GLOBAL EPIDEMIOLOGY OF CHIKUNGUNYA

Susan Hills, MBBS, MTH
CDC Lead, Chikungunya Vaccines Work Group
Arboviral Diseases Branch
Division of Vector-Borne Diseases
Fort Collins, Colorado

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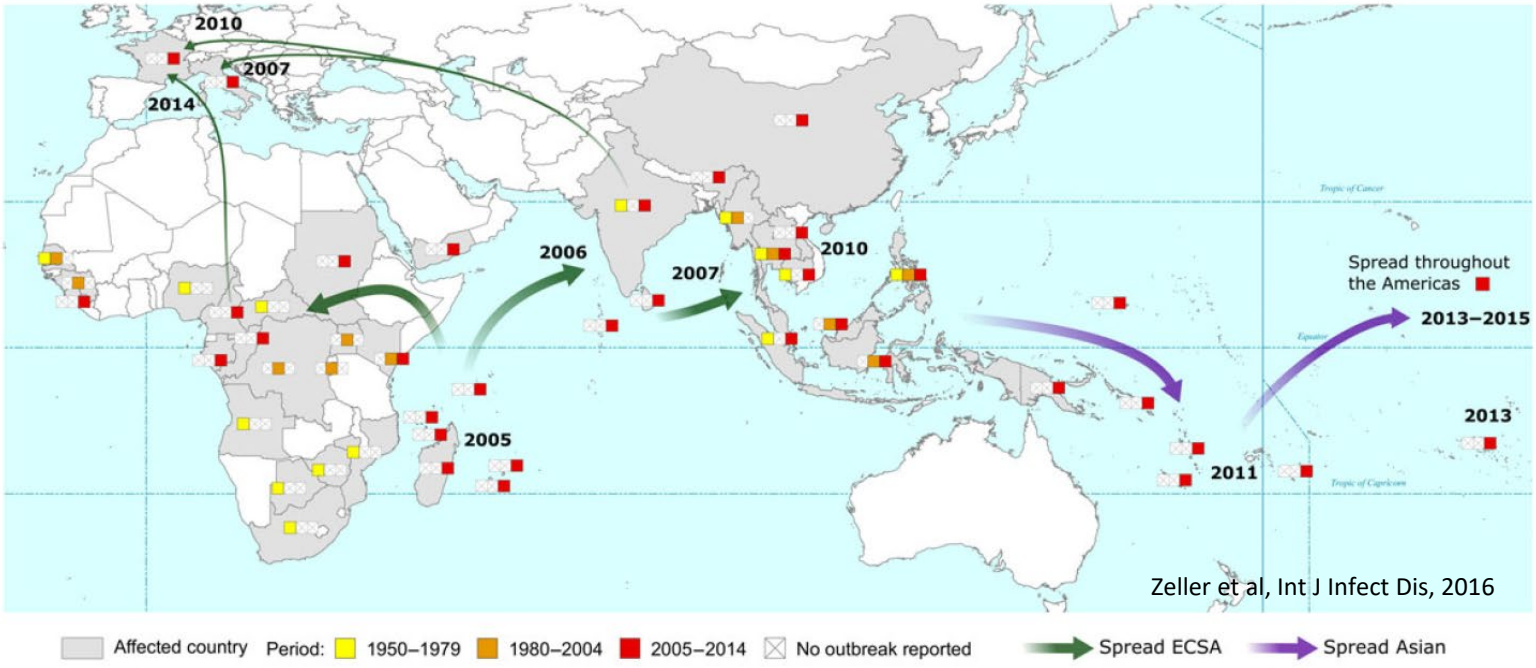
Chikungunya

- Mosquito-borne viral disease
  - Primarily human-mosquito-human transmission
  - Mainly *Aedes aegypti* and *Aedes albopictus*
- Clinically characterized by acute onset of fever and often severe polyarthralgia
- Risk factors for severe disease
  - Age >65 years
  - Underlying medical conditions
  - Neonate infected through intrapartum transmission

Source: PAHO, 2011. www.paho.org

Spread of chikungunya virus into new regions, 2004-2015



Zeller et al, Int J Infect Dis, 2016

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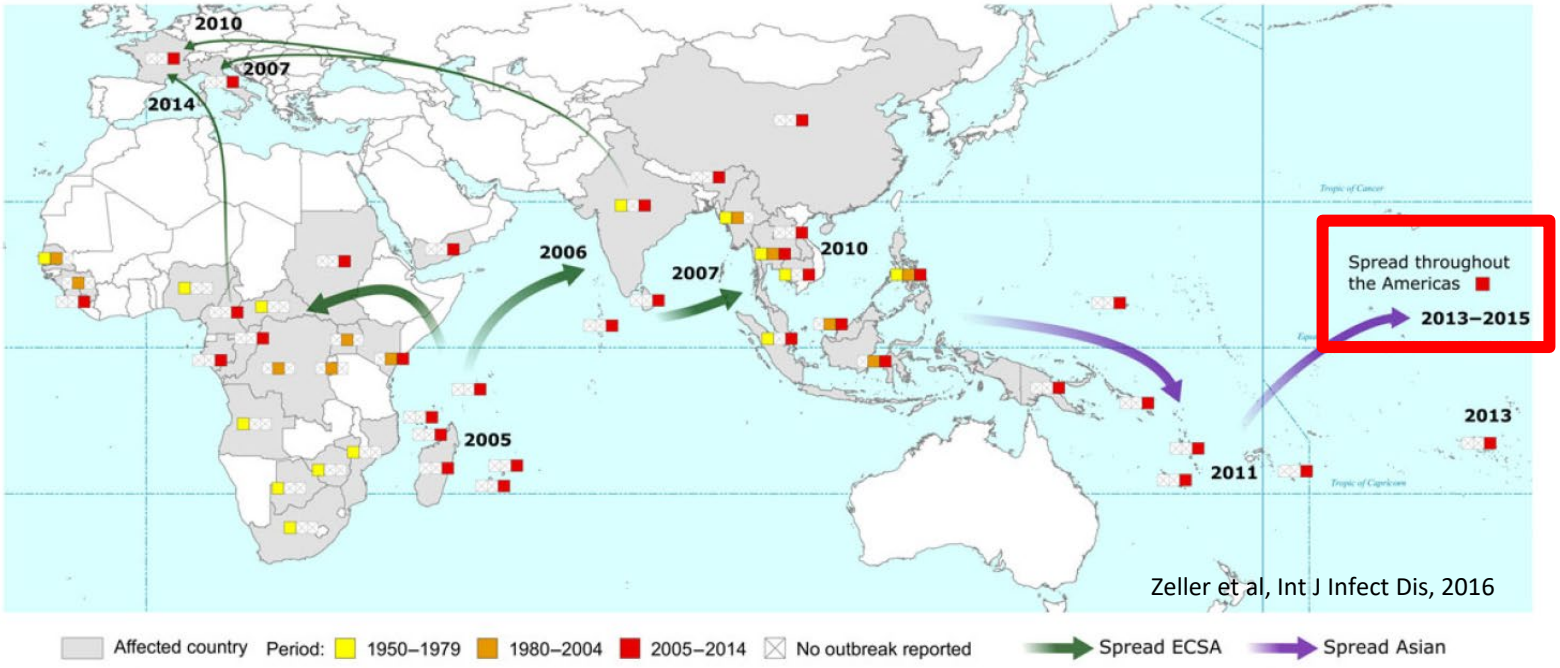

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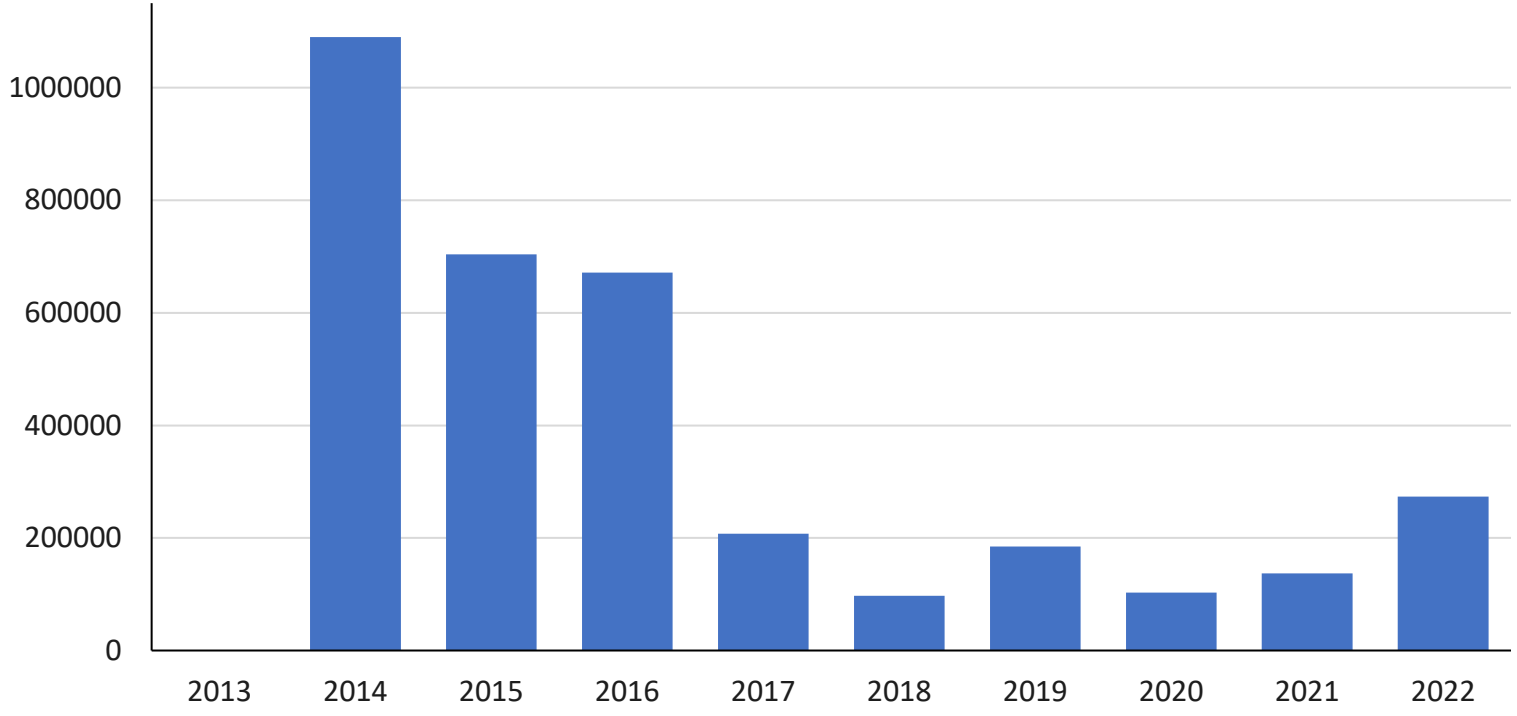
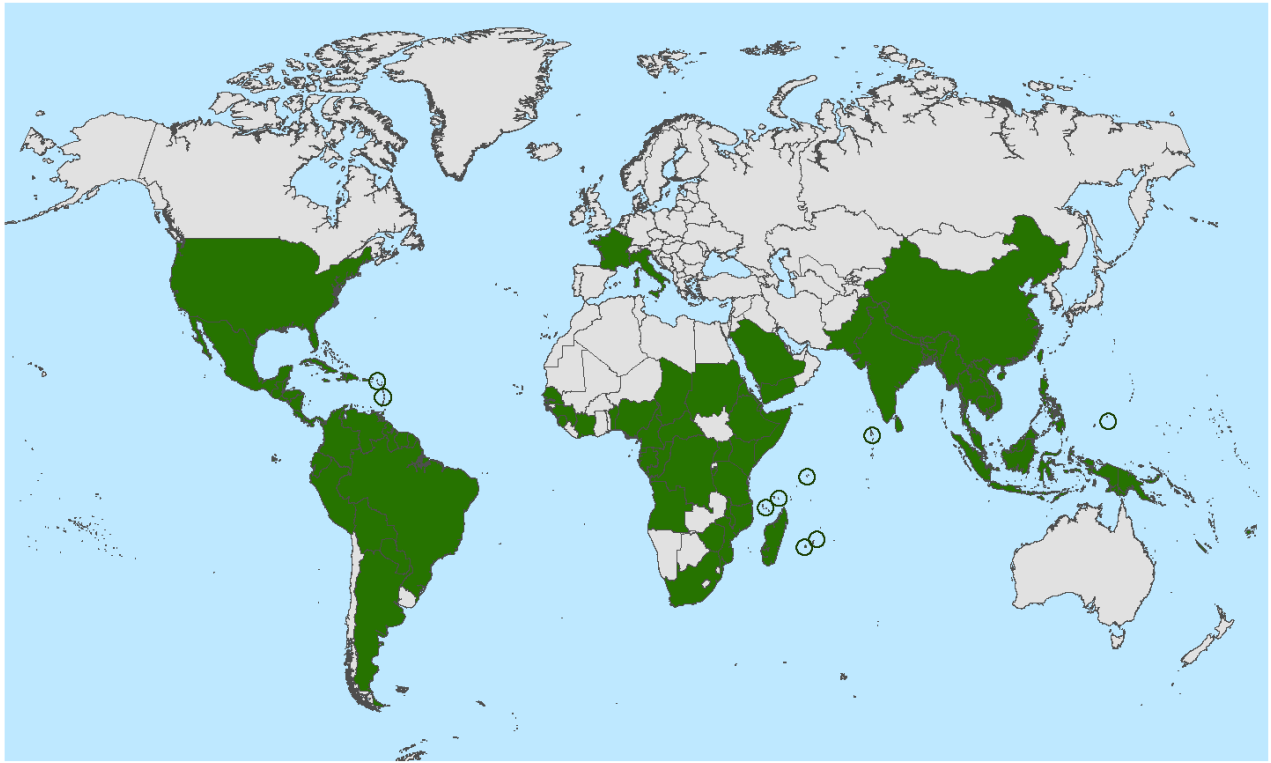
Chikungunya cases reported in the Americas, 2013-2022

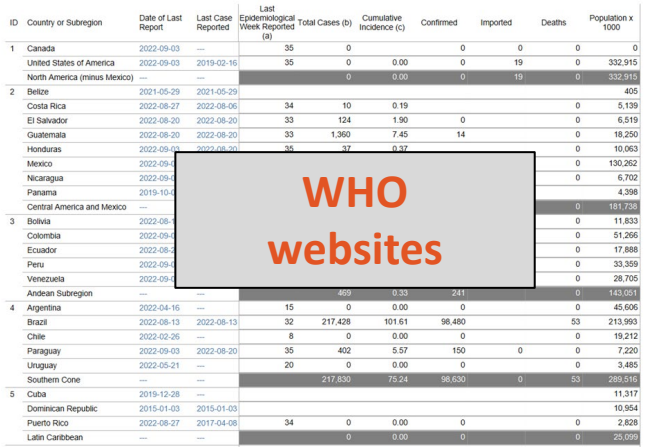


Countries and territories with past or current transmission of chikungunya virus, 2023



https://www.cdc.gov/chikungunya/geo/index.html

Limited data sources for understanding current patterns of chikungunya virus transmission



ID	Country or Subregion	Date of Last Report	Last Case Reported	Last Epidemiological Week Reported (a)	Total Cases (b)	Cumulative Incidence (c)	Confirmed	Imported	Deaths	Population x 1000
1	Canada	2022-09-03	---	35	0		0	0	0	0
	United States of America	2022-09-03	2019-02-16	35	0	0.00	0	19	0	332,915
	North America (minus Mexico)	---	---		0	0.00	0	19	0	332,915
2	Belize	2021-05-29	2021-05-29							405
	Costa Rica	2022-08-27	2022-08-06	34	10	0.19			0	5,139
	El Salvador	2022-08-20	2022-08-20	33	124	1.90	0		0	6,519
	Guatemala	2022-08-20	2022-08-20	33	1,360	7.45	14		0	18,250
	Honduras	2022-09-03	2022-08-20	35	37	0.37			0	10,063
	Mexico	2022-09-0							0	130,262
	Nicaragua	2022-09-0							0	6,702
	Panama	2019-10-0								4,398
	Central America and Mexico	---							0	181,738
3	Bolivia	2022-08-1							0	11,833
	Colombia	2022-09-0							0	51,266
	Ecuador	2022-08-2							0	17,888
	Peru	2022-09-0							0	33,359
	Venezuela	2022-09-0							0	28,705
	Andean Subregion	---	---		469	0.33	241		0	143,051
4	Argentina	2022-04-16	---	15	0	0.00	0		0	45,606
	Brazil	2022-08-13	2022-08-13	32	217,428	101.61	98,480		53	213,993
	Chile	2022-02-26	---	8	0	0.00	0		0	19,212
	Paraguay	2022-09-03	2022-08-20	35	402	5.57	150	0	0	7,220
	Uruguay	2022-05-21	---	20	0	0.00	0		0	3,485
	Southern Cone	---	---		217,830	75.24	98,630	0	53	289,516
5	Cuba	2019-12-28	---							11,317
	Dominican Republic	2015-01-03	2015-01-03							10,954
	Puerto Rico	2022-08-27	2017-04-08	34	0	0.00	0		0	2,828
	Latin Caribbean	---	---		0	0.00	0		0	25,099

Cases among travelers

ArboNET
National Arbovirus Surveillance System

General features of chikungunya virus transmission

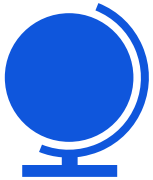
- Occurs in tropical and subtropical regions
  - Rare outbreaks in temperate areas
- Often seen in areas with similar vector-borne diseases (e.g., dengue, Zika)
- Transmission impacted by several factors including weather, environmental factors, pre-existing population immunity, population density, local vectors

Patterns for chikungunya virus transmission vary

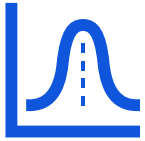
- Ongoing low-level transmission with periodic outbreak activity in Africa, Asia, Central America, and South America
  - Immunologically susceptible individuals continue to acquire infection and propagate human-mosquito-human cycles
  - Outbreaks are unpredictable in terms of timing and size

- Cessation of transmission after outbreaks is common in island nations
  - Apparent interruption in Pacific Island and most of Caribbean countries and territories
  - Risk for reintroduction will increase over time as population immunity decreases

Features of chikungunya outbreaks



- More likely in regions with no or mild outbreaks in recent past
- Can be localized or widespread



- Often rapid increase in size
- 30%–60% population infected within few months
- Huge outbreaks, like 2014–2016 in Americas, unlikely in future
- Continued reporting of large outbreaks likely

- Many commence during tropical rainy season
- Can occur in dry season
- Period of intense transmission typically short, often 3–6 months

Interval between outbreaks

- Unpredictable and variable, can be >20 years
- Related to factors including pre-existing population immunity, build-up of non-immune population, environmental factors
- Some countries report outbreaks regularly, but typically in different locations

Summary

- Mainly tropical and subtropical areas
- Currently, most countries with chikungunya virus activity have low-level transmission
- Outbreak-prone disease
- Important impact when outbreaks occur as often intense, although generally short-lived, transmission