

Chikungunya and Dengue Co-Infections Among Travelers Returning to Florida

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To protect, promote, and improve the health of all people in Florida
through integrated state, county, and community efforts.



Chikungunya in the Americas

- December 2013: first report of locally transmitted chikungunya in the Americas in St. Martin
- 44 countries or territories with over 1.2 million suspect and confirmed cases in 2014
- >2,000 imported cases to mainland U.S.
- >4,000 cases in Puerto Rico and the Virgin Islands
- Dengue in 2014: over 1.1 million cases, all 4 serotypes

Data courtesy of PAHO/CDC

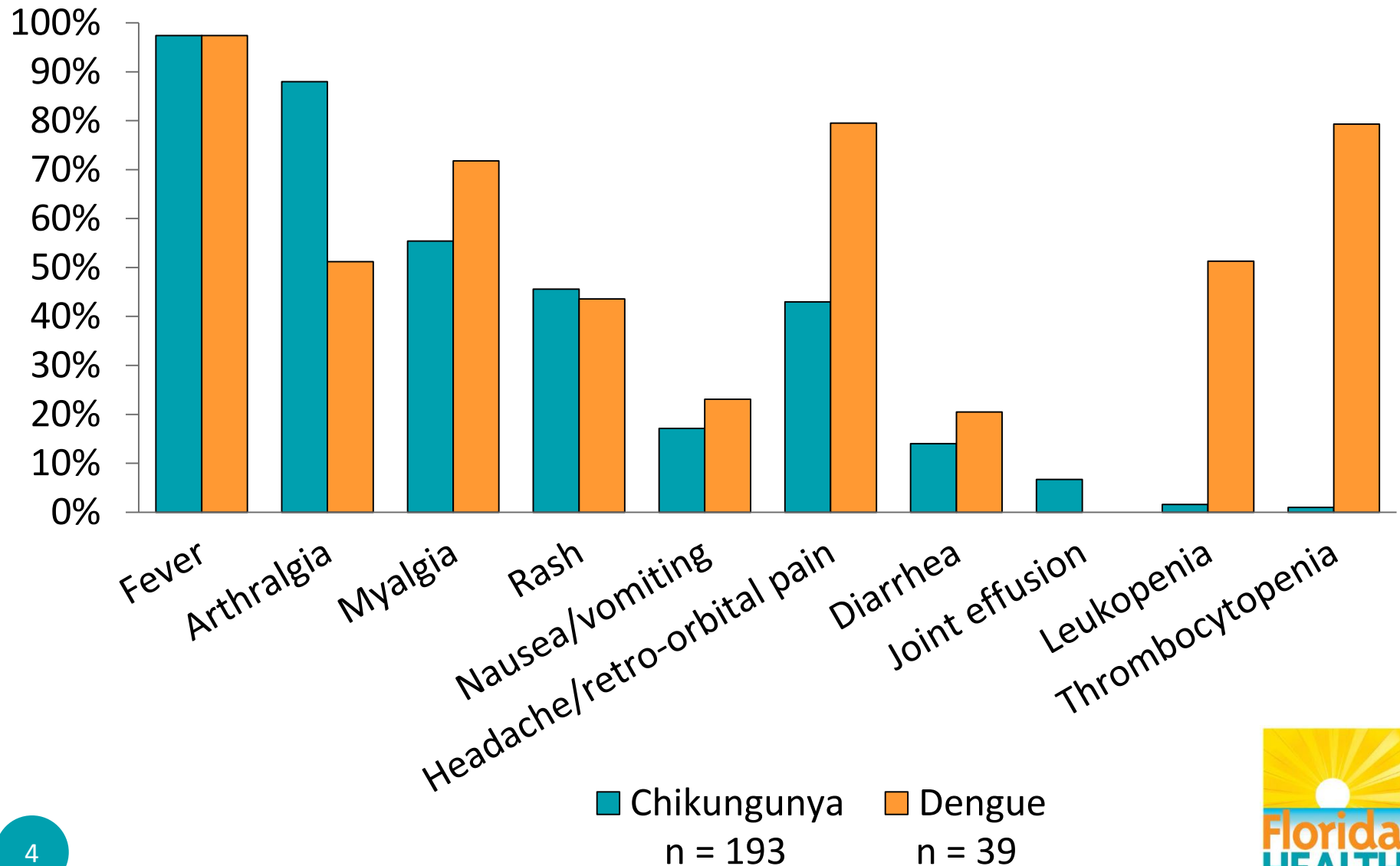


Dengue Distribution



Chikungunya
Distribution

Clinical Presentation, 2014



Chikungunya/Dengue Co-Infections

- *Alphavirus* and *Flavivirus*
- First described in 1964 in India
- Areas of overlap
- Imported cases
 - Germany
 - Portugal
 - Taiwan

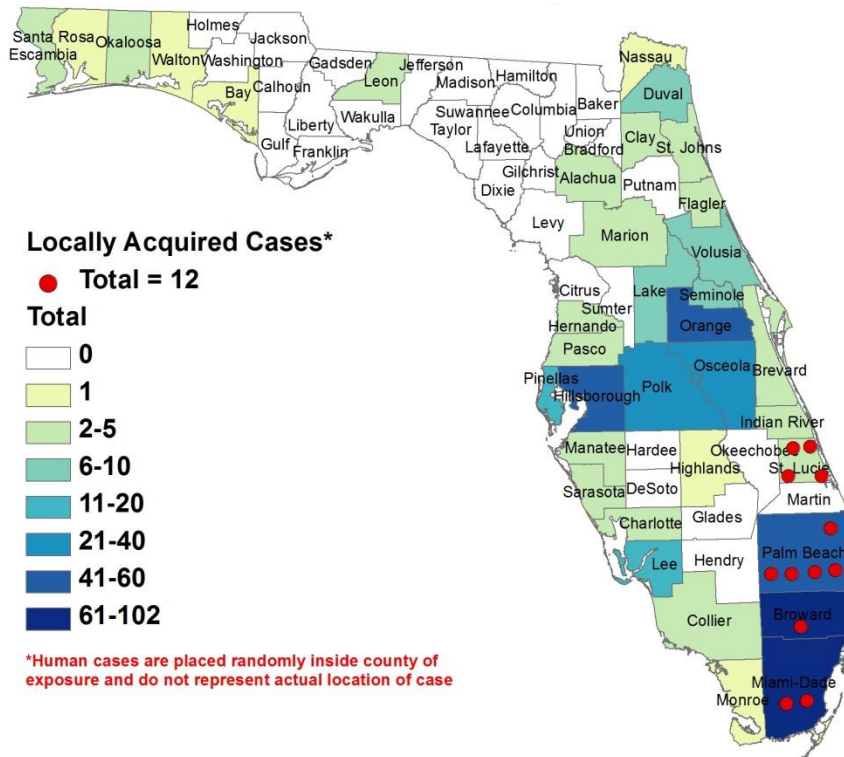
Aedes aegypti and *Aedes albopictus*



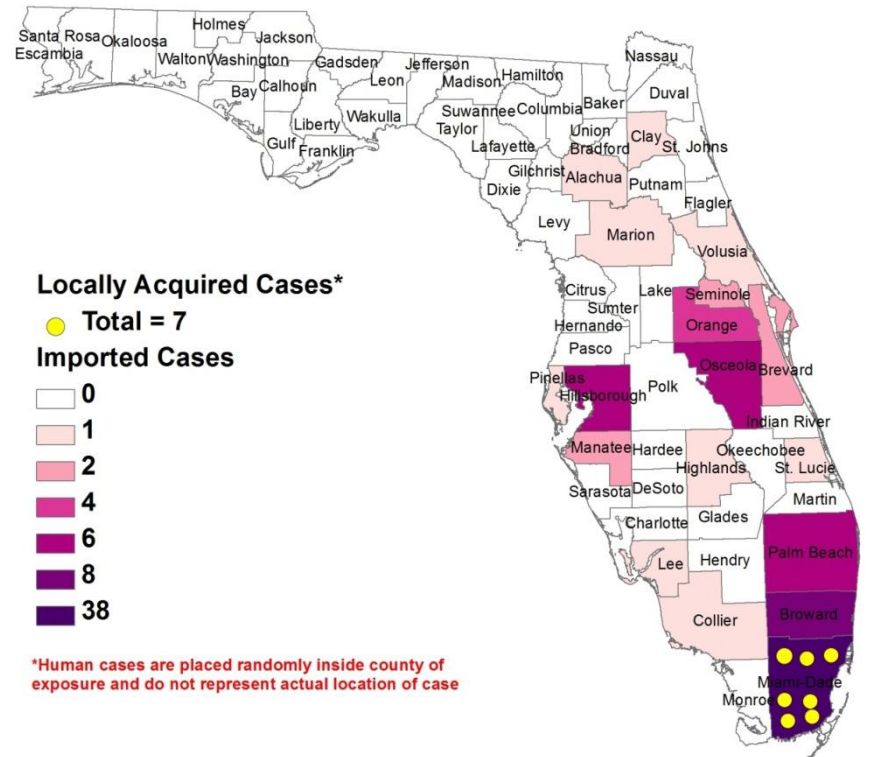
- Same vectors for both viruses
- Field vs. laboratory studies

Chikungunya and Dengue in Florida, 2014

Chikungunya



Dengue



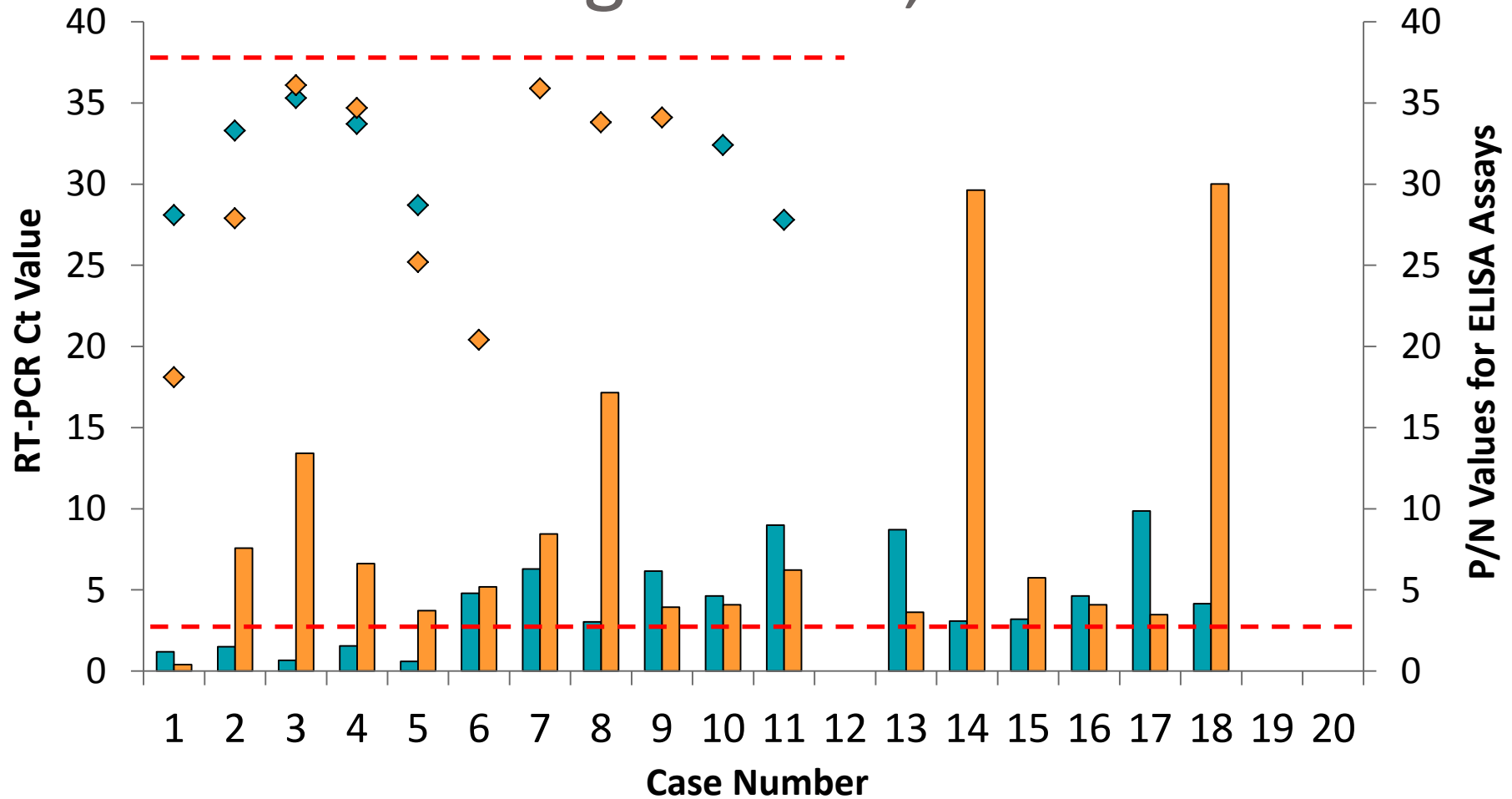
- 508 imported cases
- 12 local cases
- 2015: 24 imported cases

- 83 imported cases
- 7 local cases
- 2015: 10 imported cases

Imported Co-Infections in Florida, 2014-2015

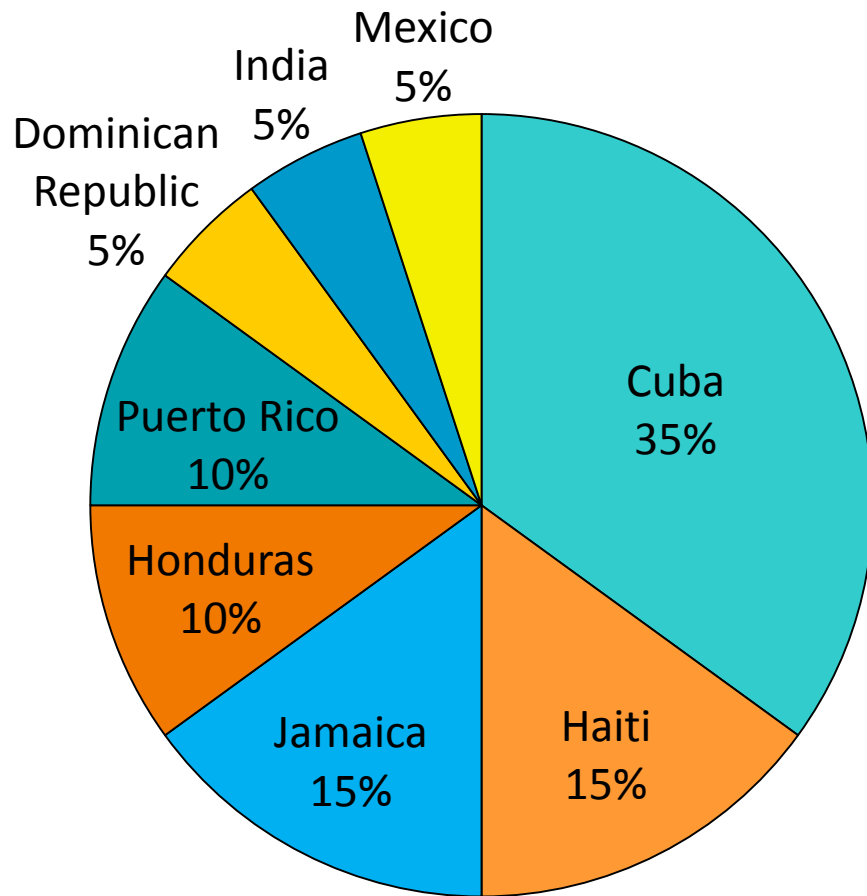
- Florida Department of Health Merlin Reporting System
- 20 persons reported as both CHIK and DEN cases
 - 5 PCR-positive for both viruses
 - 7 PCR-positive for one virus and IgM positive for the other
 - 8 IgM-positive for both viruses
- All 4 dengue serotypes detected
- 80% of co-infections identified by Bureau of Public Health Laboratories (BPHL)

BPHL Testing Results, 2014-2015



*Cases 12, 19, and 20 were only tested at a commercial laboratory
Cases 13 and 15 did not have enough sample volume for PCR testing.

Travel History of Co-Infection Cases



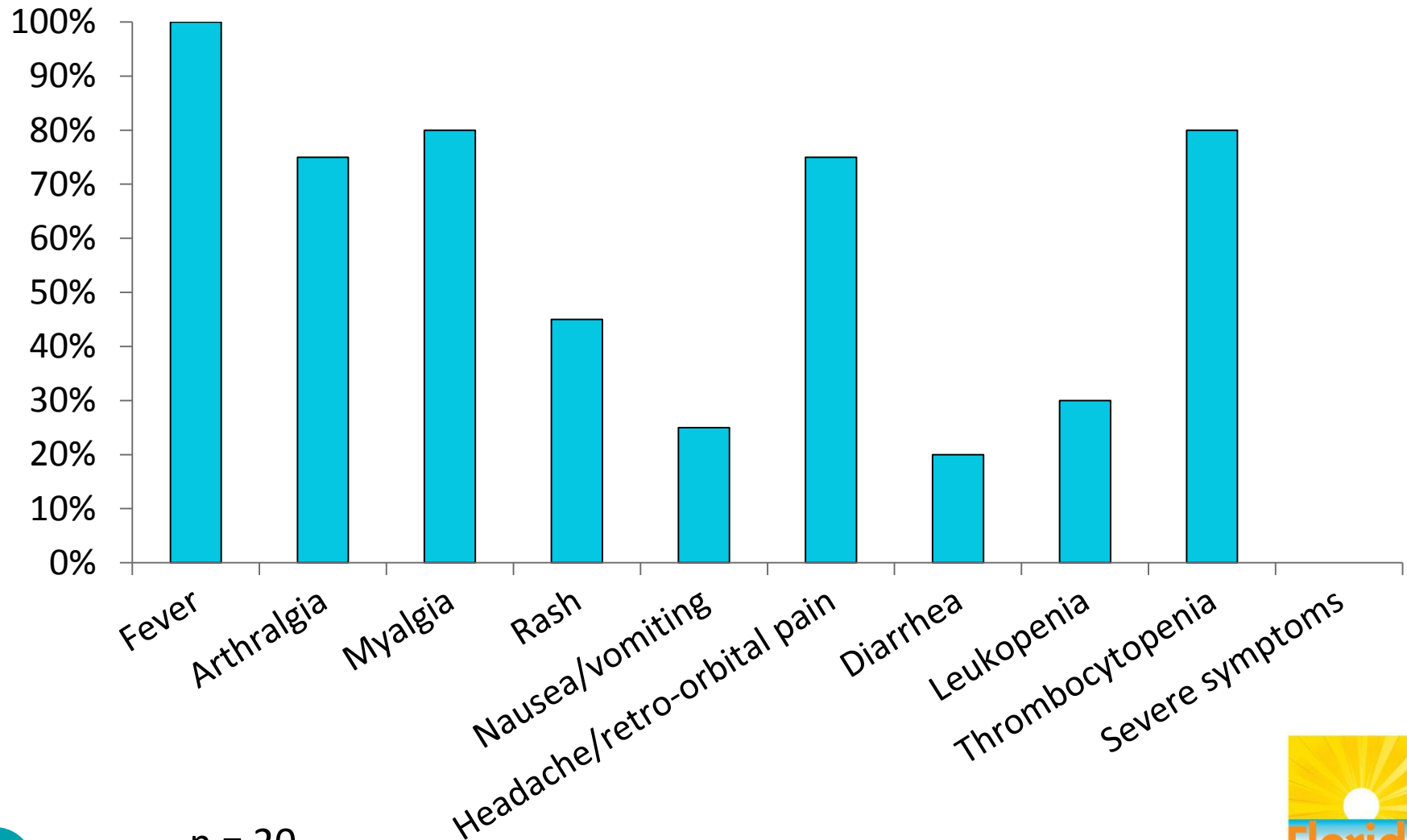
n = 20

- 1 Puerto Rico resident
- Top 5 countries for chikungunya cases in 2014:
 - Puerto Rico (25%), Haiti (22%), Dominican Republic (19%), Jamaica (15%), and Colombia (2%)
- Top 5 countries for dengue cases in 2014:
 - Cuba (33%), Honduras (10%), Dominican Republic (8%), Puerto Rico (8%), and Haiti (7%)

Case Characteristics, 2014

	CHIK/DEN Cases (n = 20)	2014 CHIK Cases (n = 508)	2014 DEN Cases (n = 83)
Age	58 yrs (range 31-78)	50 yrs (range <1-98)	48 yrs (range 9-79)
Gender	50% female	60% female	43% female
Race	70% white, 25% black	45% white, 34% black	84% white, 8% black
Ethnicity	65% Hispanic	48% Hispanic	72% Hispanic
Hospitalizations	50%	32%	38%
Reason for travel	80% VFR	73% VFR	No Data
Days out of U.S.	24 (range 3-92)	25 (range 3-340)	19 (range 3-131)

Clinical Presentation of Co-Infections, 2014-2015



n = 20

Conclusions

- Consider both DEN and CHIK
- Public health confirmation of specimens
- Lack of distinct onset dates
 - Dual, immediately consecutive, or asymptomatic secondary infections
- Co-infections underreported
 - Incomplete testing
 - Asymptomatic infections
 - Not seeking health care

Questions?



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