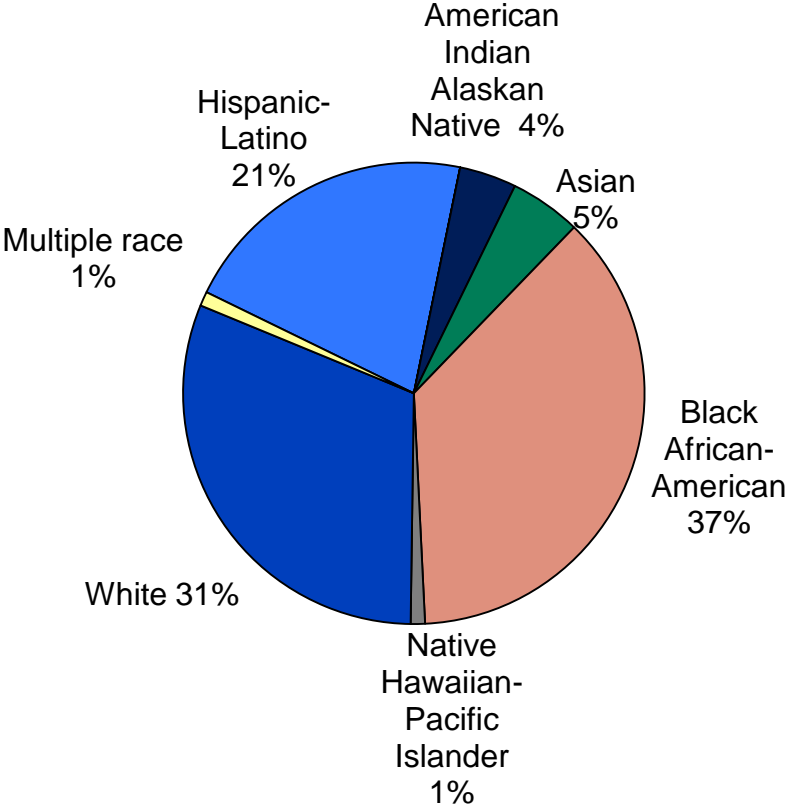
Number of TB Cases Among U.S.-Born versus Non-U.S.-Born Persons, United States, 1993–2016*



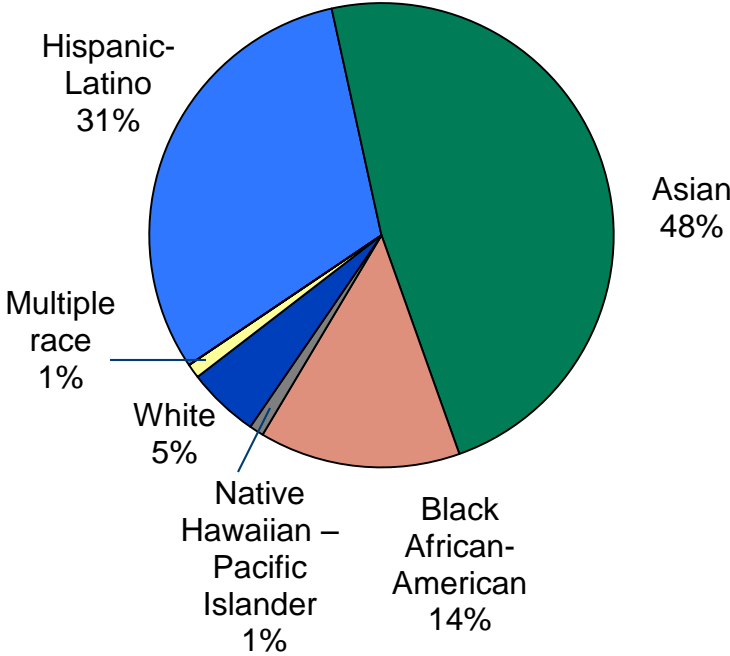
*As of June 21, 2017.

Reported TB Cases by Origin and Race/Ethnicity*, United States, 2016†

U.S.-born persons



Non-U.S.-born persons§



* All races are non-Hispanic; multiple race indicates two or more races reported for a person, but does not include persons of Hispanic/Latino origin.

† Percentages are rounded; as of June 21, 2017.

§ American Indian/Alaska Native accounted for <1% of cases among non-U.S.-born persons and are not shown.

World TB Day Key Messages

- TB remains under control in the United States, but reaching the goal of TB elimination requires and increase in prevention efforts.
- A total of 9,093 TB cases were reported in the United States in 2017 according to data from CDC National TB Surveillance System.

World TB Day Key Messages

- The overall TB rate decreased slightly to approximately 2.8 cases per 100,000.
- Eliminating TB in the United States requires a continued effort to control TB disease, and expanding testing and treatment of latent TB infection to prevent the development of TB disease.

TB in Wisconsin



Trends in TB

How many people were identified with TB in Wisconsin in 2017?

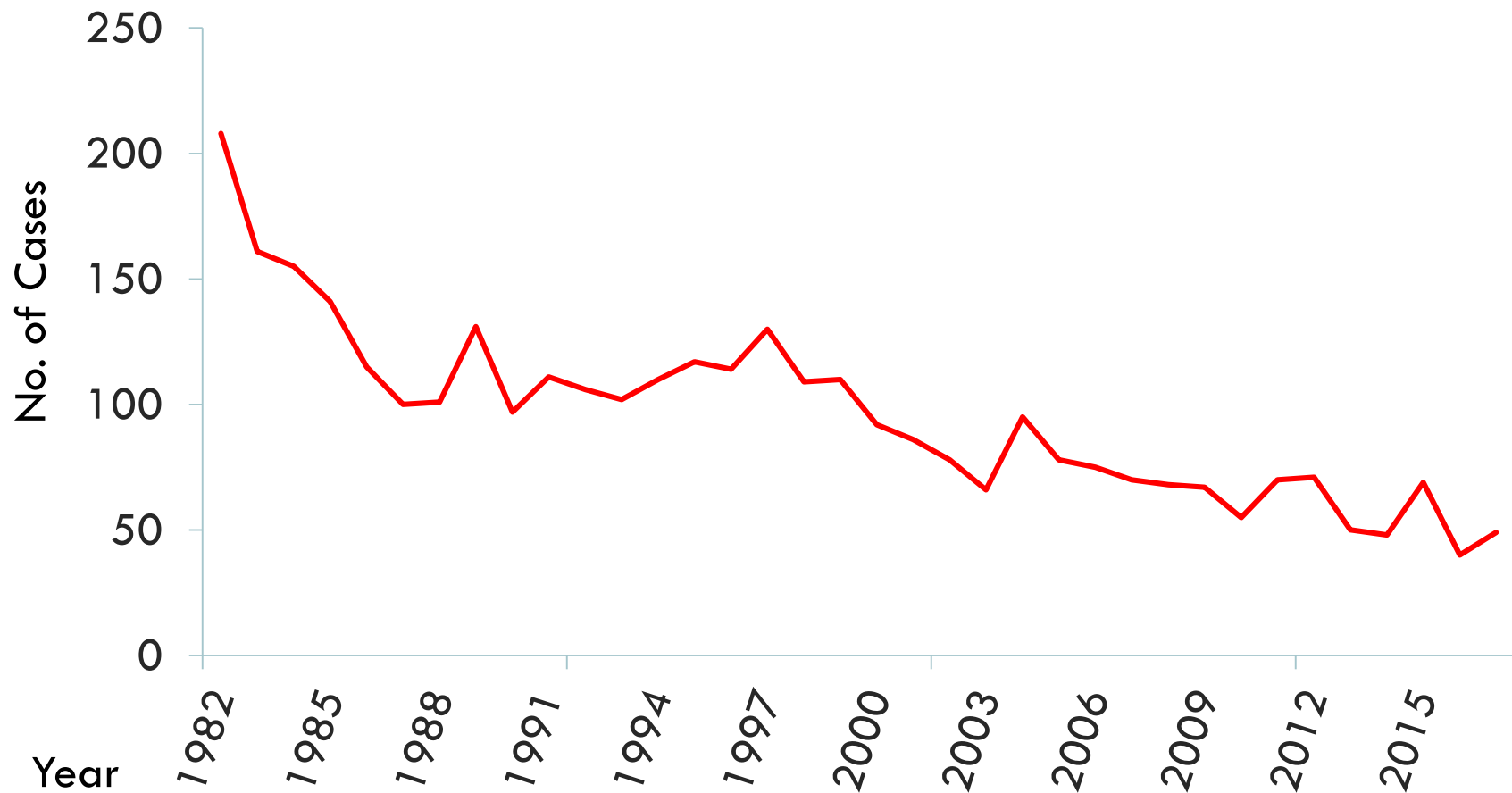
- A. 102
- B. 28
- C. 49

TB Morbidity Wisconsin, 2011–2017

Year	No.	Rate*
2011	70	1.2
2012	71	1.2
2013	50	0.87
2014	48	0.83
2015	69	1.2
2016	40	0.69
2017	49	0.86

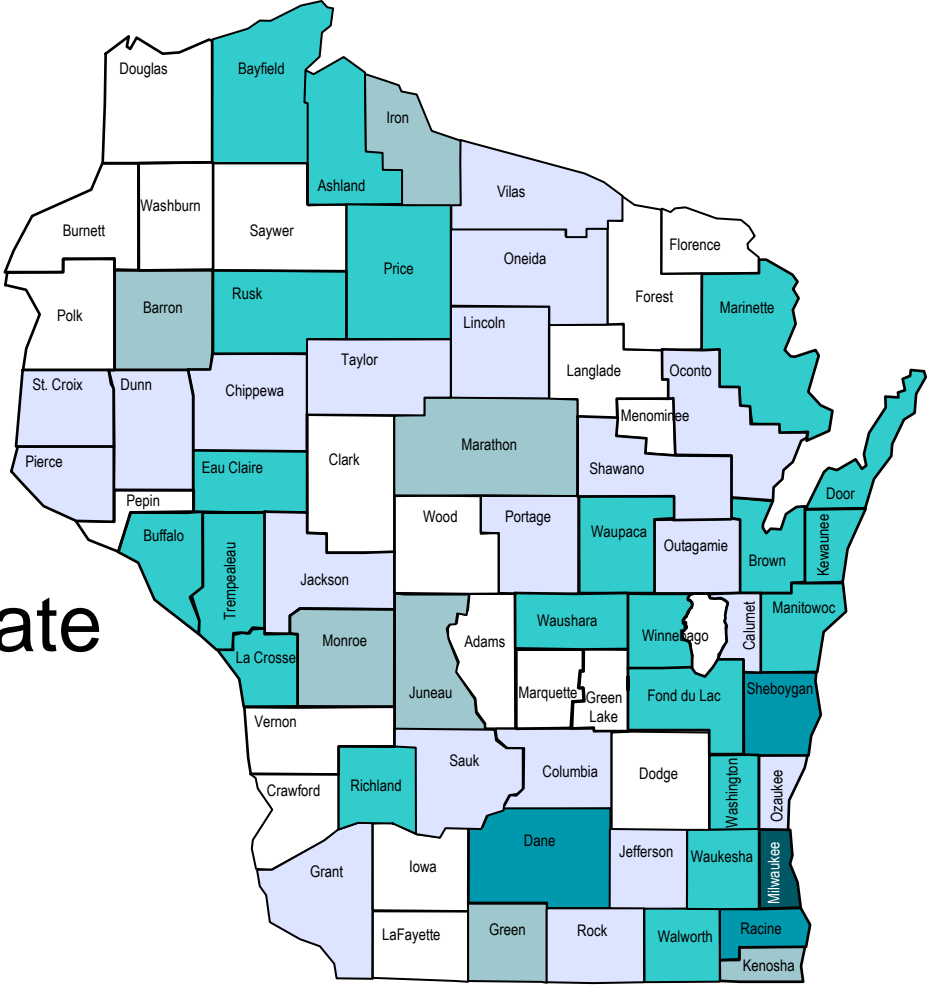
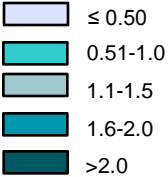
*People with TB per 100,000

Reported TB Cases Wisconsin, 1982–2017

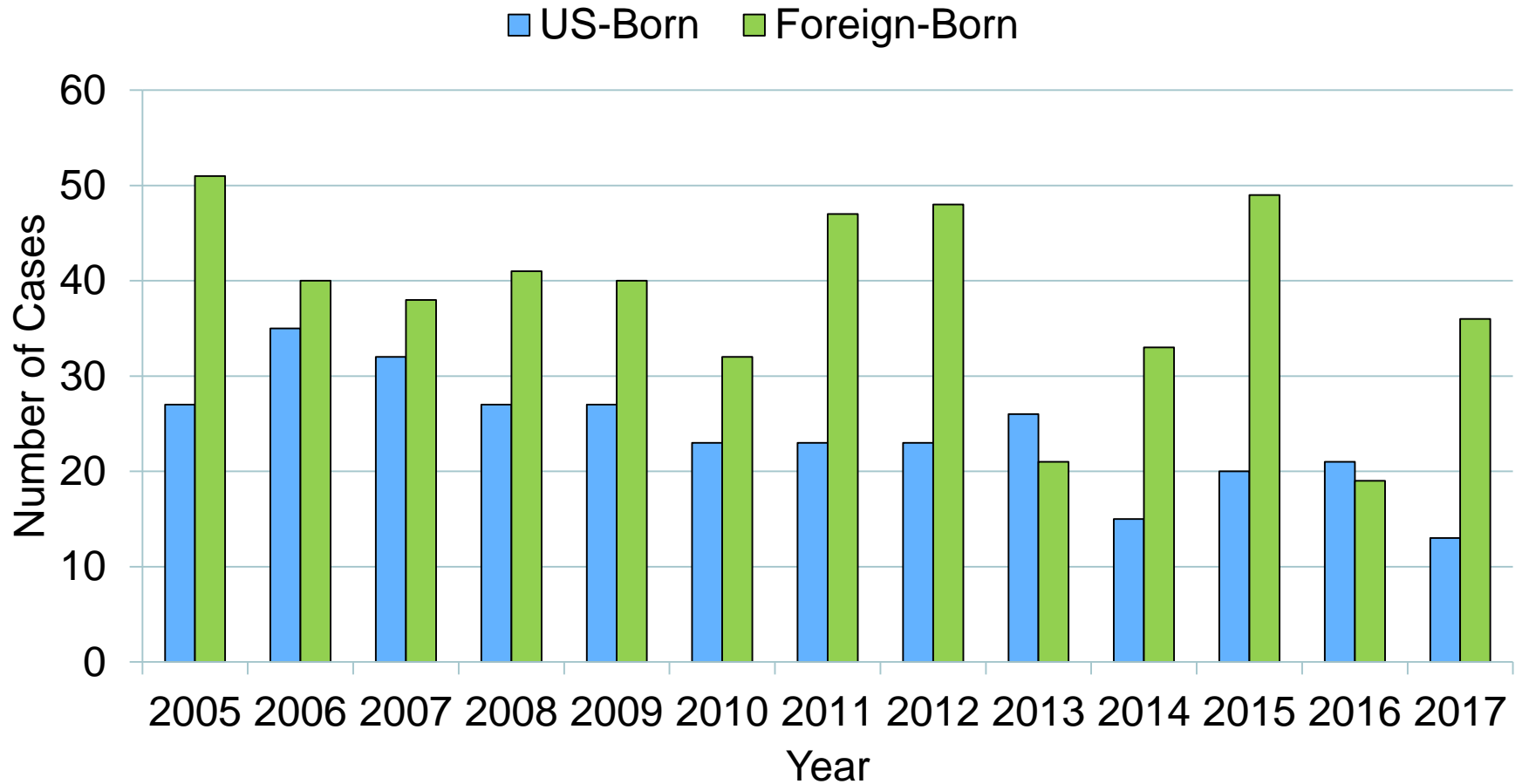


TB Case Rates, Wisconsin, 2007-2016

10-year average rate
2007-2016

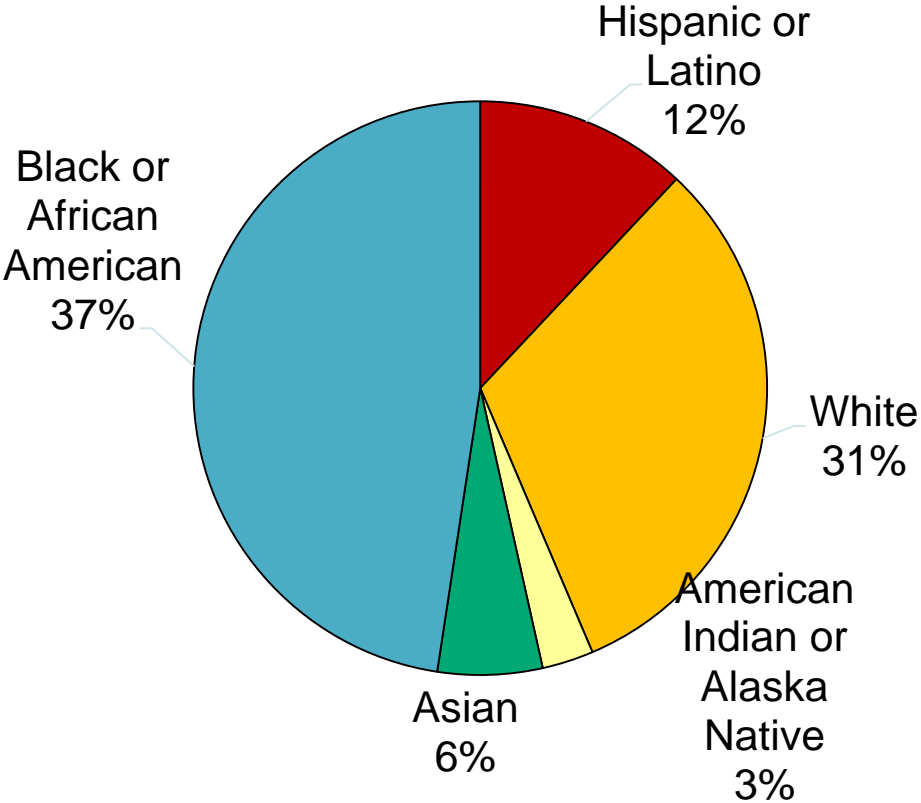


Number of TB Cases in U.S.-born vs. Foreign-born Persons, Wisconsin, 2005–2017

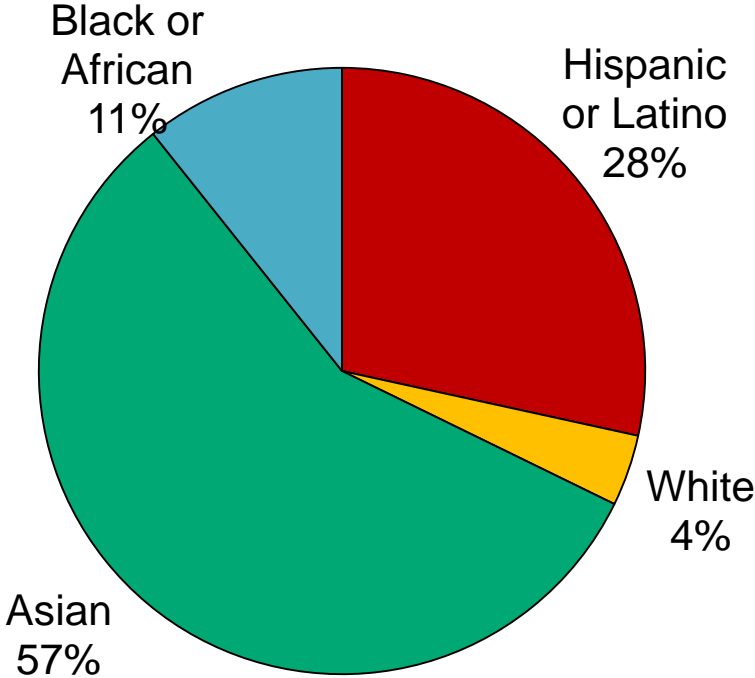


Reported TB Cases by Origin and Race/Ethnicity, Wisconsin, 2005-2017

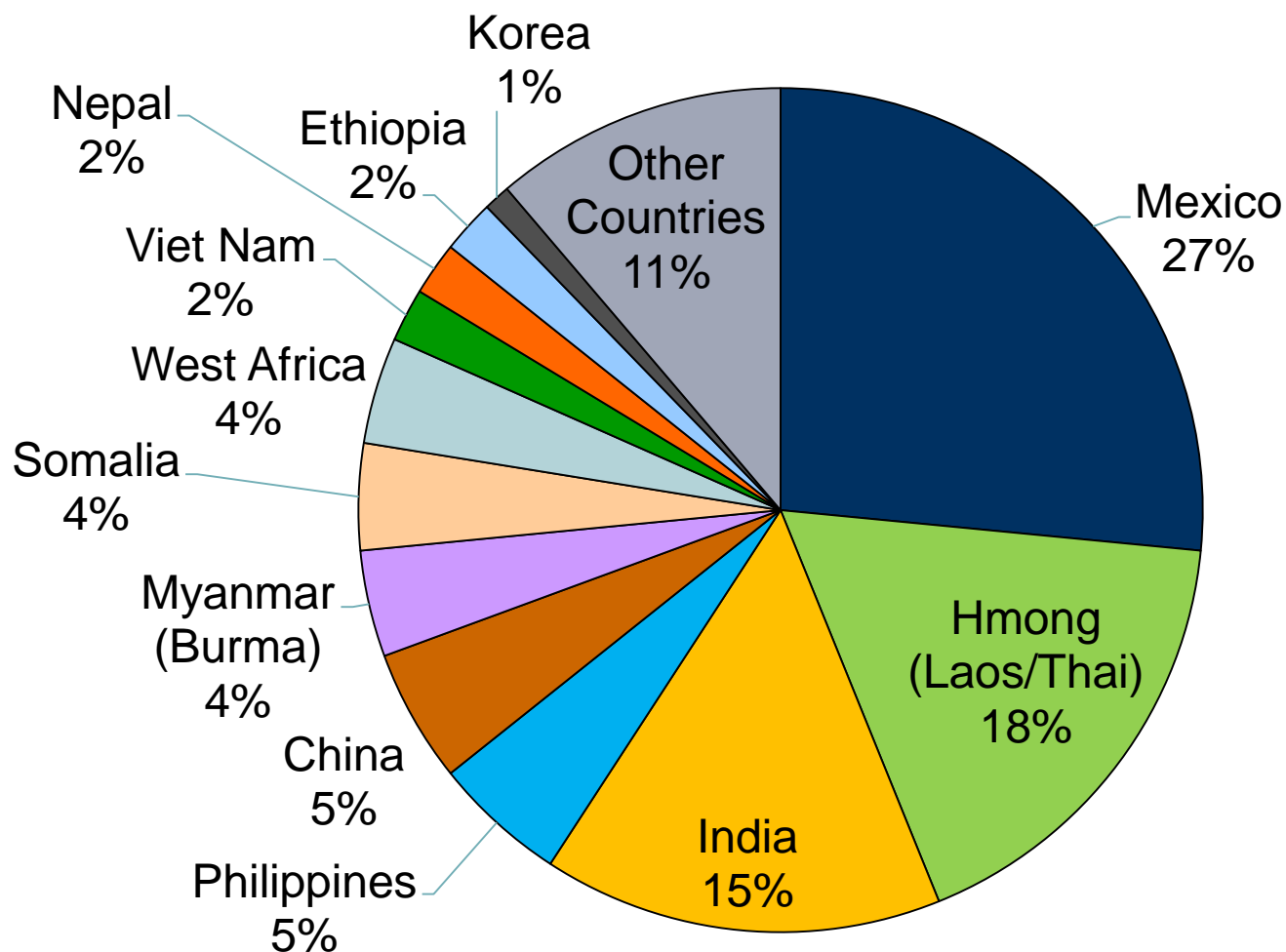
U.S.-born



Foreign-born



Countries of Birth of Foreign-born Persons Reported with TB, Wisconsin, 2005-2017



Wisconsin TB Summary

- 49 new patients were identified with TB in 2017.
- The 10-year average number of cases is 58.8 cases per year.
- Wisconsin TB incidence for 2017 (0.86) is below the national rate.
- No MDR-TB was identified for 2016–2017.
- TB rates are very low for homeless, long-term care, and correctional populations in Wisconsin.

Wisconsin TB Challenges

- Although Wisconsin is identifying fewer patients with TB, case complexity is emerging as a new challenge:
 - ◆ TB and HIV co-infection (4 patients in 2016–2017)
 - ◆ Patients with diabetes
 - ◆ Patients with alcohol, drug, or tobacco use

*2013–2017 five year average

Wisconsin TB Challenges

- Wisconsin's percentage of multidrug resistant TB (3.9%*) is nearly 3.5 times the national average rate.
- There are challenges associated with diagnosis and treatment of TB in Wisconsin's high-risk, foreign-born populations.
- Wisconsin is experiencing a loss of TB expertise in health care facilities and local health departments.

*2013–2017 five year average

Reporting LTBI in Wisconsin



Reporting TB Disease in Wisconsin

- Wis. Admin. Code § DHS 145.04 Appendix A lists diseases of public health importance that must be reported.
- Tuberculosis is a Category 1 communicable disease (urgent public health importance).
- Upon identification of a case or suspected case:
 - ◆ Report immediately by telephone or fax to patient's local health officer.
 - ◆ Enter information into the Wisconsin Electronic Disease Surveillance System (WEDSS) within 24 hours.

Why Report LTBI in Wisconsin?

- TB epidemiology in low incidence areas is characterized by a low rate of transmission. The majority of cases are generated from progression of LTBI to active TB disease.

Why Report LTBI in Wisconsin?

- To progress toward TB elimination, it is important to identify and treat LTBI reservoirs.
 - ◆ Current LTBI surveillance data is based on patients that use the Wisconsin TB Dispensary Program.
 - ◆ Universal reporting would provide more robust surveillance data for the purpose of targeted programming and improved prevention and control of TB.

Reporting LTBI in Wisconsin

- As of July 1, 2018, changes went into effect for Wis. Admin. Code § DHS 145.04.
- LTBI is a category II reportable condition.
- Within 72 hours of recognition of a case or suspected case:
 - ◆ Report through WEDSS or
 - ◆ Report via the LTBI Confidential Case Report (form F-02265) or the Acute and Communicable Disease Case Report (form F-44151).

Case Definition for LTBI: Laboratory Criteria

- Immunologic:
 - ◆ Positive IGRA or
 - ◆ Positive tuberculin skin test
- Microbiologic:
 - ◆ Culture negative for *M. tuberculosis* complex (if specimen collected)

Case Definition for LTBI: Clinical Criteria

- No signs or symptoms consistent with TB disease **AND**
- Chest imaging without abnormalities consistent with TB disease
- If chest imaging is abnormal and could be consistent with TB disease, then TB disease must be clinically ruled out.

Reporting LTBI to the Local Health Department

Reports will arrive in the following formats:

- Laboratory report (interferon gamma release assay results) in WEDSS staging area, faxed or mailed
- Web report from physician in WEDSS staging area
- Paper report from physician
 - ◆ LTBI Confidential Case Report form (F-02265)
 - ◆ Acute and Communicable Disease Case Report (F-44151)

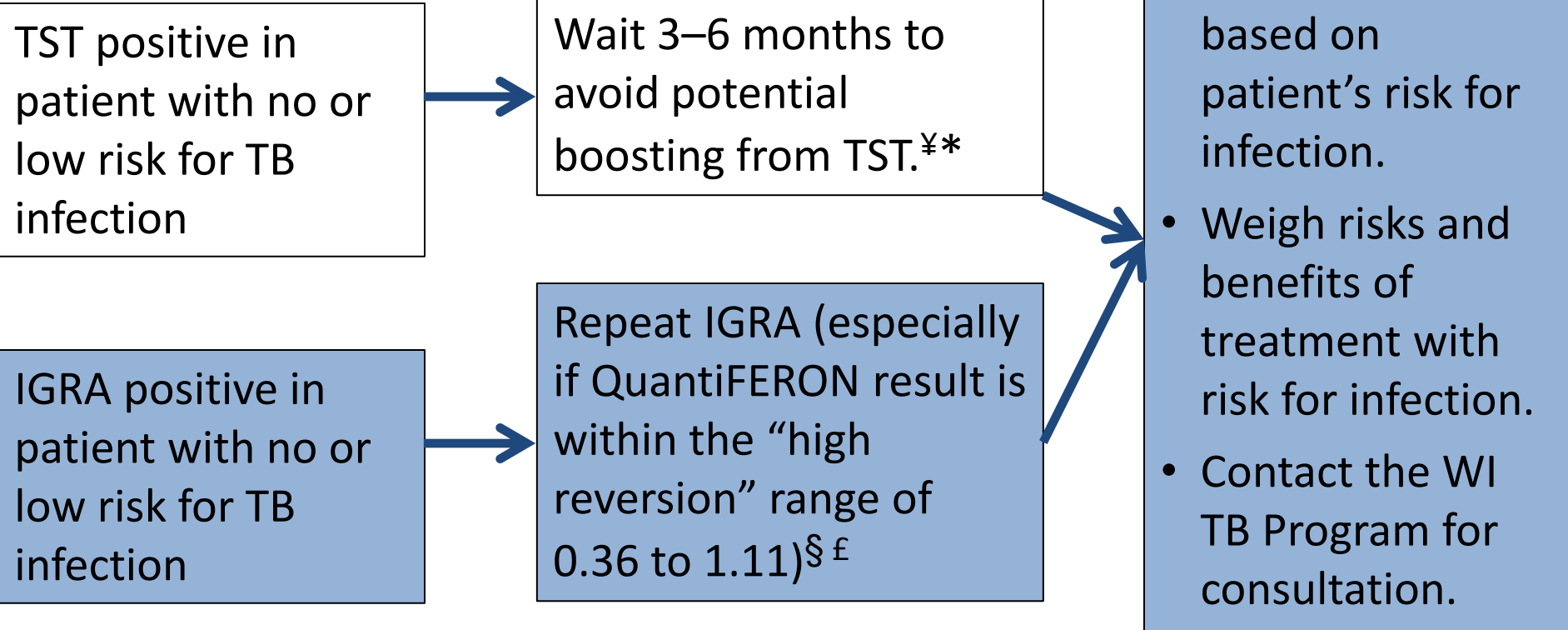
Local Health Department (LHD) Follow-up for LTBI

- Assure all results are documented.
- Check interpretation of test results, risk factors, and clinical information.
- Assure that the patient receives follow-up medical evaluation that could include chest imaging and sputum collection.
- Assure that active TB disease is ruled out before LTBI therapy is recommended and initiated.
- Administer LTBI medications with directly observed therapy as necessary.

LHD Questions for Laboratory

- Patient address
- Numeric results for QuantiFERON (TB antigen minus nil) or T-SPOT
- Interpretation
 - ◆ Indeterminate or borderline results
 - ◆ Positive results in patients with no risk for TB infection

Positive IGRA or TST in Low Risk Patients



¥Dorman SE et al. AJRCCM 2014; 189(1) online supplement.

§Lewinsohn et al., CID 2017; 64(2): 111-5, figure 2.

£Thanassi et al., 2012; Pulm Med 291294

*Van Zyl-Smit et al. AJRCCM 180;49 2009.

Labs Reporting QuantiFERON Results

Laboratory	Type of QFT Result
ACL, West Allis	Interpretation only
ARUP, Salt Lake City, UT	Interpretation only
Aspirus, Wausau	Interpretation only
Beloit Clinic	Interpretation only
LabCorp	TB Ag-Nil, Mitogen-Nil, Nil and Interpretation
Mayo Rochester and hospitals/clinics in Wisconsin	TB1 Ag-Nil, TB2 Ag-Nil, Mitogen-Nil, Nil and Interpretation
Mercy, Janesville	TB Ag-Nil, Mitogen-Nil, Nil and Interpretation
Quest Diagnostic Labs	Interpretation only
St. Vincent/St. Mary's Prevea, Green Bay	Interpretation only
Wisconsin Diagnostic Laboratory, Milwaukee	TB Ag-Nil, Mitogen-Nil, Nil and Interpretation

A Targeted TB Testing Program in Wisconsin



Overview: Targeted Testing

- Today, about 35% of Wisconsin farm workers are immigrants from high TB prevalence counties.
- Immigrant workers may have little access to health care.
- Interactions between livestock and humans may pose an elevated risk of TB transmission.
- Farm-related TB exposures could threaten the Wisconsin dairy and beef industries.

Partners in Health and Safety

The 2011 pilot project provided clinics for livestock workers in northwest Wisconsin.

- University of Wisconsin-Eau Claire – College of Nursing and Health Sciences
- Buffalo County Public Health
- Pepin County Public Health
- Bridges/Puentes
- Dairy Producers
- Chippewa Valley Free Clinic

Partners in Health and Safety

- Students and faculty prepared for clinics.
- Students developed teaching plans.
- Students participated in clinics on farms.
- Clinics included screening, testing, immunizations, and education.

Partners in Health and Safety

- 229 individuals were tested for TB using IGRA.
- LTBI was identified in 16 individuals (7%).
- No active TB was identified.
- 15 individuals treated for LTBI.
- One individual was lost to follow-up.

Expansion of Targeted Testing

In 2018, the Wisconsin Tuberculosis Program (WTBP) offered funding to perform targeted testing in livestock workers.

- St. Croix County
- Madison/Dane County
- Buffalo County

Expansion of Targeted Testing

- Identification of farms for testing
- Communication with farm owners and other partners
- Development of educational materials for farm owners and livestock workers
- Coordination of interpretation services
- Coordination of health clinics
- Coordination of follow-up services
- Coordination of LTBI treatment

Summary



Summary

- The incidence of tuberculosis is slowly decreasing.
- Diagnosis and care of patients with tuberculosis remains challenging.
- LTBI is now a category II reportable condition.
- Universal reporting will help gather surveillance data for better targeted testing.
- Pilot sites are performing TB screening and testing for livestock workers.

Wisconsin TB Program Contact Information



TB Program Contact Information

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<https://www.dhs.wisconsin.gov/tb/index.htm>

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Southeastern National Tuberculosis Center (SNTC)

- The new CDC-funded TB Center of Excellence located at University of Florida at Gainesville.
- The SNTC goal is to support domestic TB control and prevention efforts with a focus on two major activities:
 - ◆ Medical evaluation and management of persons with TB or LTBI
 - ◆ Education and training activities
- <http://sntc.medicine.ufl.edu/>

Questions?

