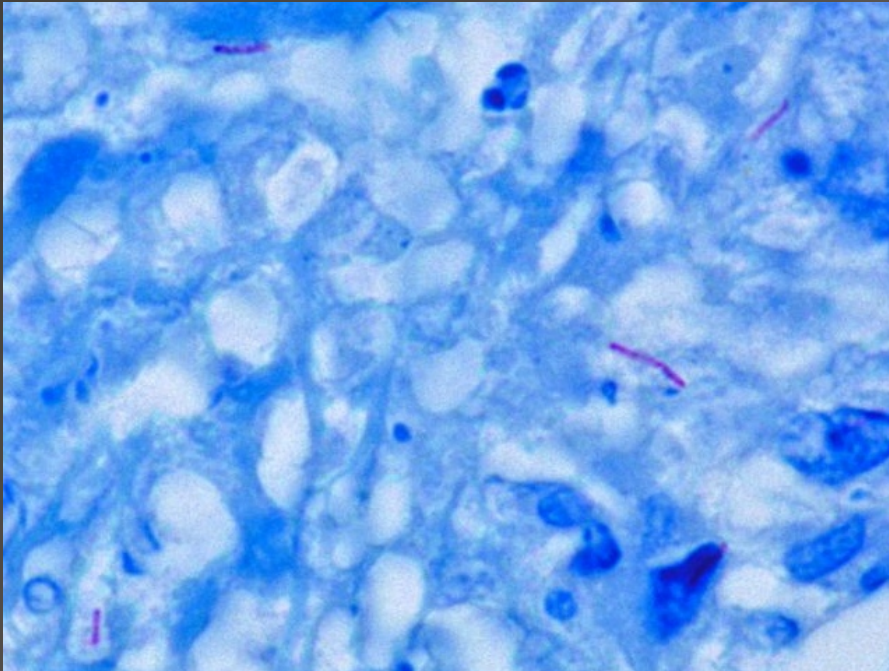


TUBERCULOSIS

ACADEMIC HALFDAY 2017



Felipe N. Gutierrez MD, MPH

Chief, Infectious Diseases Section

Phoenix VA Medical Center

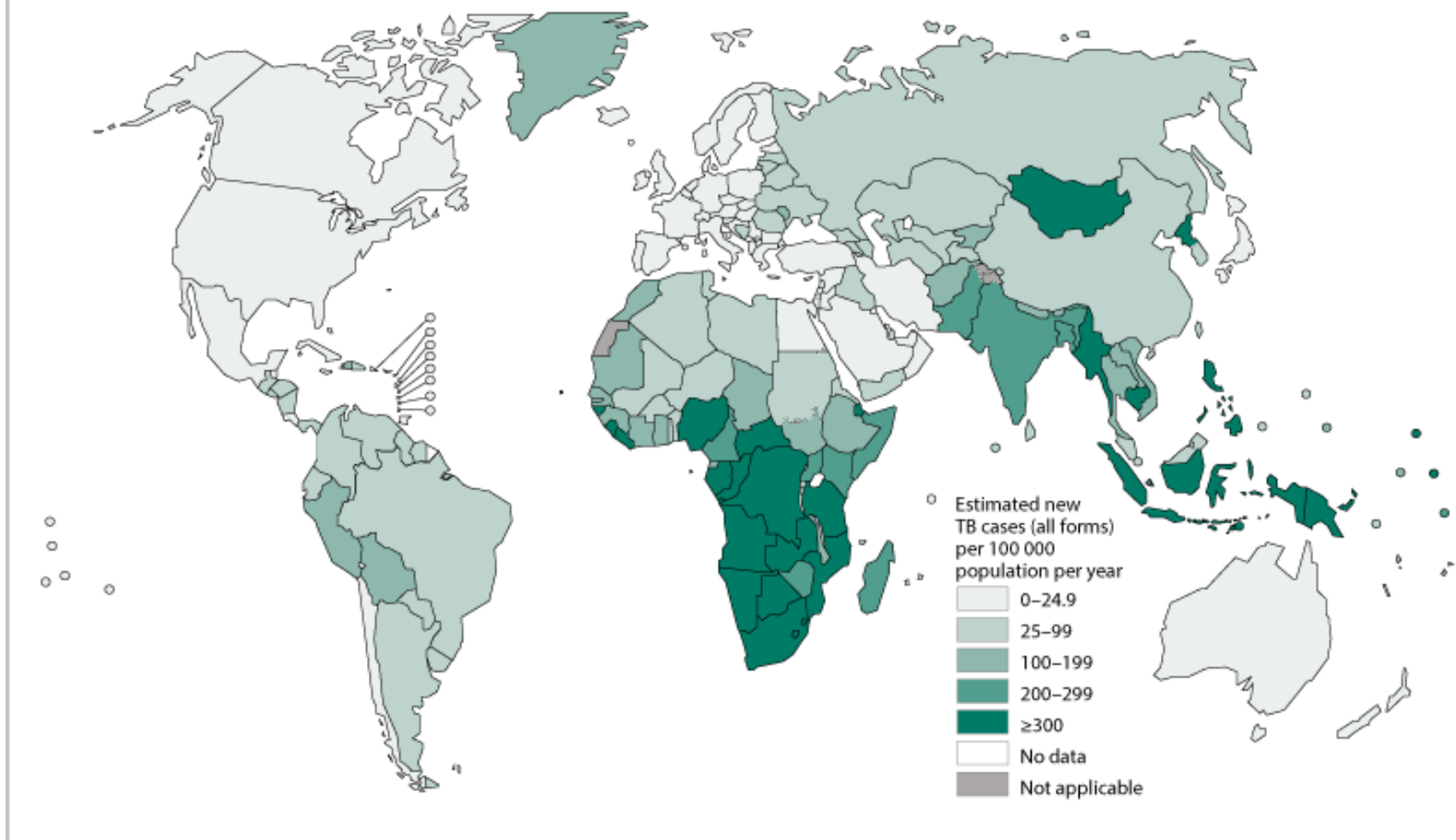
Deputy TB Control Officer

Maricopa County Department of Public Health

Global Picture

- 2015 Statistics (WHO TB Report)
 - 10.4 million new cases
 - 1.4 million deaths
 - Remains in top 10 causes of mortality
 - 22% decline 2000-2015
 - 480,000 new cases of MDRTB
 - 6 countries account for 60% of new cases
 - India , Indonesia, China, Nigeria, Pakistan, South Africa

Estimated TB incidence rates, 2015



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

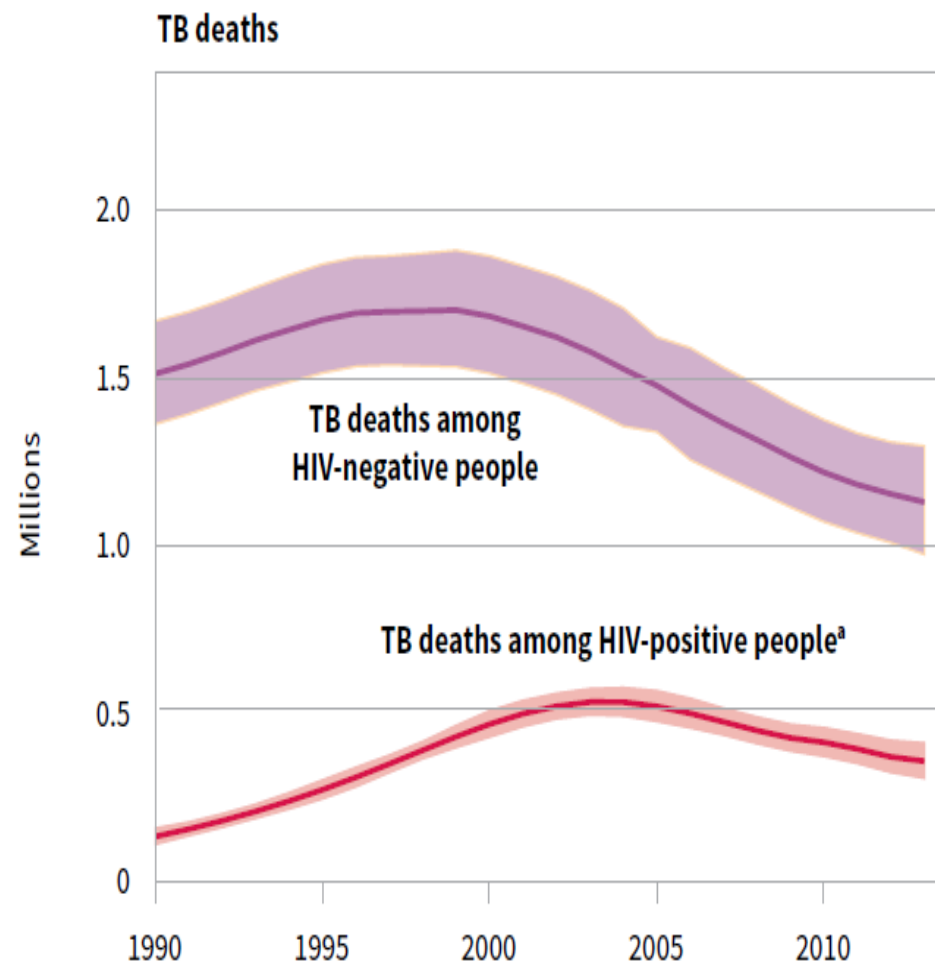
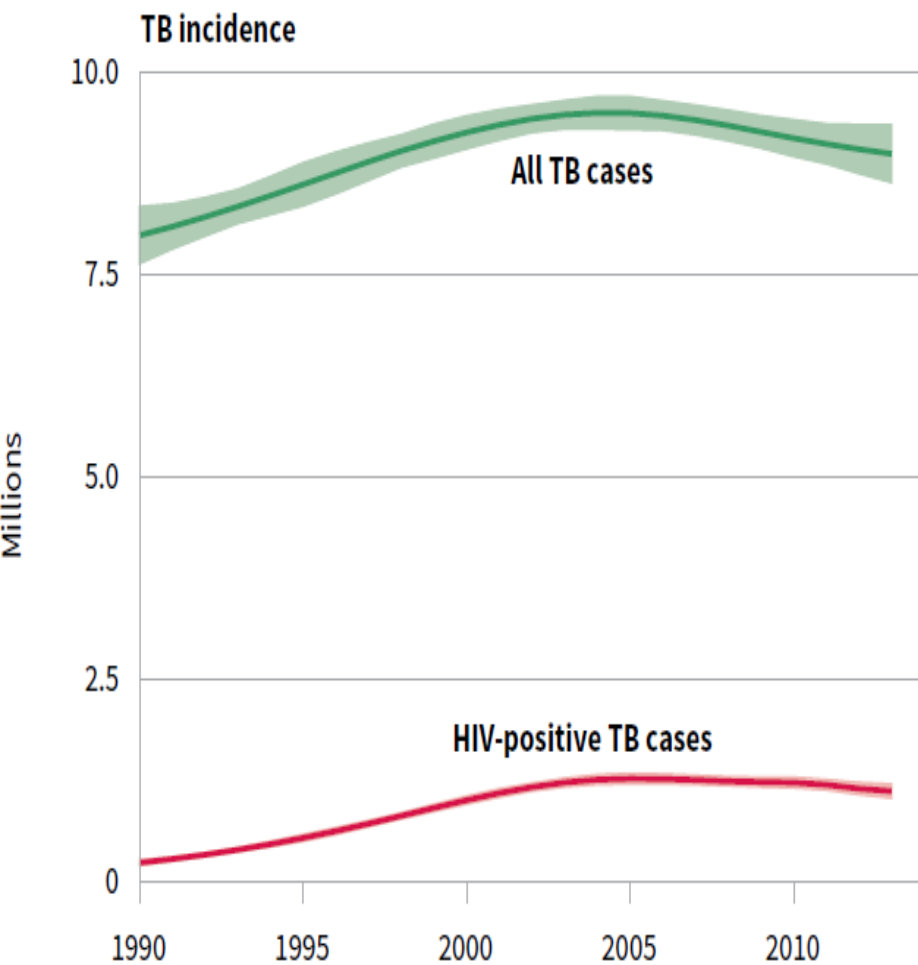
Data Source: *Global Tuberculosis Report 2016*. WHO, 2016.

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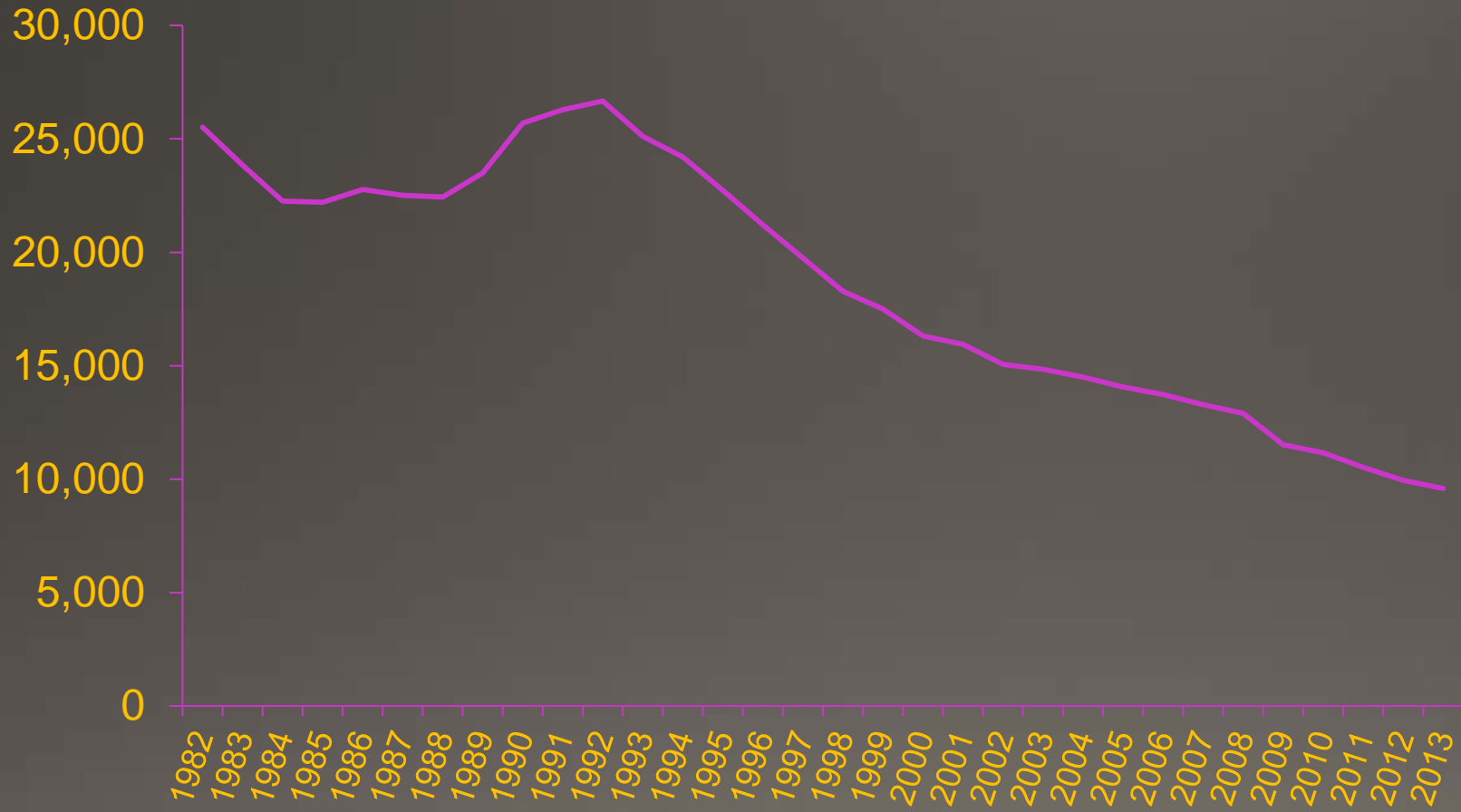


World Health Organization

Global Impact of HIV on TB

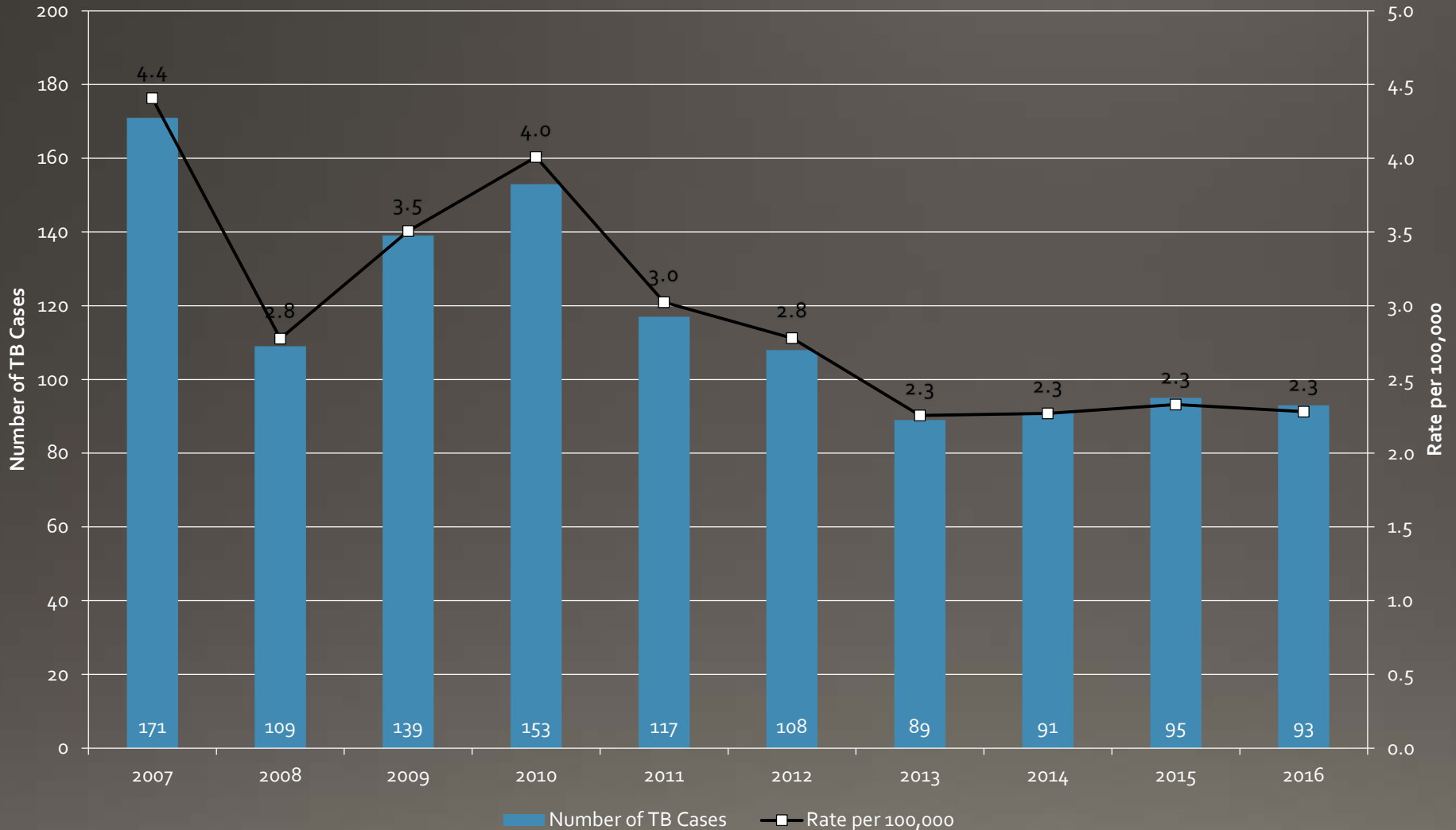


Reported TB Cases US 1982-2013



Maricopa County Statistics

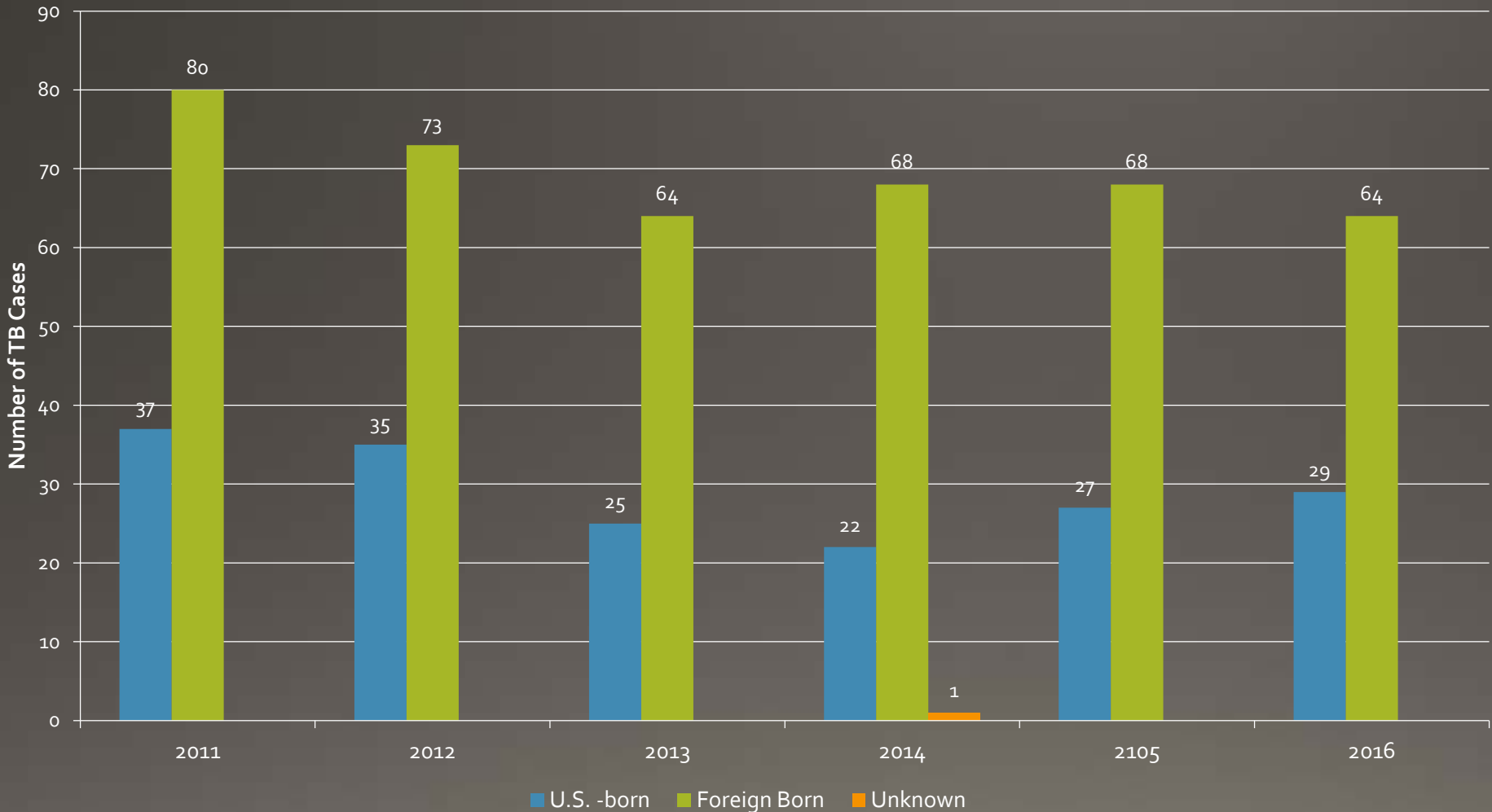
TB Case Rates & Number of TB Cases, Maricopa County, 2003 - 2016



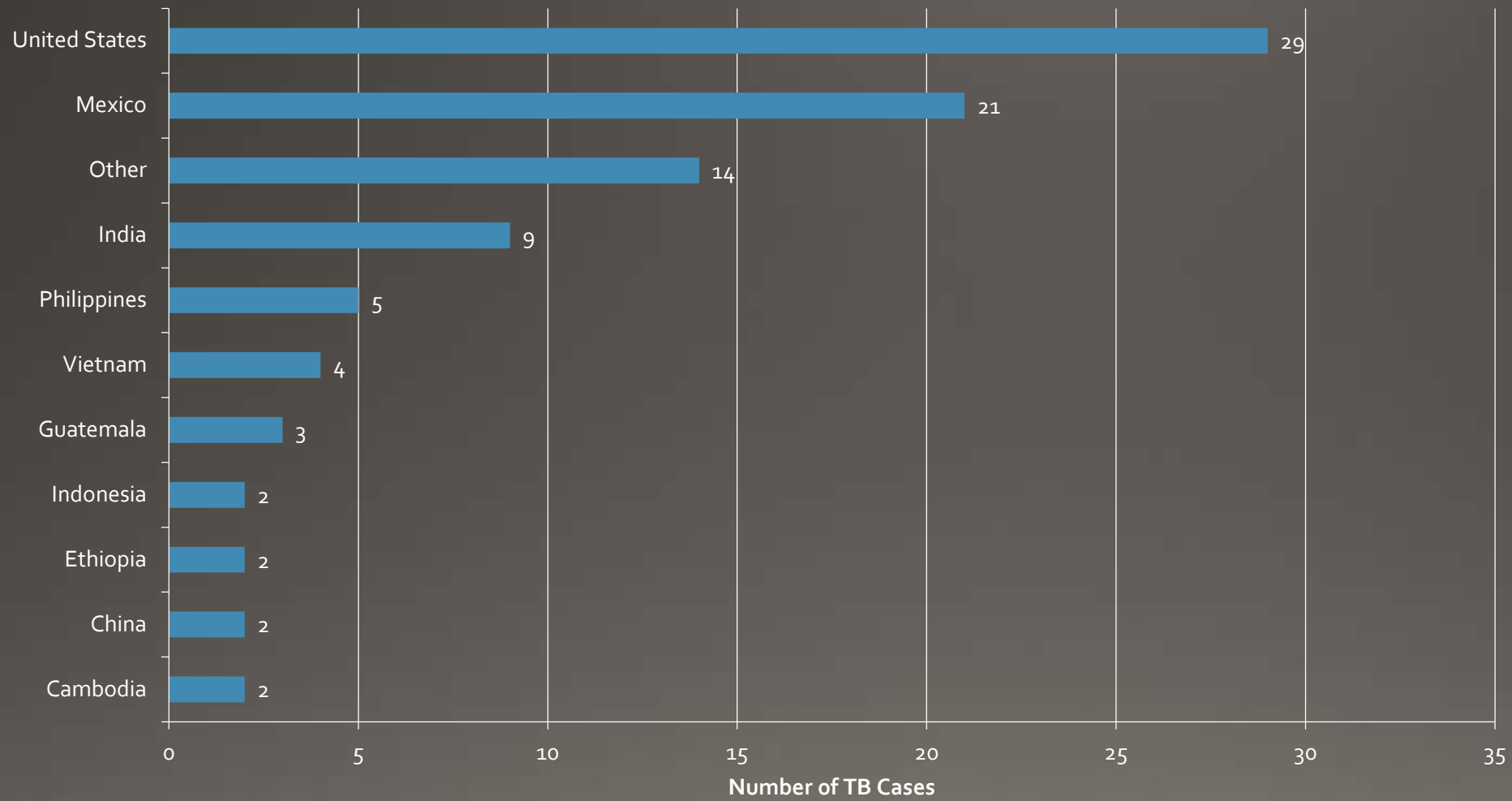
TB Cases by Gender, Maricopa County, 2011 - 2016



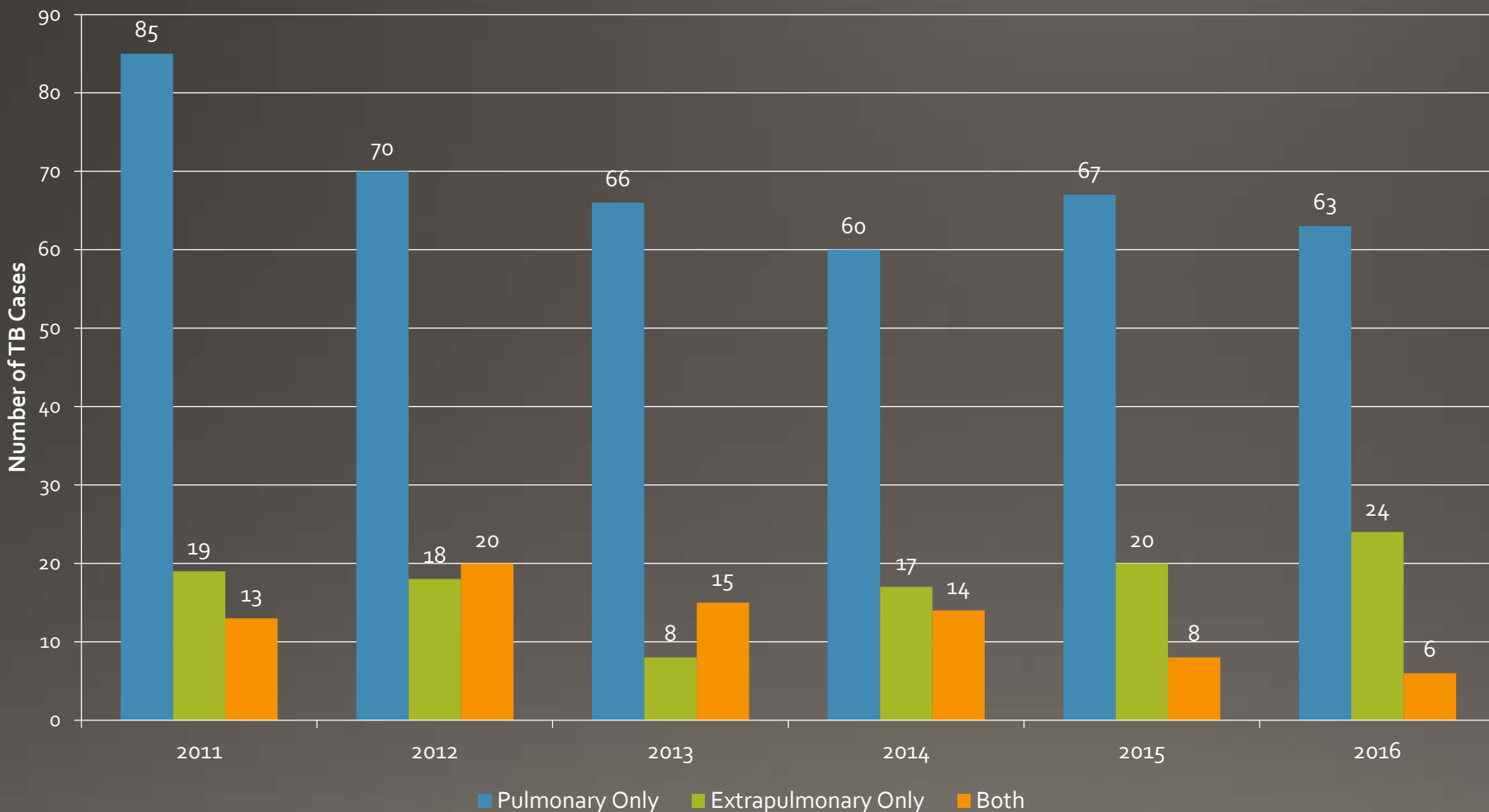
U.S.-born Compared to Foreign-born TB Cases, Maricopa County, 2011 - 2016



TB Cases by Country of Origin, Maricopa County, 2016



TB Cases by Site of Disease, Maricopa County, 2011 - 2016



TB Cases with Reported Drug Resistance, Maricopa County, 2011 - 2016



	Cases with Drug Susceptibility Results Reported	INH Resistance ^a		Multi-Drug Resistance ^b		Other Resistance ^c	
		Number of Cases	Number	%	Number	%	Number
2011	83	4	4.8	0	0	1	1.2
2012	84	8	9.5	0	0	0	0
2013	72	8	11.1	1	1.4	1	1.4
2014	73	6	8.2	2	2.7	0	2.7
2015	71	10	14.1	0	0	12	16.9
2016	74	10	13.5	3	4.1	3	4.1

^aIsolates may also be resistant to other drugs including rifampin, includes initial and final susceptibility results

^bResistant to at least isoniazid and rifampin, includes initial and final susceptibility results

^cOther drug resistance without isoniazid resistance.

TB Cases with Reported Drug Resistance, Maricopa County, 2011 - 2016



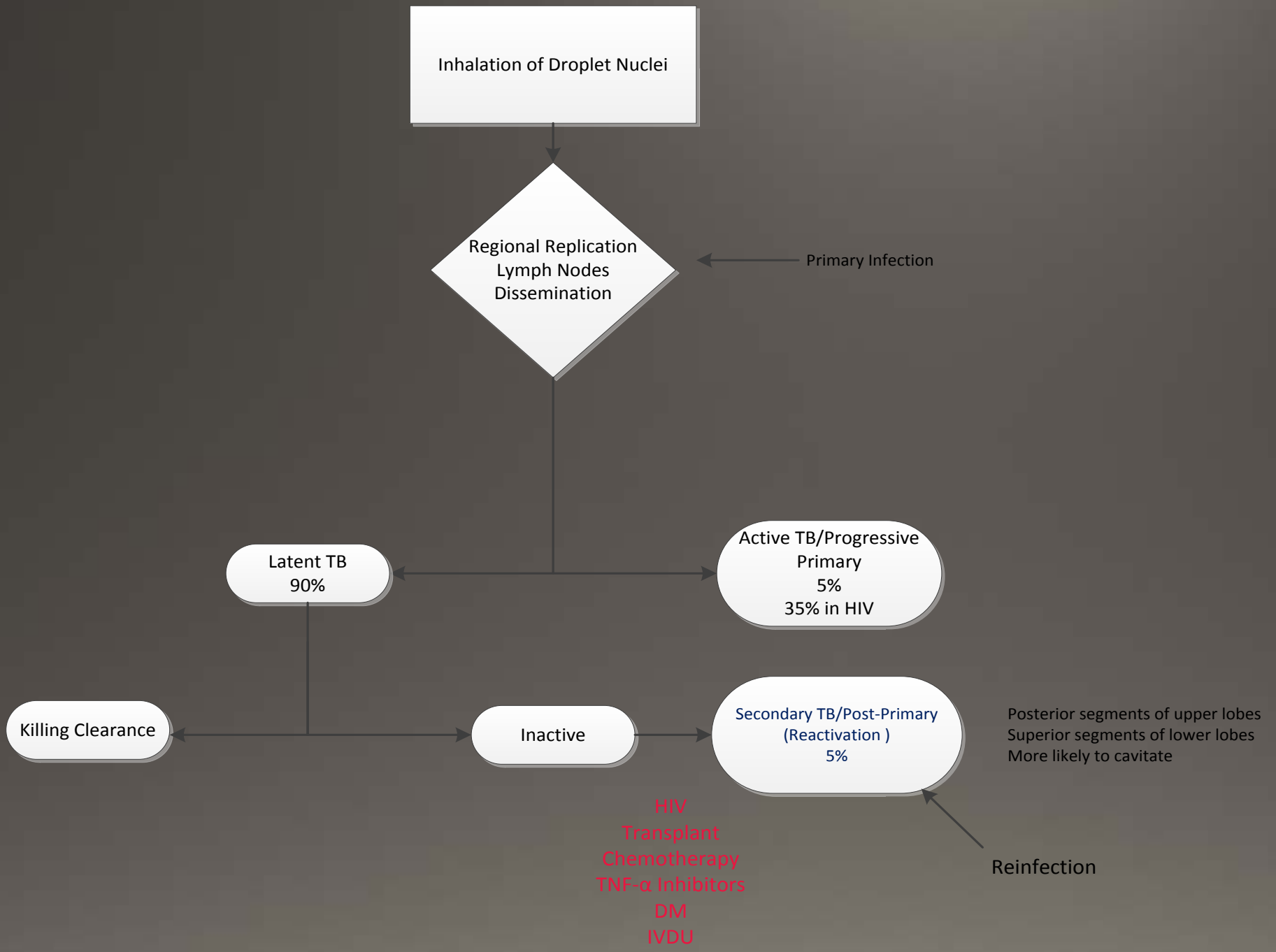
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TB INFECTION



Inhalation of Droplet Nuclei

Regional Replication
Lymph Nodes
Dissemination

Primary Infection

Latent TB
90%

Active TB/Progressive
Primary
5%
35% in HIV

Killing Clearance

Inactive

Secondary TB/Post-Primary
(Reactivation)
5%

Posterior segments of upper lobes
Superior segments of lower lobes
More likely to cavitate

HIV
Transplant
Chemotherapy
TNF-α Inhibitors
DM
IVDU

Reinfection

Diagnostic Tools

- Immunologic
 - TST
 - IGRA (Quantiferon/T-Spot)
- Radiographic
 - Chest X-Ray
 - CT scan
- PCR
 - Xpert MTB/Rif
 - NAAT
- HPLC
- Microscopy
 - AFB staining
- Culture

TST INTERPRATION

- Read at 47-72hours
- Measured in mm induration
- ≥ 5 mm
 - HIV +
 - Transplant
 - TNF- α antagonists
 - Prednisone ≥ 15 mg/day ≥ 1 month
- ≥ 10 mm
 - Recent immigration (5yrs) from high prevalence countries
 - Clinical conditions (Silicosis, CRI, DM)
 - IVDU
 - Mycobacterial Laboratory Personnel
- ≥ 15 mm
 - Anyone
- <http://www.tstin3d.com/en/calc.html>

LTBI TREATMENT REGIMENS

- Isoniazid – 9 months
- Rifampin – 4 months
- Rifapentine + Isoniazid – 3 months
 - Once weekly
 - Directly Observed Therapy

TREATMENT FOR ACTIVE TB

- RIPE
 - Rifampin
 - Isoniazid (INH)
 - B6
 - Pyrazinamide (PZA)
 - Ethambutol (EMB)
- Induction Phase
 - 8 weeks (40 doses)
- Continuation Phase
 - Typically INH + B6 + Rifampin
 - Duration 6,9, 12 months

QUESTIONS?