

NEW ISSUES AND NEW STRATEGIES IN COMMUNICABLE DISEASE

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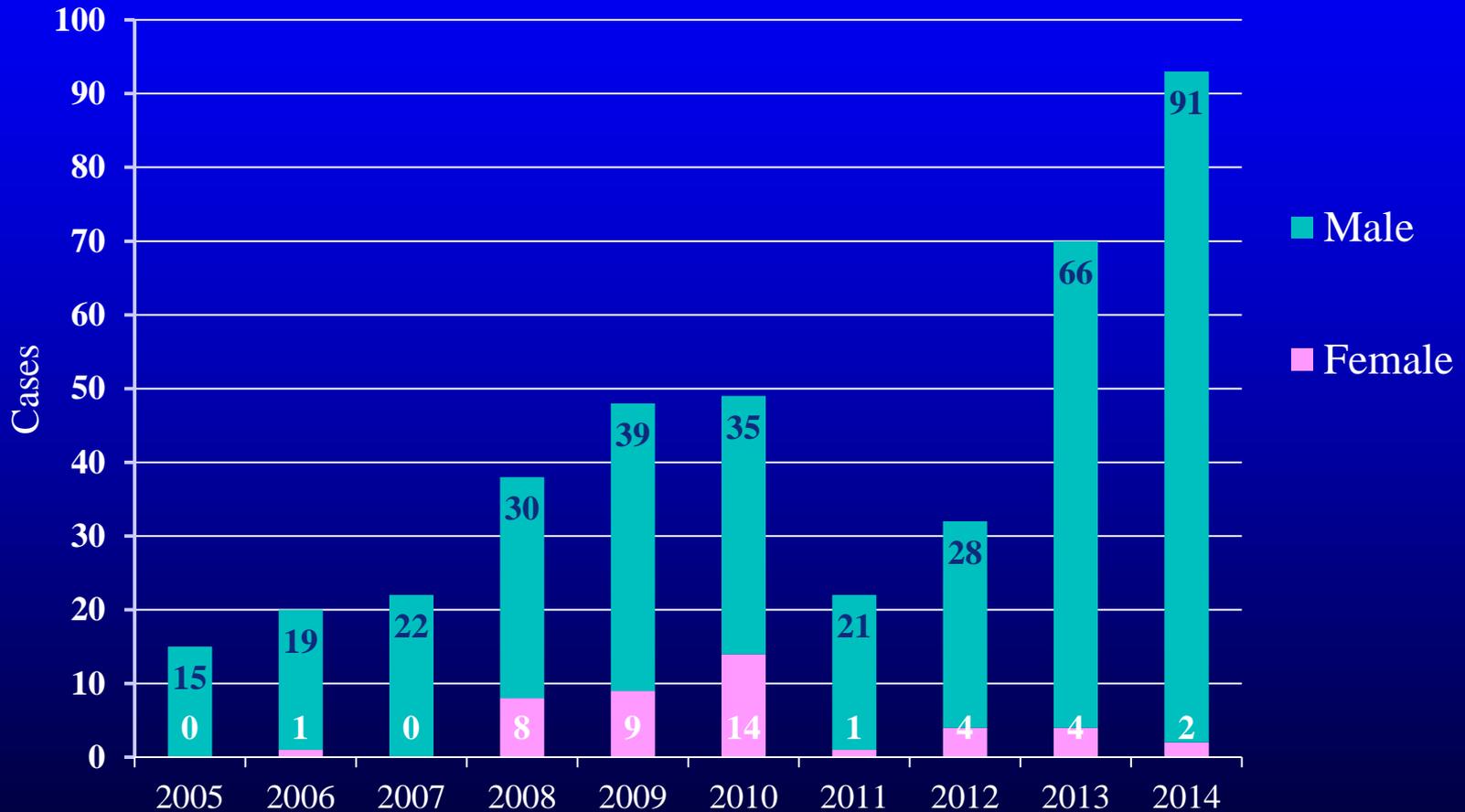
July 22, 2016

Emerging and Threatening to Emerge Communicable Diseases

- Syphilis
- HIV
- Antimicrobial-resistant Gonorrhoea
- Tuberculosis
- Hansen's Disease

Early Syphilis Cases By Gender

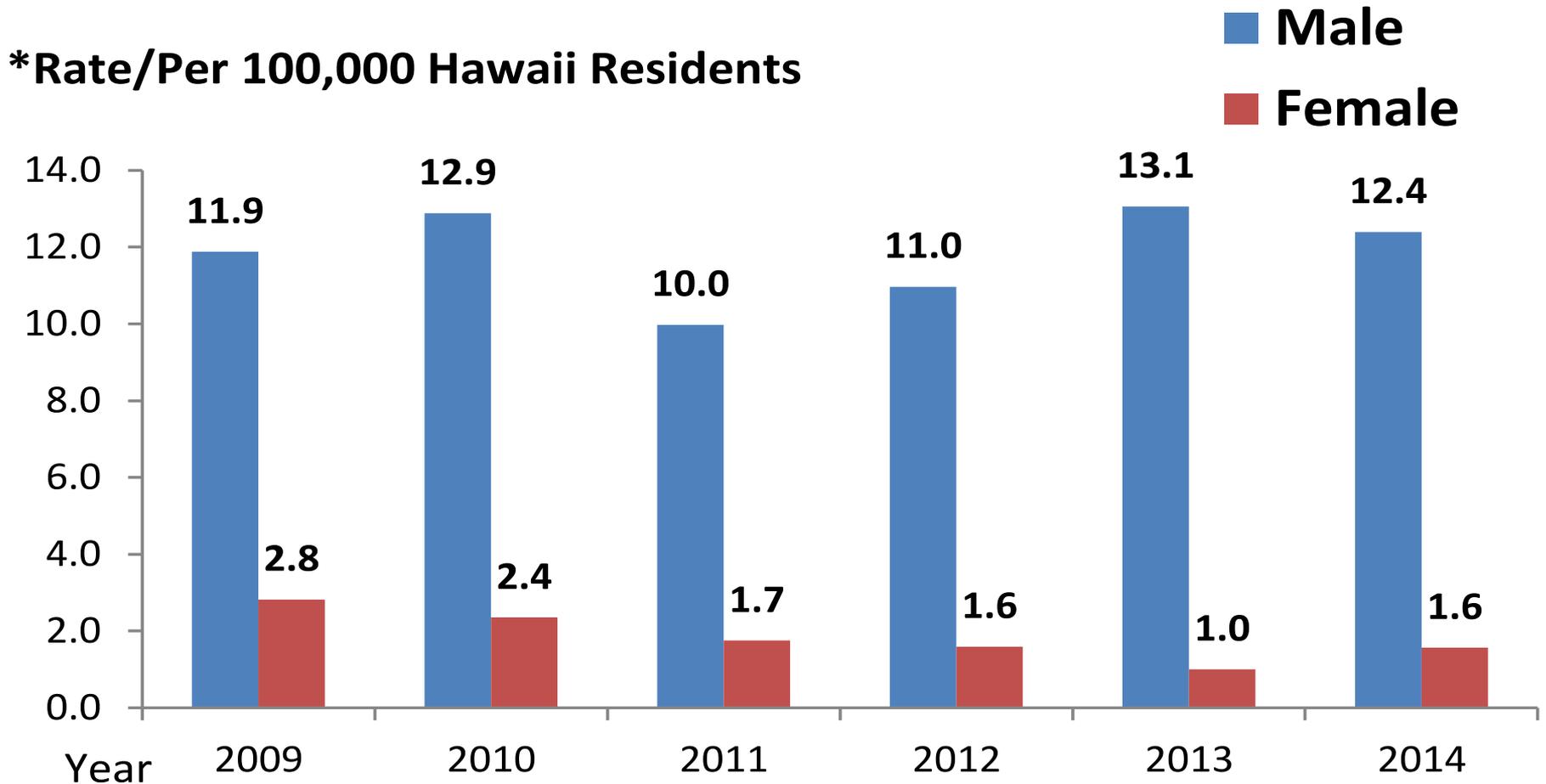
Hawaii, 2005 - 2014



Syphilis - Prevention

- Abstinence or condoms
- Early diagnosis and treatment
- Contact tracing
- Education and advertising
- Identification of co-infections

HIV Infection Rates* by Gender and Year of Diagnosis, 2009-2014, Hawaii

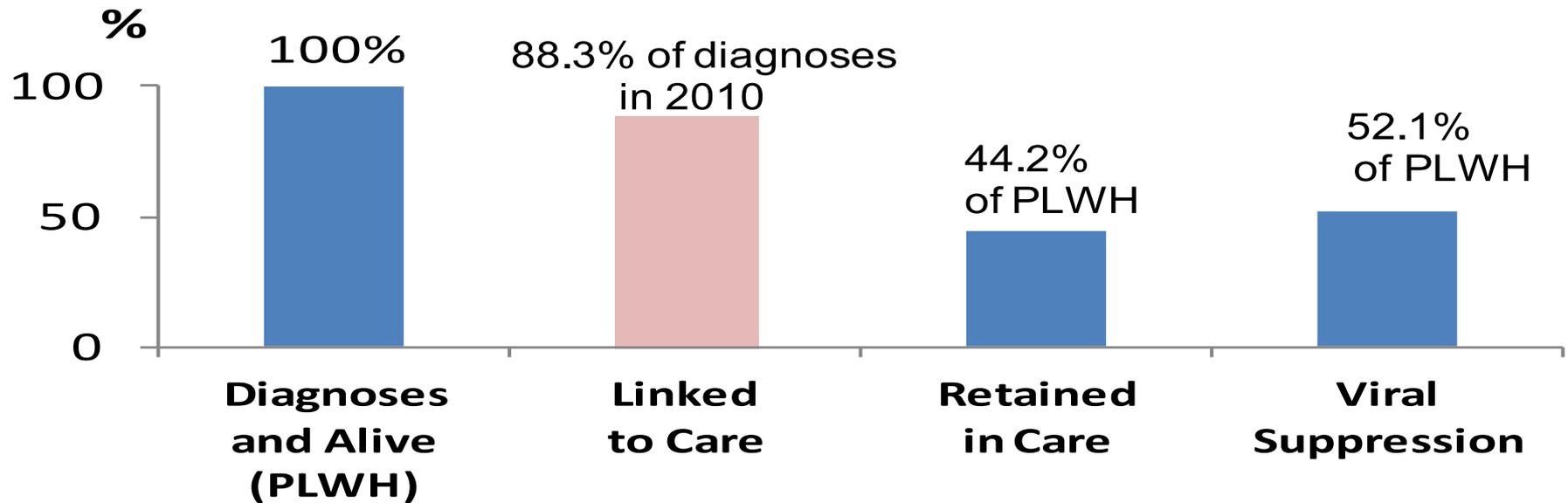


HIV - Prevention

- Pre-exposure prophylaxis
- Post-exposure prophylaxis
- Early identification
- Early treatment, Retention in care, Viral suppression



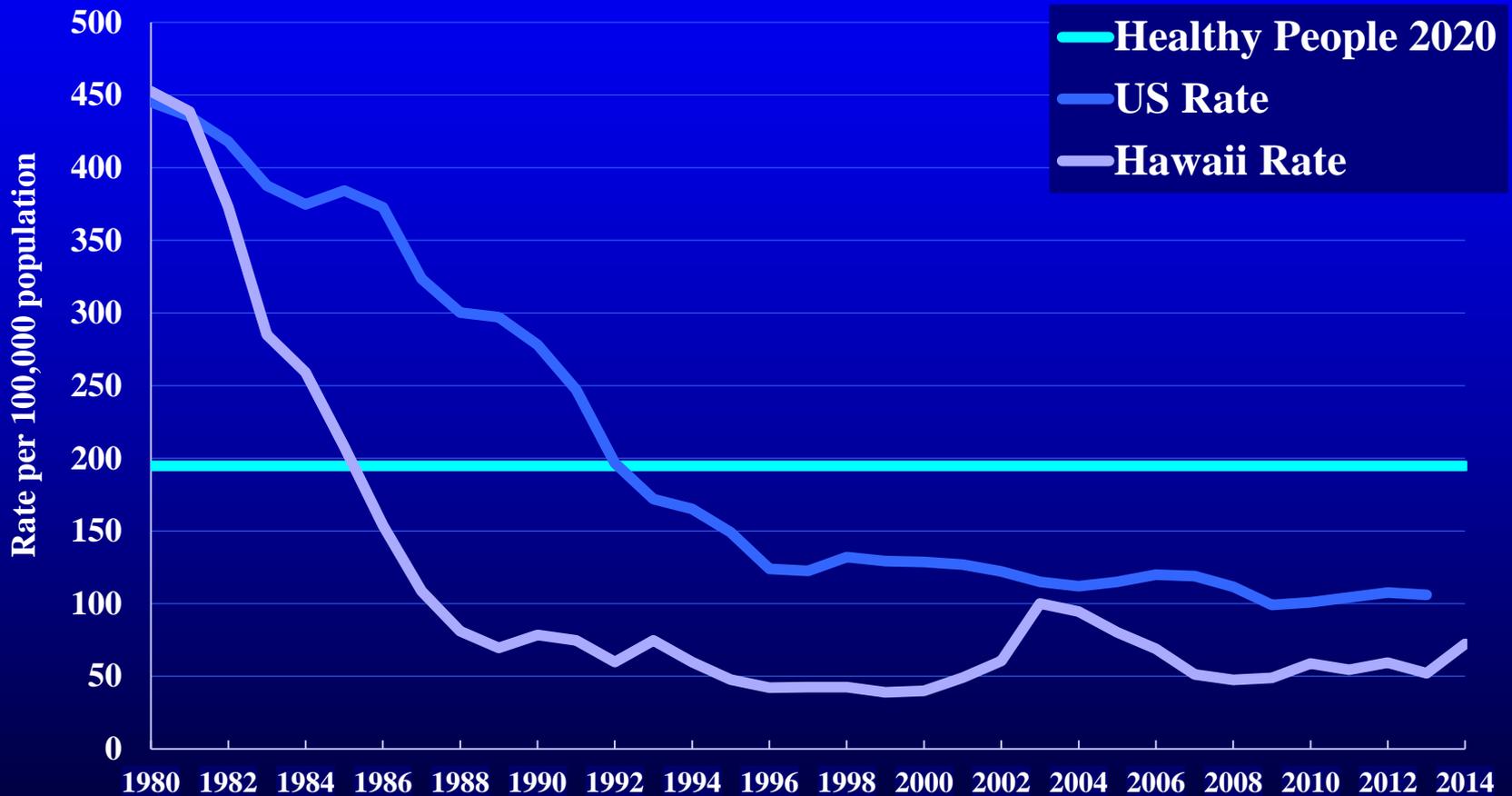
The Continuum of HIV Care in 2011 Among Persons With Diagnosed HIV Infection, Hawaii



^a Denominator is newly Hawaii Diagnoses in 2010 (94 persons)

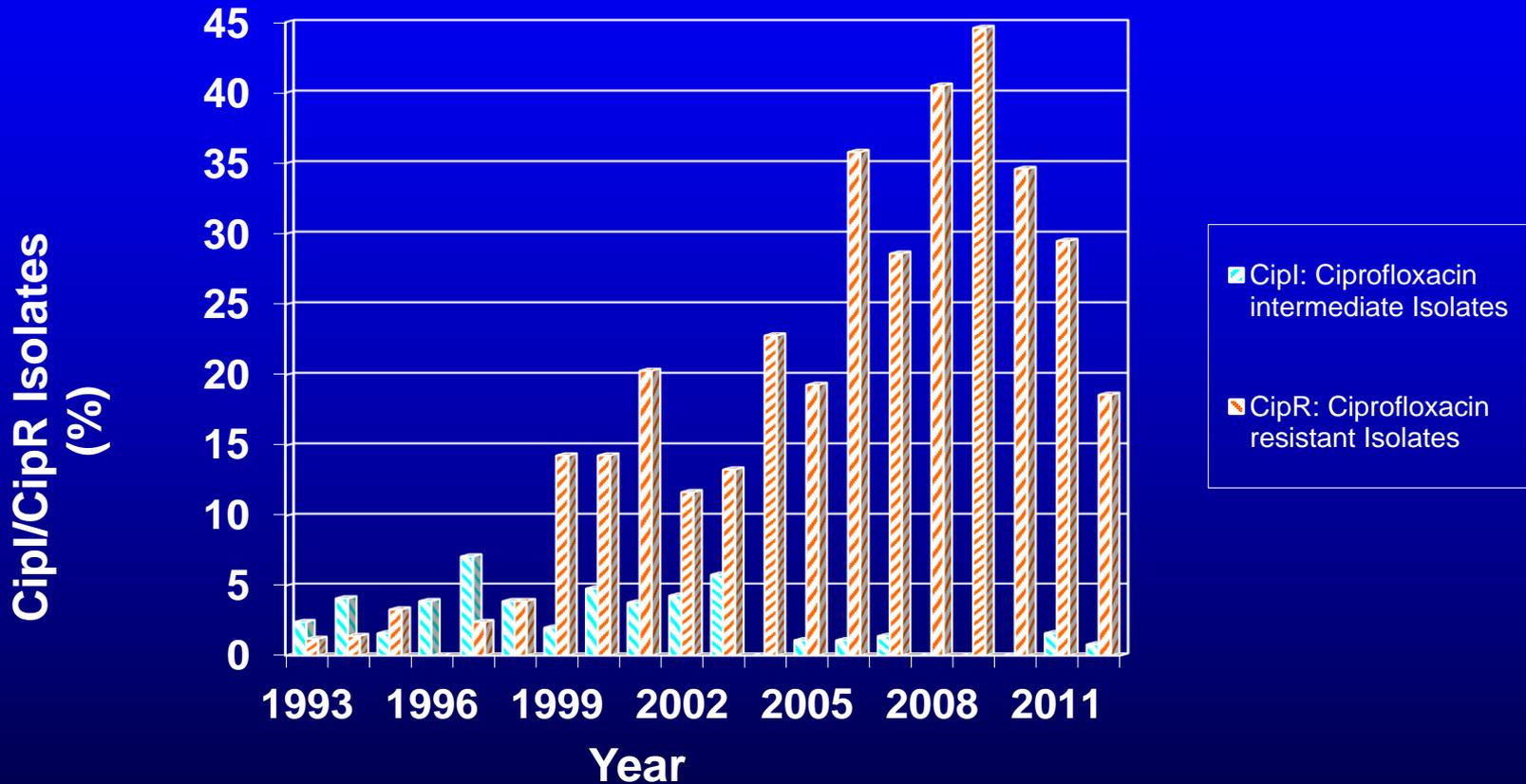
^b Denominators are persons living with diagnosed HIV in the end of 2011 (2,208 persons).

Gonorrhea Case Rate by Year Hawaii and U.S., 1980-2014



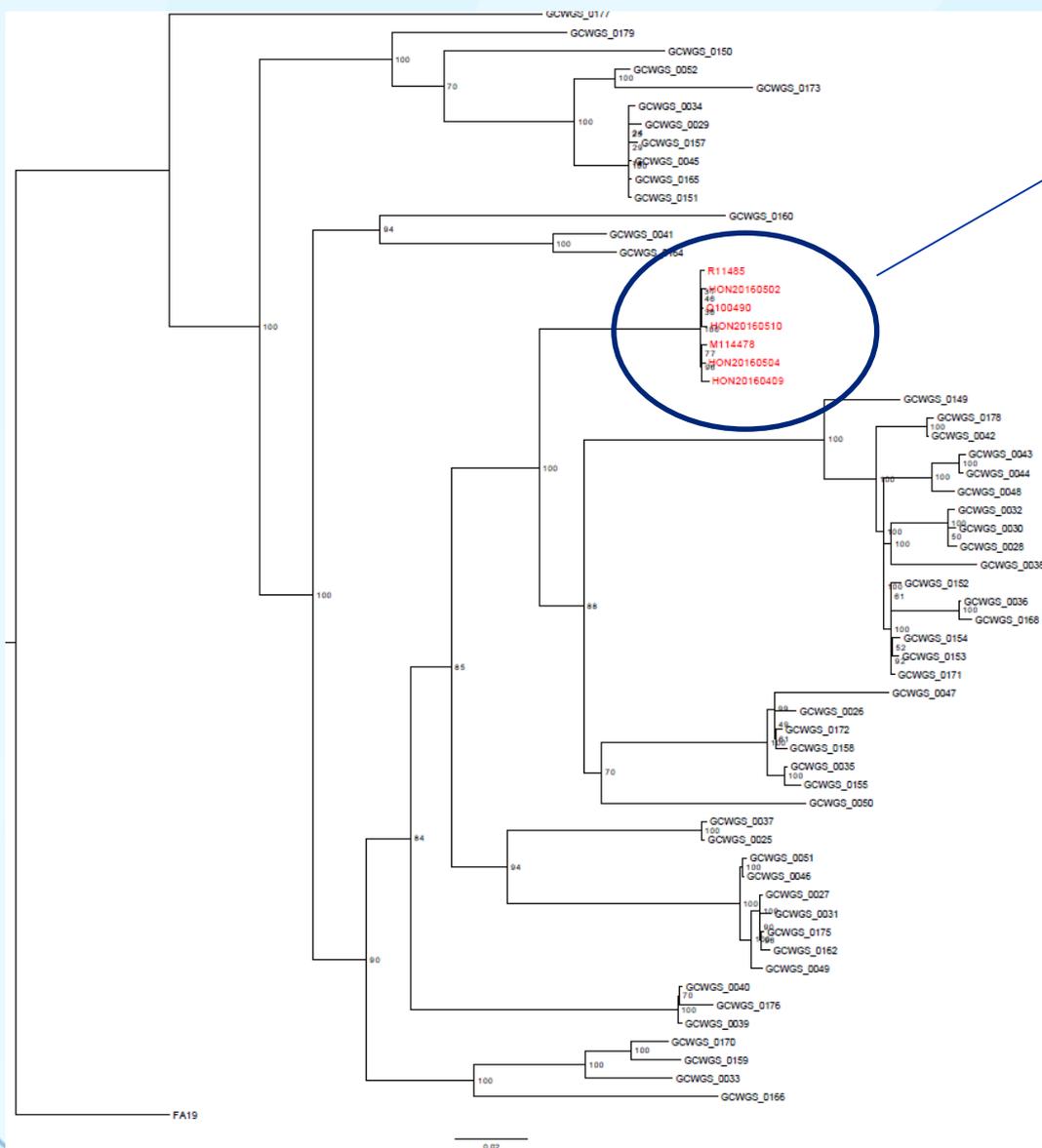
CipI/CipR Gonococcal Isolates

Hawaii Gonorrhea Culture Program, 1993-2012



Since 2000, the Hawaii DOH recommended to discontinue the use of ciprofloxacin and other quinolones to treat *N. gonorrhoeae* infections acquired in Hawaii. In 2007, CDC recommended not to use ciprofloxacin to treat gonococcal infections.

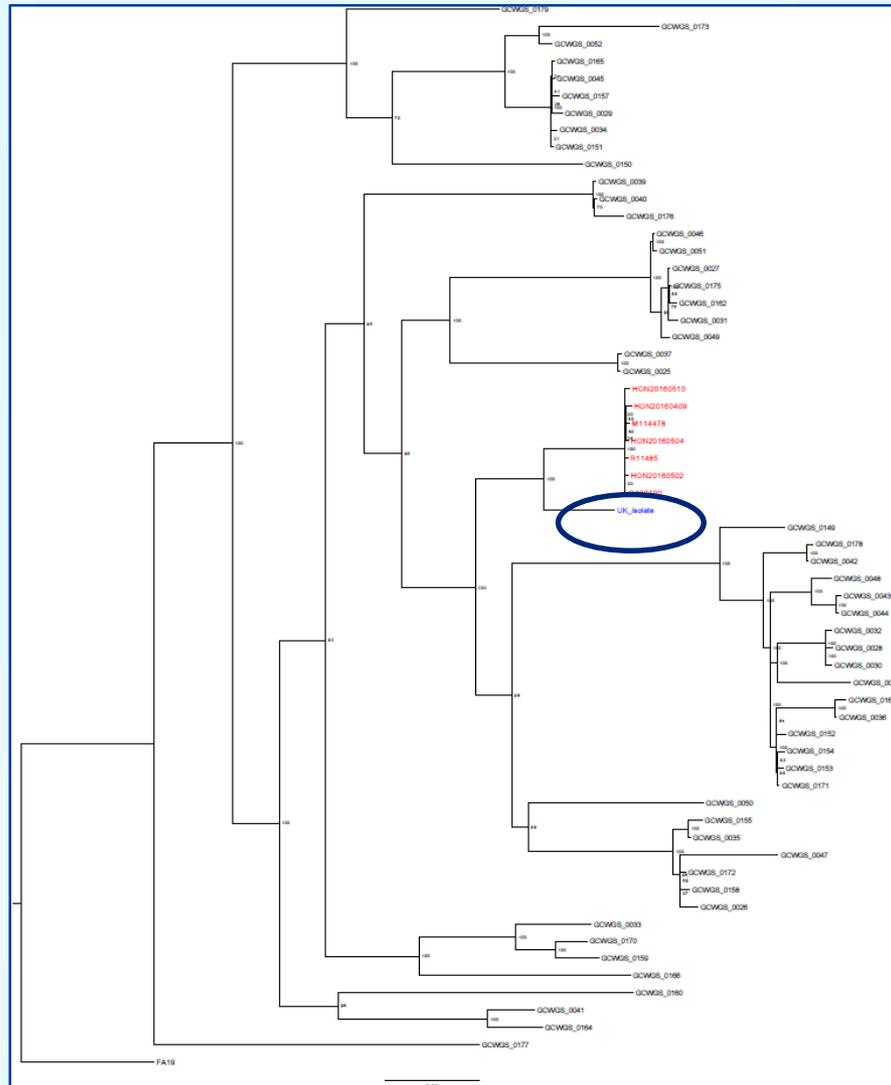
WGS Analysis for 7 HI GC isolates



Tight cluster of 7 HI isolates with multiple resistance profile

Maximum likelihood phylogeny of *Neisseria gonorrhoeae* samples (N = 60) collected in Hawaii (April – June 2016). Isolates highlighted in red correspond to the 7 HI isolates with resistance phenotype to multiple antibiotics. All samples were sequenced by the Hawaii State Department of Health laboratory as a part of the Advanced Molecular Detection initiative at DSTDP. The phylogeny is based on the core genome single nucleotide polymorphism (SNP) alignment of the 60 genomes and the FA19 reference genome. Values on the nodes of the phylogeny (based on 100 bootstrap replicates) represent the support for each node and the corresponding clade.

Preliminary results – Comparison to UK case (NEJM, 2016)



Hawaii isolates are related to UK isolate

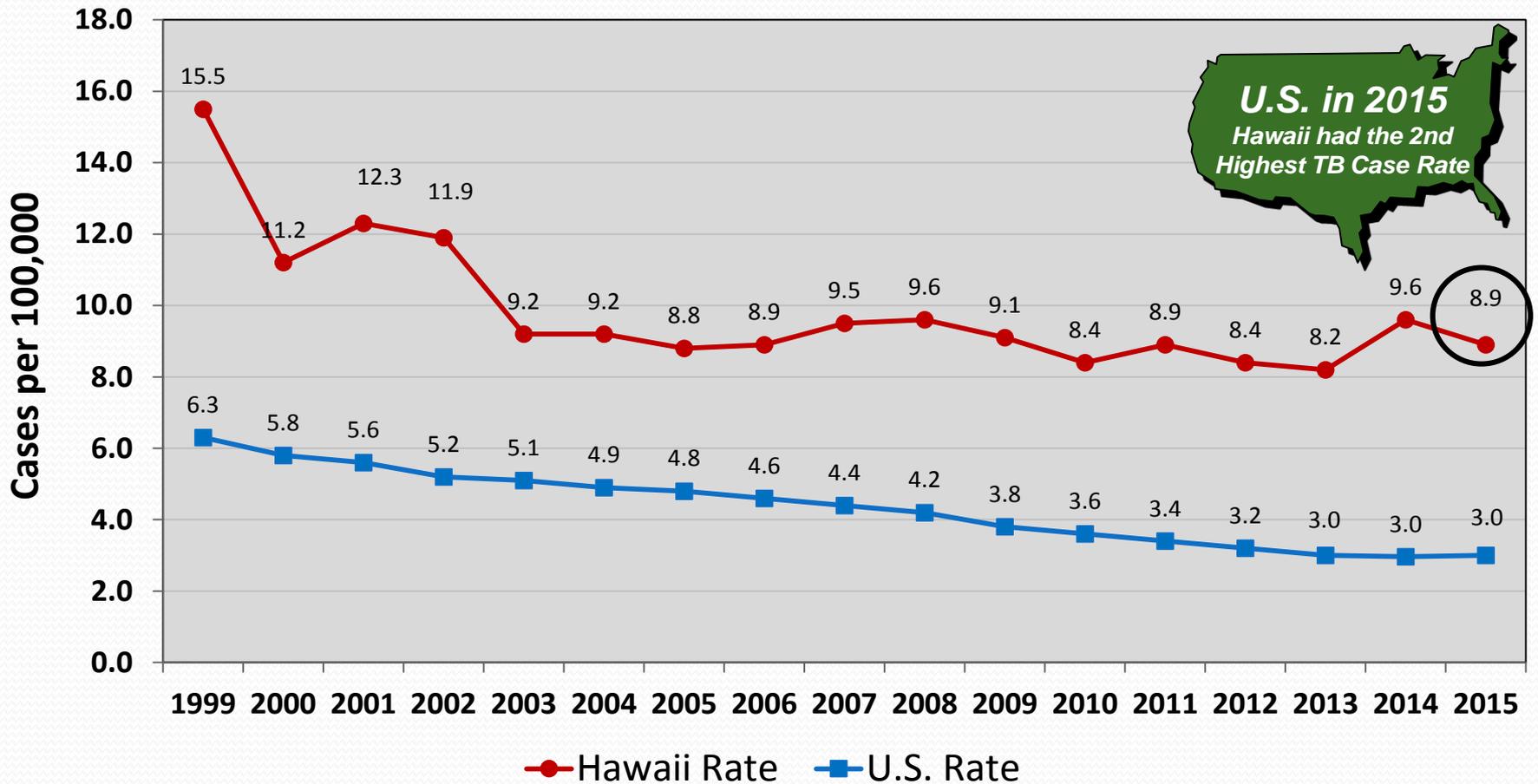
Figure 2. Maximum likelihood phylogeny of *Neisseria gonorrhoeae* samples collected in Hawaii (N = 60; April – June 2016) and an isolate from the UK (highlighted in blue). Isolates highlighted in red correspond to samples with elevated azithromycin minimum inhibitory concentration (MIC) values (MIC ≥ 256, Etest). All samples were sequenced by the Hawaii State Department of Health laboratory as a part of the Advanced Molecular Detection initiative at DSTDP. The phylogeny is based on the core genome single nucleotide polymorphism (SNP) alignment of the 60 genomes and the FA19 reference genome. Values on the nodes of the phylogeny (based on 100 bootstrap replicates) represent the support for each node and the corresponding clade.

Antimicrobial-resistant GC Prevention

- Prevent transmission – abstinence or condoms
- Adequate treatment:
Ceftriaxone 250 mg IM + Azithromycin 2 gm orally
- Identify treatment failures
 - Test of cure
 - Retest
- Treat partners and test of cure

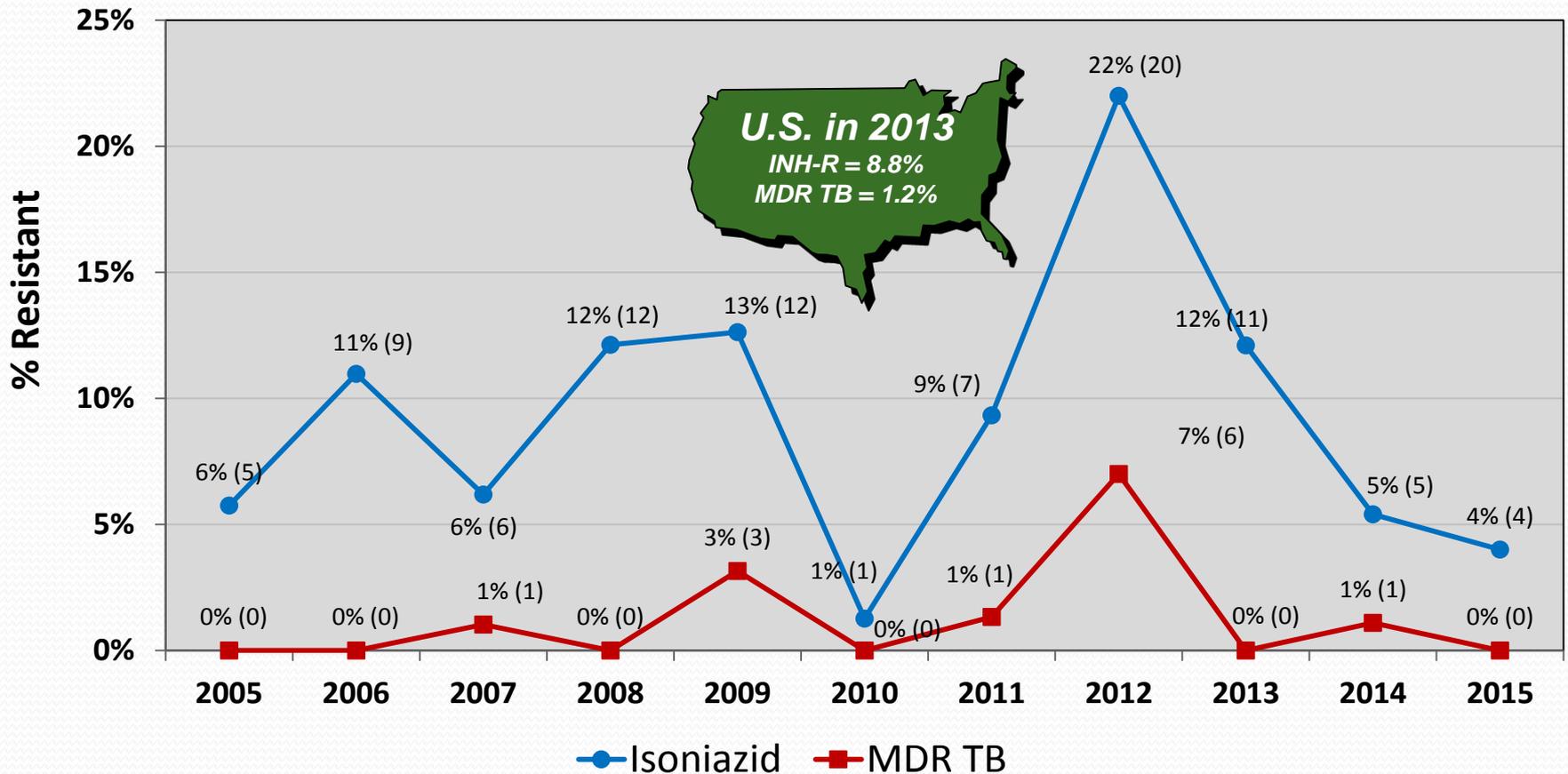
TB Case Rates

Hawaii vs. United States, 1999–2015



Primary Anti-TB Drug Resistance*

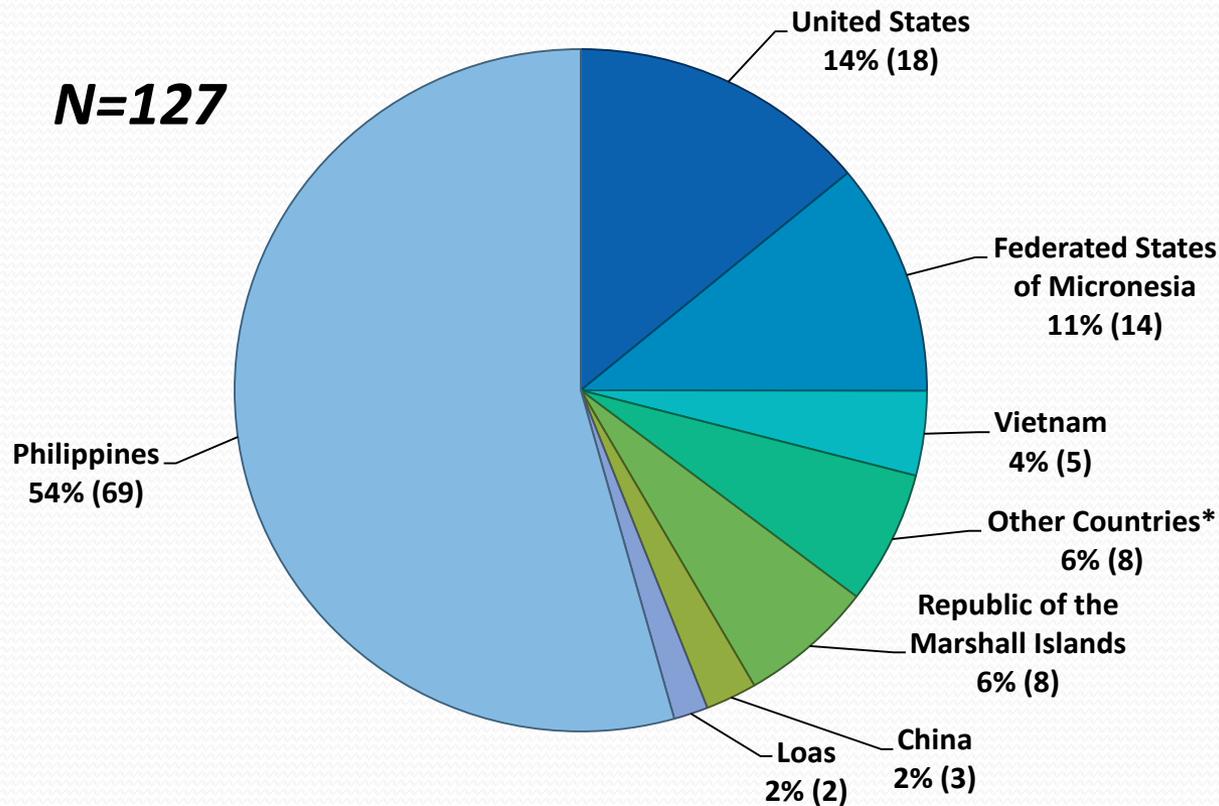
Hawaii, 2005–2015



*Cases are culture positive with initial drug susceptibility testing done. Isolates may be resistant to other drugs. Excludes cases with susceptibility testing not done or unknown for isoniazid and rifampin.

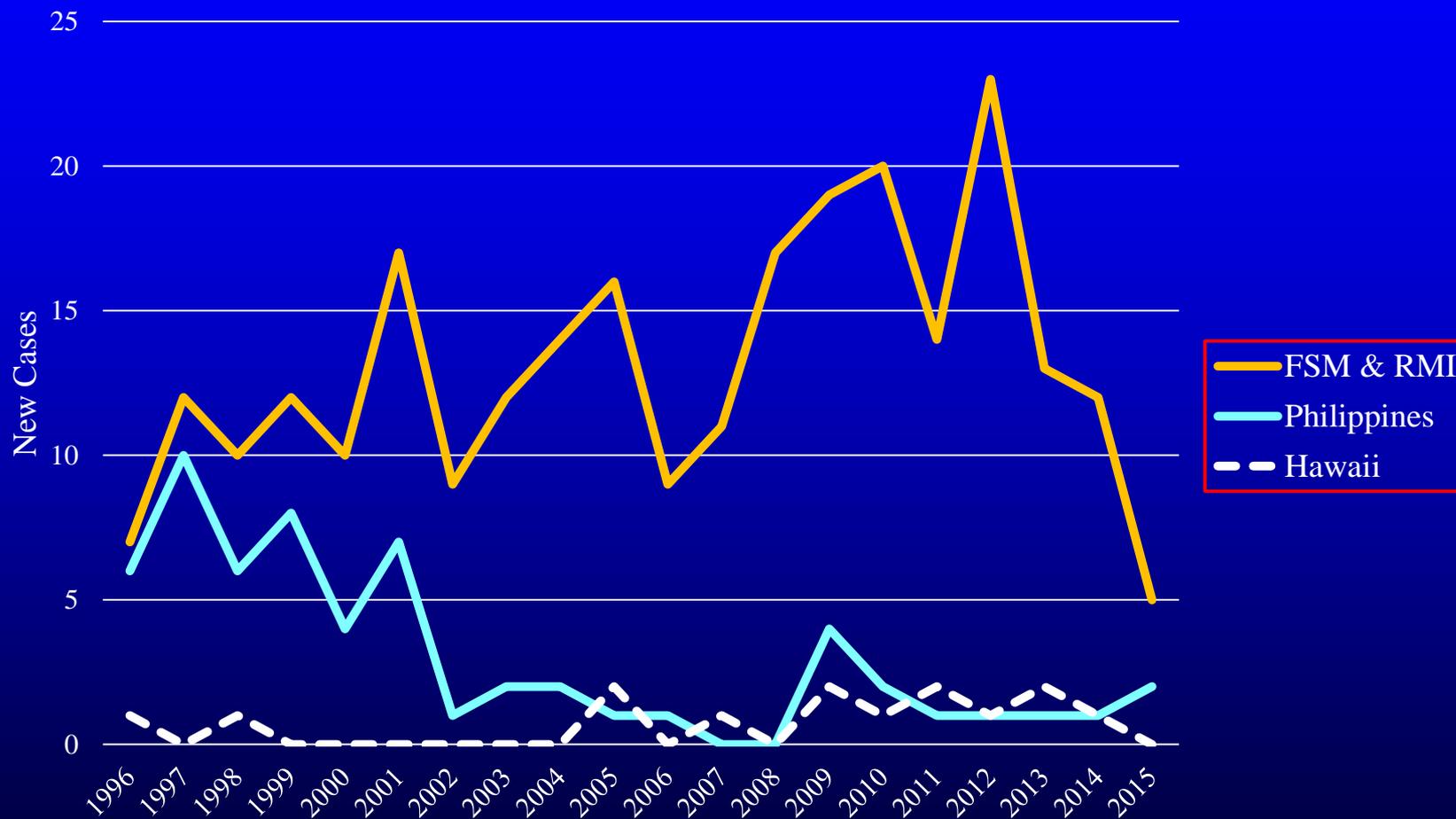
Updated as of June 20, 2016

Countries of Birth of All Persons Reported with TB, Hawaii, 2015



*Other countries include: American Samoa (1), Burundi (1), Guam (1), Korea (1), Mongolia (1), Taiwan (1), Thailand (1), Palau (1)

New HD Cases by Country of Origin Hawaii, 1996 – 2015



HANSEN'S DISEASE INCIDENCE RATES PER 10,000 POPULATION

FEDERATED STATES OF MICRONESIA	18.8
REPUBLIC OF THE MARSHALL ISLANDS	17.7
REPUBLIC OF THE PHILIPPINES	0.18
STATE OF HAWAII	0.11
UNITED STATES	0.01

Hansen's Disease

- Low risk of transmission in immune population
- Early identification of cases and treatment
 - Multibacillary HD (lepromatous leprosy)
 - Prevent sequelae

Summary

- Syphilis

- Emerging disease associated with social media use
- Prevention: abstinence/condoms, identify co-infections, early treatment, social media

- HIV

- Risk of emerging due to syphilis infection
- Prevention: abstinence/condoms, **pre- and post-exposure prophylaxis**, early identification/treatment

Summary

- **Antimicrobial-resistant Gonorrhea**
 - Emerging disease associated with inadequate treatment
 - Prevention: abstinence/condoms, **combination ceftriaxone + azithromycin, test/treat partners, identify treatment failures**
- **Hansen's Disease (*Mycobacterium leprae*)**
 - Emerging disease in Marshall Islands and Micronesia
 - Prevention: prevent sequelae

THANK YOU



THANK YOU!!

