

Cholera in the Caribbean

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SUPPLÉMENT ILLUSTRÉ

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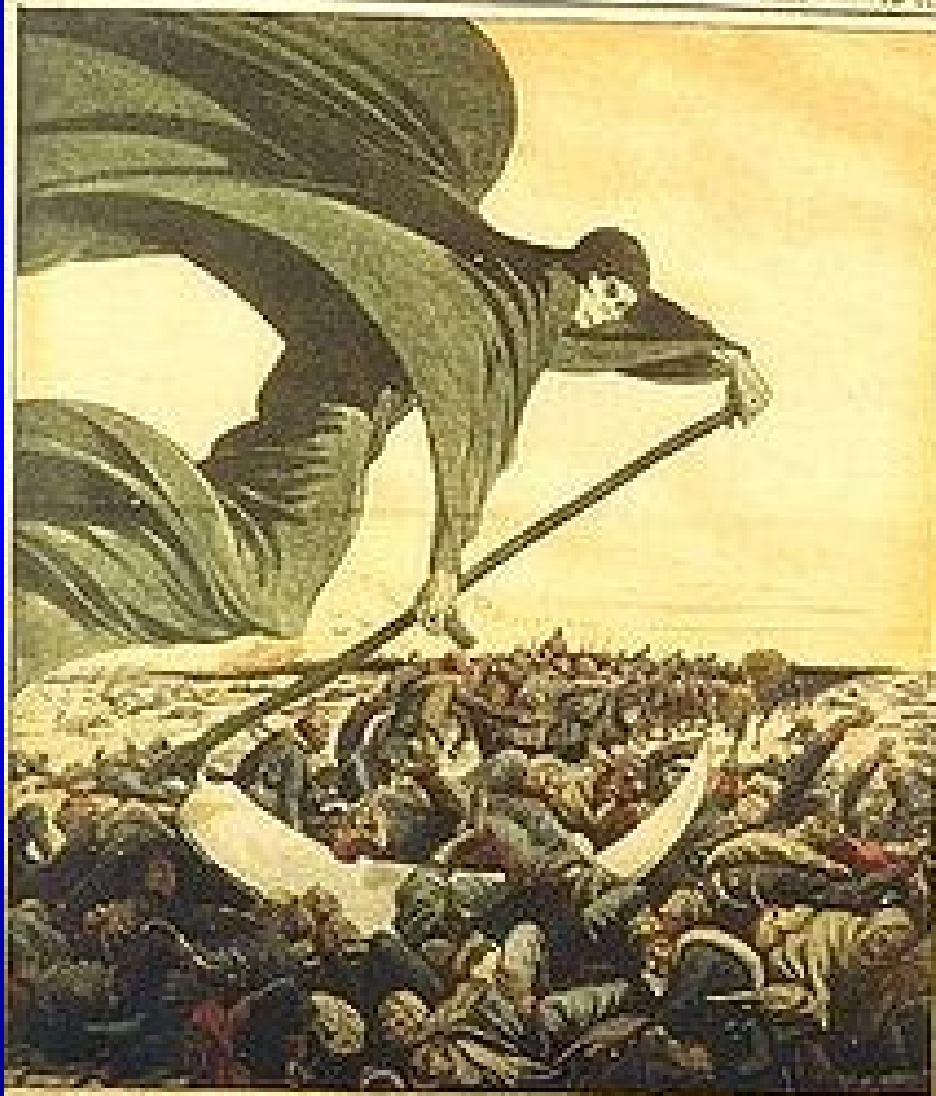
ABONNEMENTS

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LE CHOLÉRA

Major Perspectives on Cholera

- Description of cholera (*with video*)
- Background on cholera in the Caribbean
- Update on current cholera outbreak
- Prevention of cholera outbreaks
- Planning for cholera outbreaks

Additional Aspects of Cholera

- Detection of cholera – *Priya Bagwandin*
– *Leslie Edwards*
- Management of cholera outbreaks
 - Community management – *Sally Edwards*
 - Emergency management – *Robert Lee*
- Planning for cholera – *Terese Maitland*

Description of Cholera

- *Video of cholera patient*
- Spectrum of disease
- Signs and symptoms
- Agent
- Transmission
- Treatment

Video of Cholera Patient

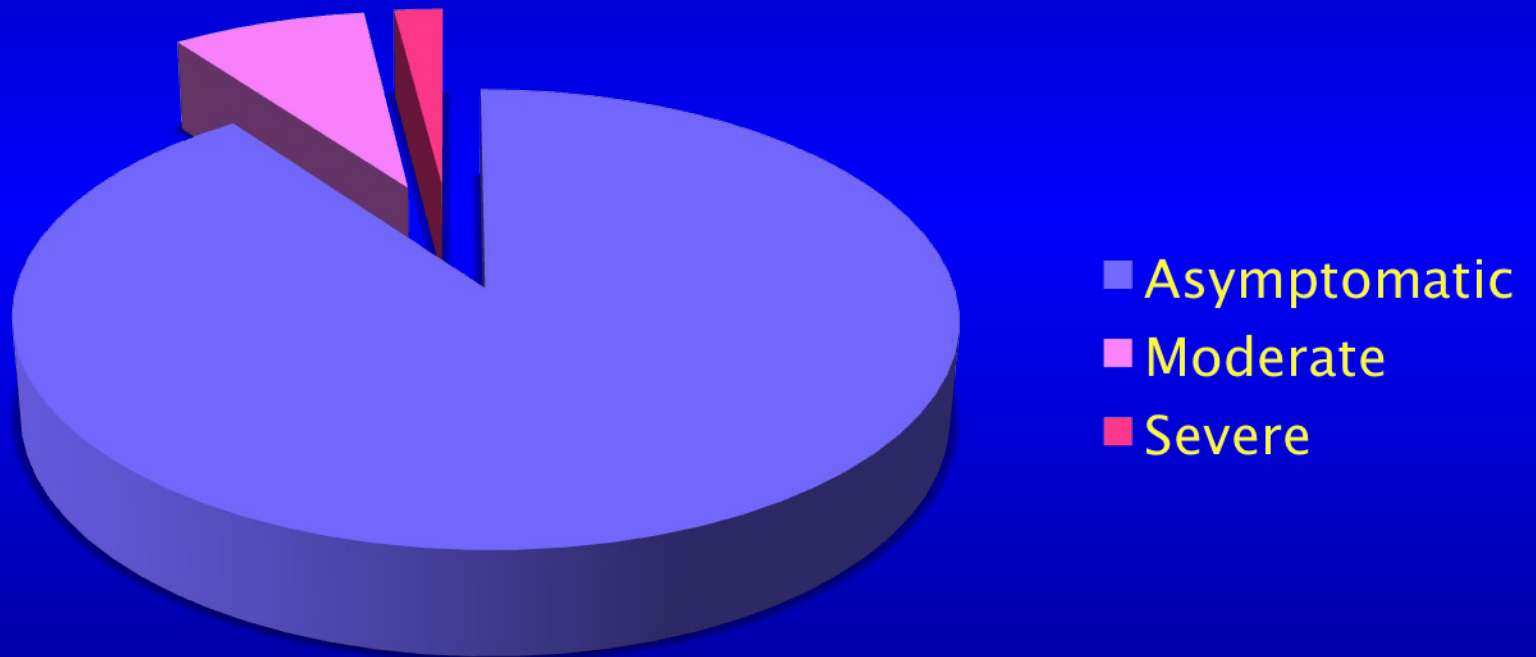
Caution! *this is an extremely graphic video of a cholera patient excreting large quantities of bodily fluid.*

Spectrum of Disease

- Up to 90% of infections are asymptomatic
- Asymptomatic individuals still shed bacteria
- 20% of symptomatic patients have severe disease
- Onset of severe disease can be < 6 hours
- Patients with severe disease can die within hours if not rapidly rehydrated
- Type 'O' blood risk factor for severe illness

Spectrum of Disease

Percent



Signs and Symptoms of Cholera

- Abrupt onset of watery diarrhea
- Rapid loss of up to 10 to 20 liters of fluid
- Vomiting is common in severe cases
-
- Usually without fever
- Low blood pressure

Cholera Agent: *Vibrio cholerae*

- One of 70 species of *Vibrio* bacteria



- Only some strains of *V. cholerae* are toxigenic
- Disease caused by toxin when bacterium attaches to the wall of the small intestine
- Production of toxin requires presence of two plasmids, CTX and TCP

Cholera Agent: *(continued)*

- Classification of *V. cholerae*:
 - Toxigenicity: Toxigenic and non-toxigenic
 - 'O' protein type: 1 and 139 (75)
 - Two biotypes: Classical and El Tor
 - Two serotypes: Inaba and Ogawa
- Can survive, grow, and persist in both salt water and fresh water
- Can attach to zooplankton and move with water or shellfish (not killed by boiling shellfish)
- Very easy to kill with chlorine and by boiling water

Transmission of Cholera

- Fecal contamination of water and food
 - Primarily water-borne for lower-income populations
 - Primarily food-borne for upper-income populations
- Also from aquatic environment
- Infective dose is approximately 1 million organisms

Treatment of Cholera

- Oral rehydration salts (ORS) for all cases if tolerated
- IV infusion with lactated ringer's solution for severe cases [*multiple lines if needed*]
- Antibiotics in severe cases (*depending on resistance*)
 - Doxycycline
 - Azithromycin
 - Erythromycin
 - Ciprofloxacin

Treatment of Cholera

SEVERITY	PERCENT	LOCATION	TREATMENT
Mild	13%	Home	ORS
Moderate	5%	CTU/CTC	ORS
Severe	2%	CTU/CTC	ORS IV LRS ANTIBIOT

Initial Outbreak of Cholera in the Caribbean, 1849 - 1854

- Began in Cartagena, 1849
- Spread next to:
 - Jamaica (1850)
 - Nevis (1853)
- From Nevis, it spread to:
 - St. Kitts (1854)
 - Barbados (1854)
 - Trinidad (1854)

1854 Trinidad Cholera Outbreak

- Outbreak lasted for 19 weeks
- Out of a total population of 77,000:
 - Approximately 20% were symptomatic
 - Almost 100% infected
 - 6% of the population died
 - Case-fatality ratio of 30%
 - More severe for African population

Trinidad Control Measures in 1854

- Prevention: burned barrels of pitch on all street corners
- Treatment: ingested oil of camphor that had been infused into lumps of sugar
- Result: 100% attack rate
30% case-fatality ratio

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Update on Cholera in the Caribbean

- 1991 agent in Peru:
 - Toxigenic O1
 - El Tor
 - Inaba
- 2010 agent in Haiti and DOR:
 - toxigenic O1
 - El Tor
 - Ogawa

Update on the Caribbean

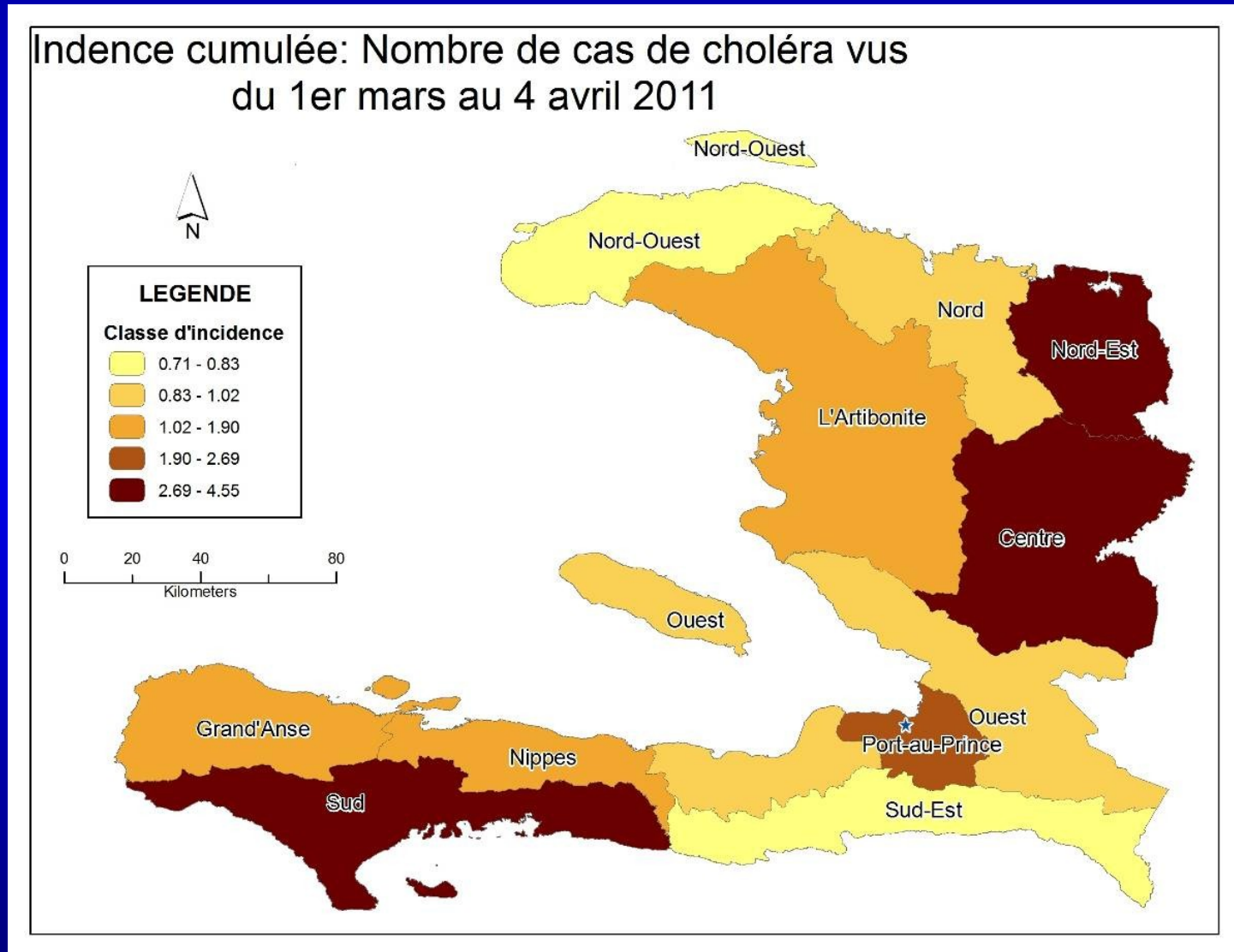
<u>Countries Affected</u>	<u>Confirmed Cases / Deaths</u>	
• Haiti	285,931 / 4,870	
• Dom. Republic	918 / 12	

• Venezuela	278 / 0	
• Canada	1	0
• United States	10	0
• Martinique	7	0
• (Mexico)	1	0

Update on Haiti

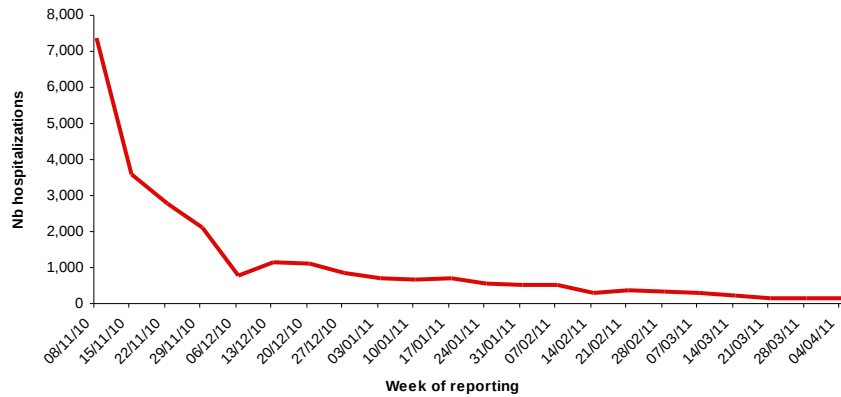
- Overall, new cases per week are declining
- Haiti is divided into 10 Departments
- Each has its own outbreak depending the timing of introduction and local conditions
- New cases are declining or stable in 8 depts.
- New cases rising only in South and Southeast departments

Map of Cholera Outbreak in Haiti

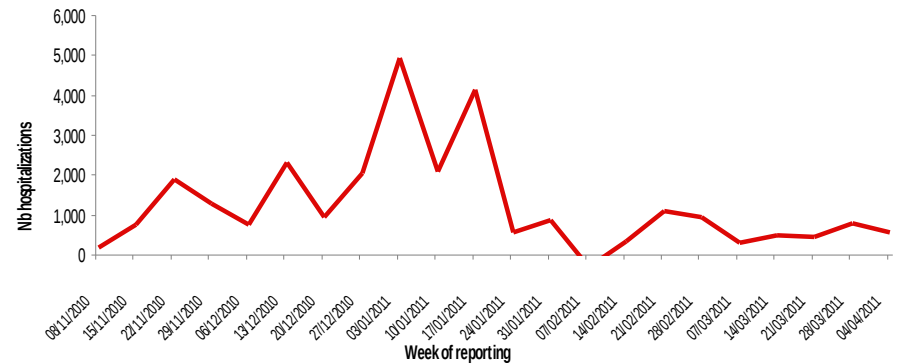


Epidemic Curves by Department

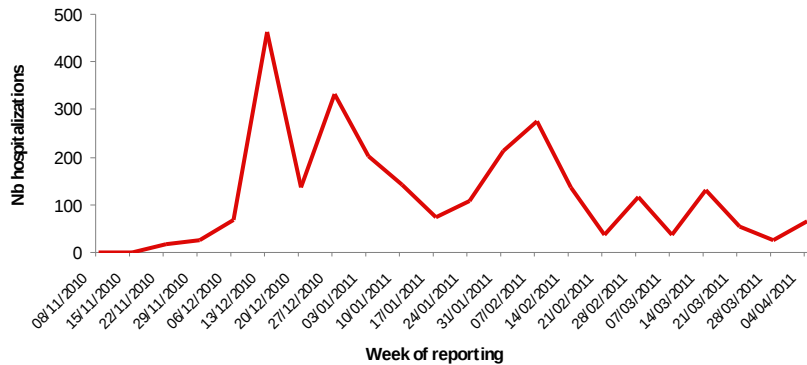
Artibonite



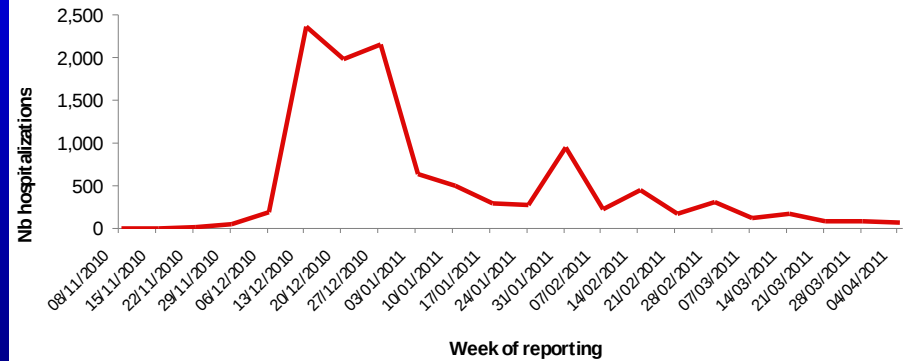
Port au Prince



South East



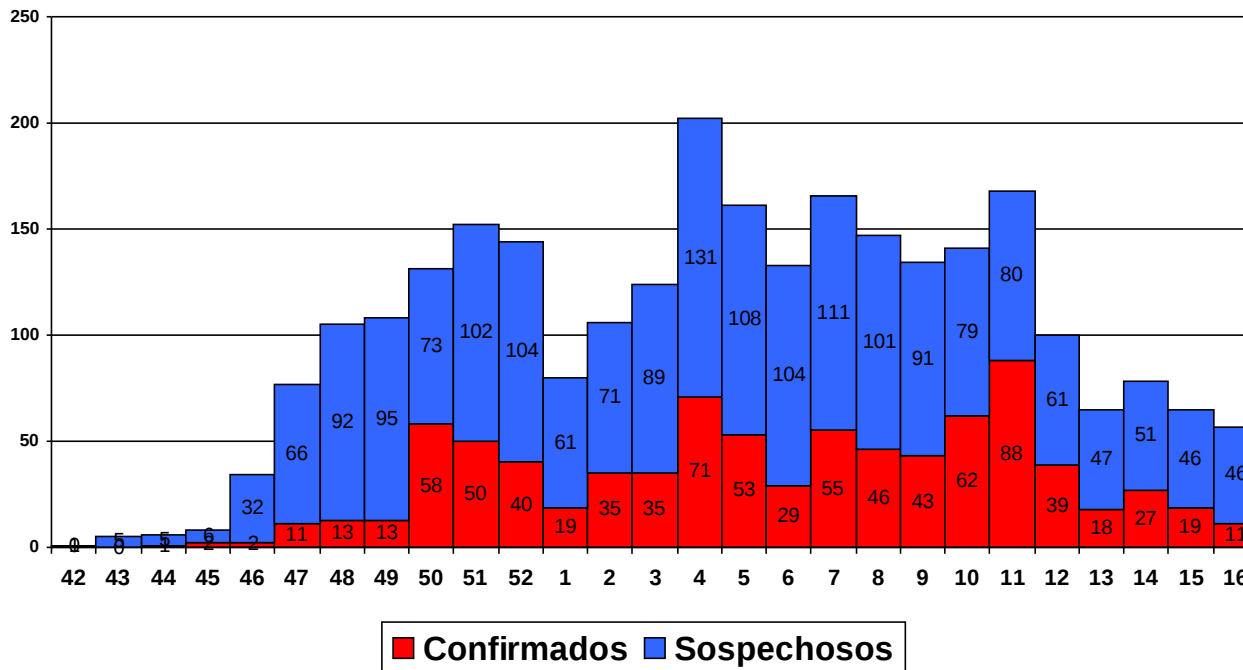
Grande Anse



Update on the Dominican Republic



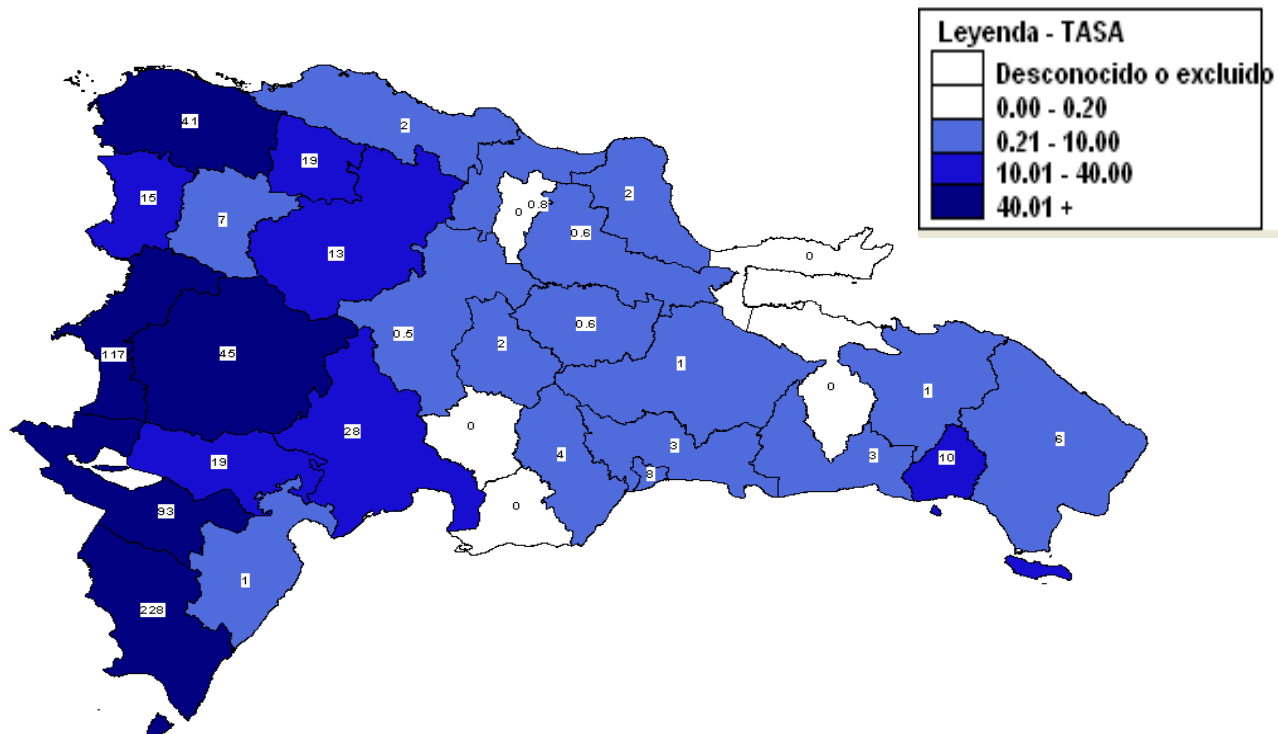
República Dominicana: Distribución de casos sospechosos y confirmados por SE Acumulado al 23 abril 2011 (SE 16)



Sala de situación de cólera. Dirección General de Epidemiología (DIGEPI). Ministerio de Salud Pública. República Dominicana

Map of Cholera Outbreak in the Dominican Republic

Tasa de incidencia de cólera,
actualizado al SE 15-2011



Prevention of Cholera - 1

- Personal hygiene:
 - Purify drinking and cooking water
 - Wash all food
 - Wash hands before cooking or eating
 - Use sanitation facilities for defecation

Prevention of Cholera - 2

- Environmental control:
 - Provide clean water for populations
 - Provide sanitary facilities for populations
 - Food safety
 - Social gatherings
 - Market places
 - Target high-risk populations

Prevention of Cholera - 3

- Vaccination against Cholera
 - There is an approved vaccine but it is not very efficacious
 - A new vaccine performs somewhat better but has not been approved by WHO
 - Not a viable option for the Caribbean

Prevention of Cholera - 4

- Prophylactic use of antibiotics
 - Clearly defined population
 - High risk of infection
 - Used successfully during a cholera outbreak in a prison in DOR

Planning for Cholera Outbreaks

- One component of overall planning for disaster management
- Part of the Health Emergency component
- Cholera-specific activities need to be addressed

Planning for a Cholera Outbreak

- Adapt national health disaster plan to accommodate cholera
- Designate specific rehydration centers
- Order supplies and equipment for centers
- Train hospital staff in clinical management
- Communicate risk to public
- Increase coordination among all disaster management partners

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Remaining Steps for Planning

- Complete identifying and supplying main rehydration centers in all countries
- Complete training of hospital staff for the rehydration centers
- Evaluate completeness of national health disaster plans through needs assessment and simulation exercises

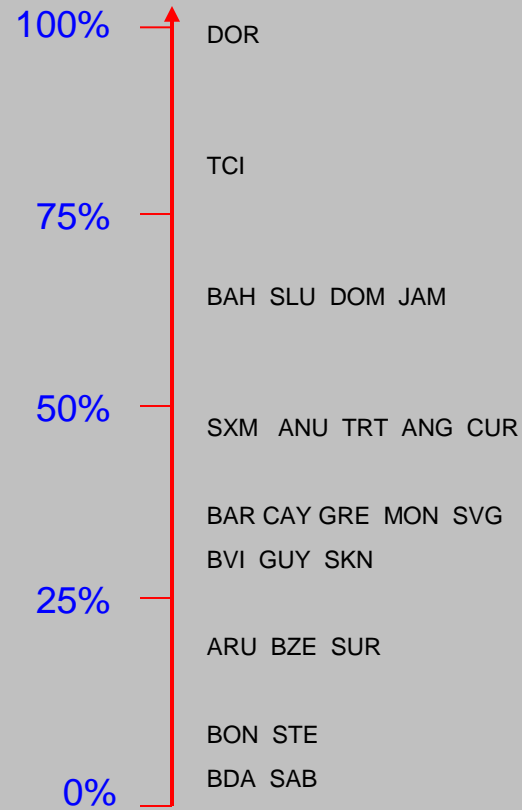
Response to a Cholera Outbreak

- Enhance surveillance for early detection
- Follow up contacts of confirmed cases
- Ensure proper clinical management of patients
- Ensure proper environmental controls
 - Disinfection of hospital waste
 - Disinfection of dead bodies
- Promptly manage the health emergency
- Communicate information to the public

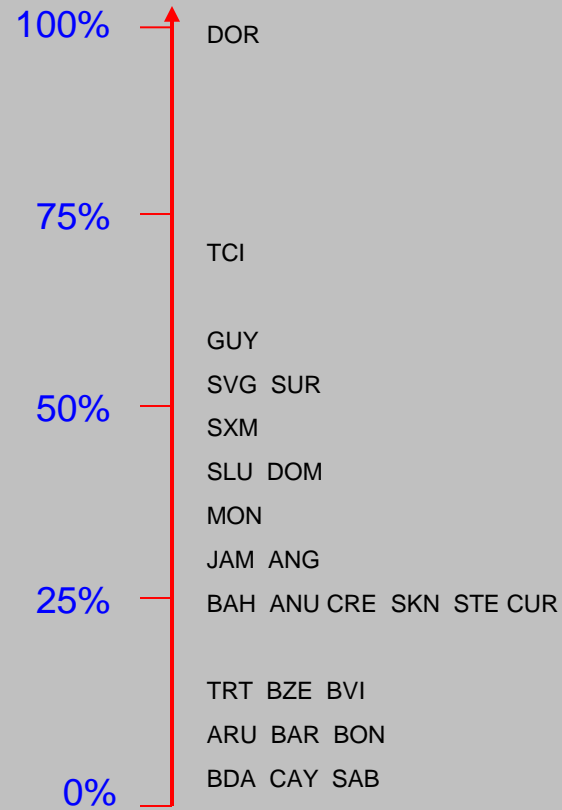
Risk Factors for Introduction and Spread of Cholera

- Legal and illegal immigrants living precariously
- Focal points for air and sea transportation
- Limited access to clean water and safe sanitation_
- Long referral time to health facilities
- Overcrowding as in slums and institutions
- Under-supervised food markets
- Places recently affected by natural disasters
- Remote indigenous and rural populations

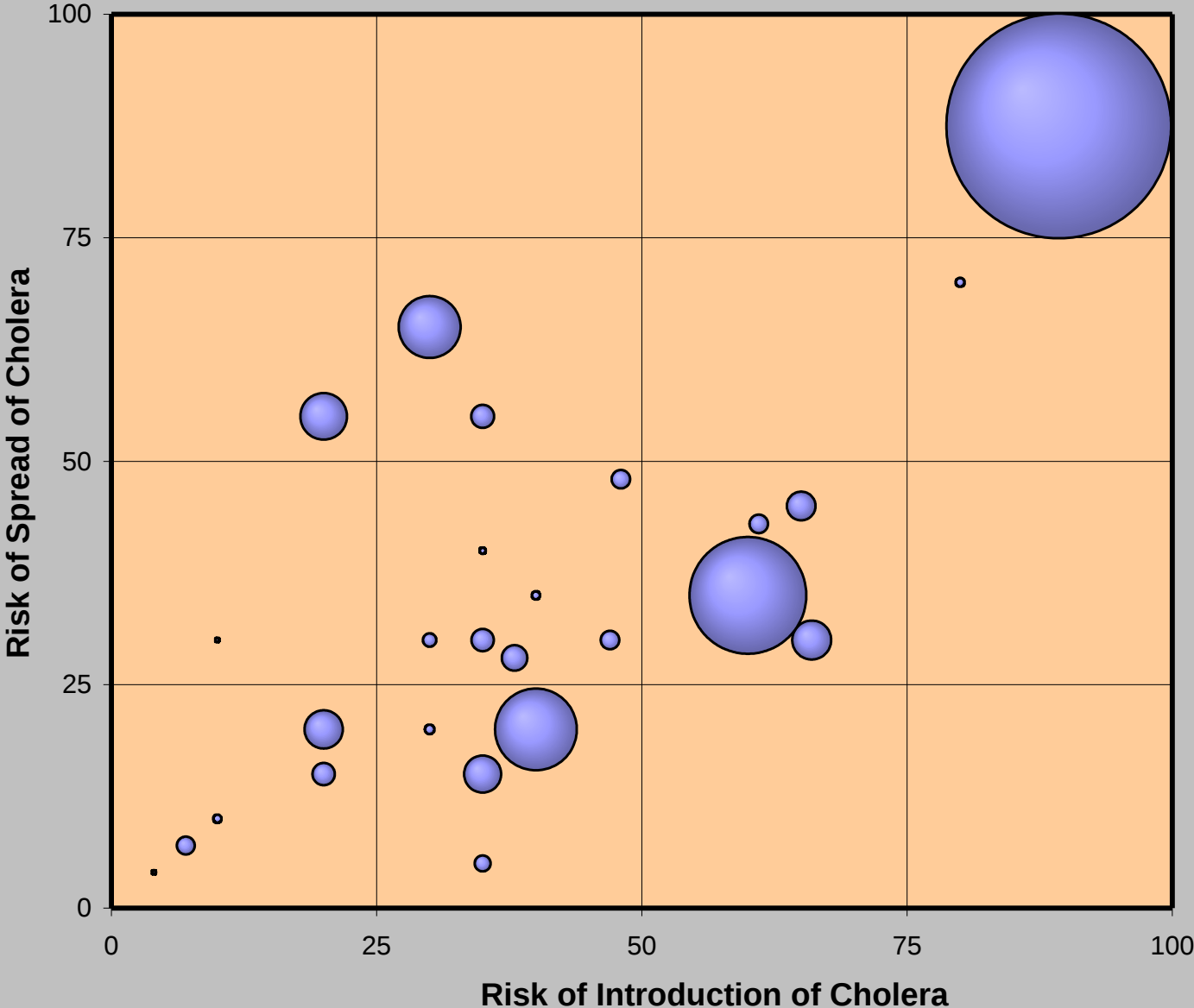
Risk of Introduction of Cholera



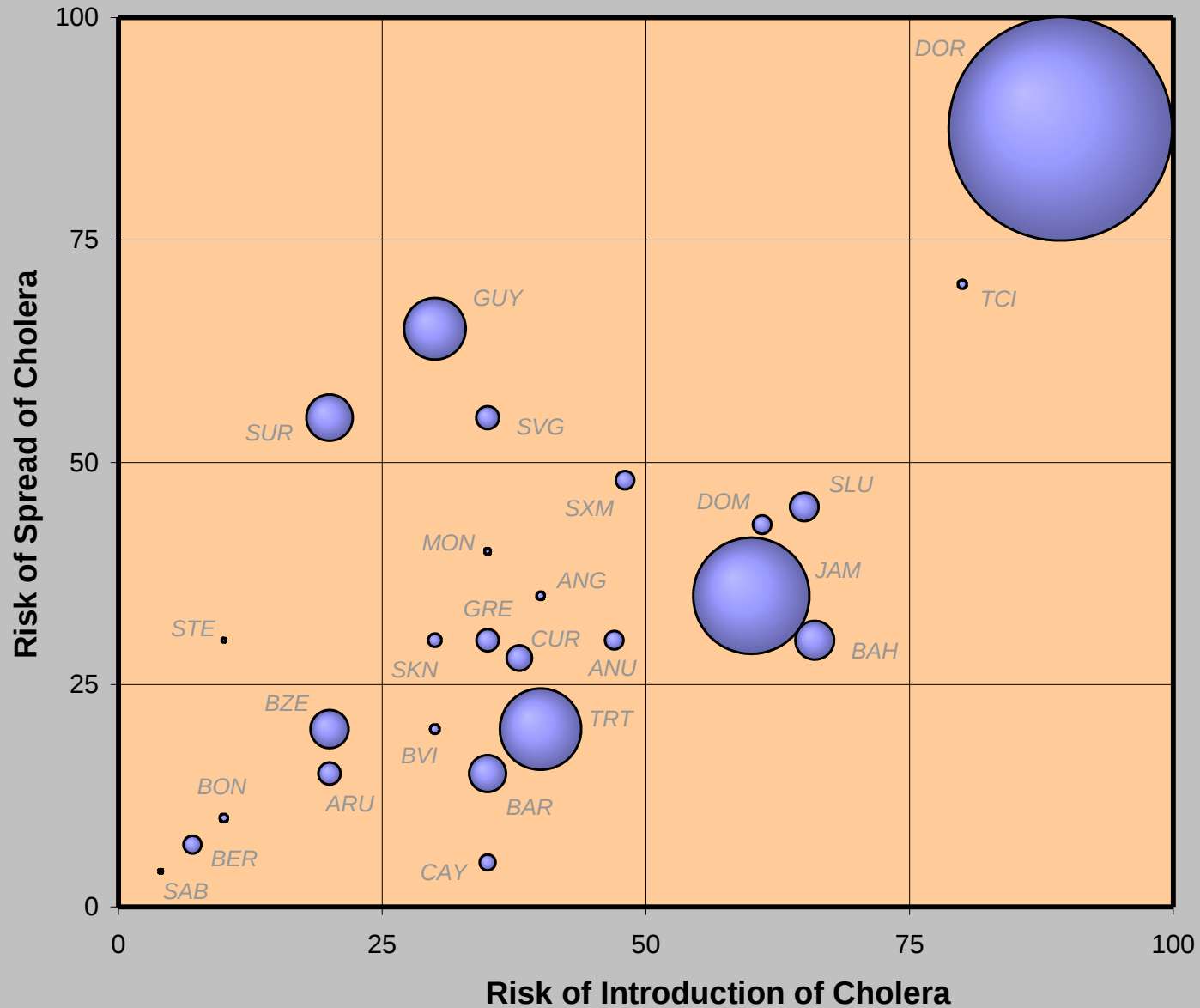
Risk of Spread of Cholera



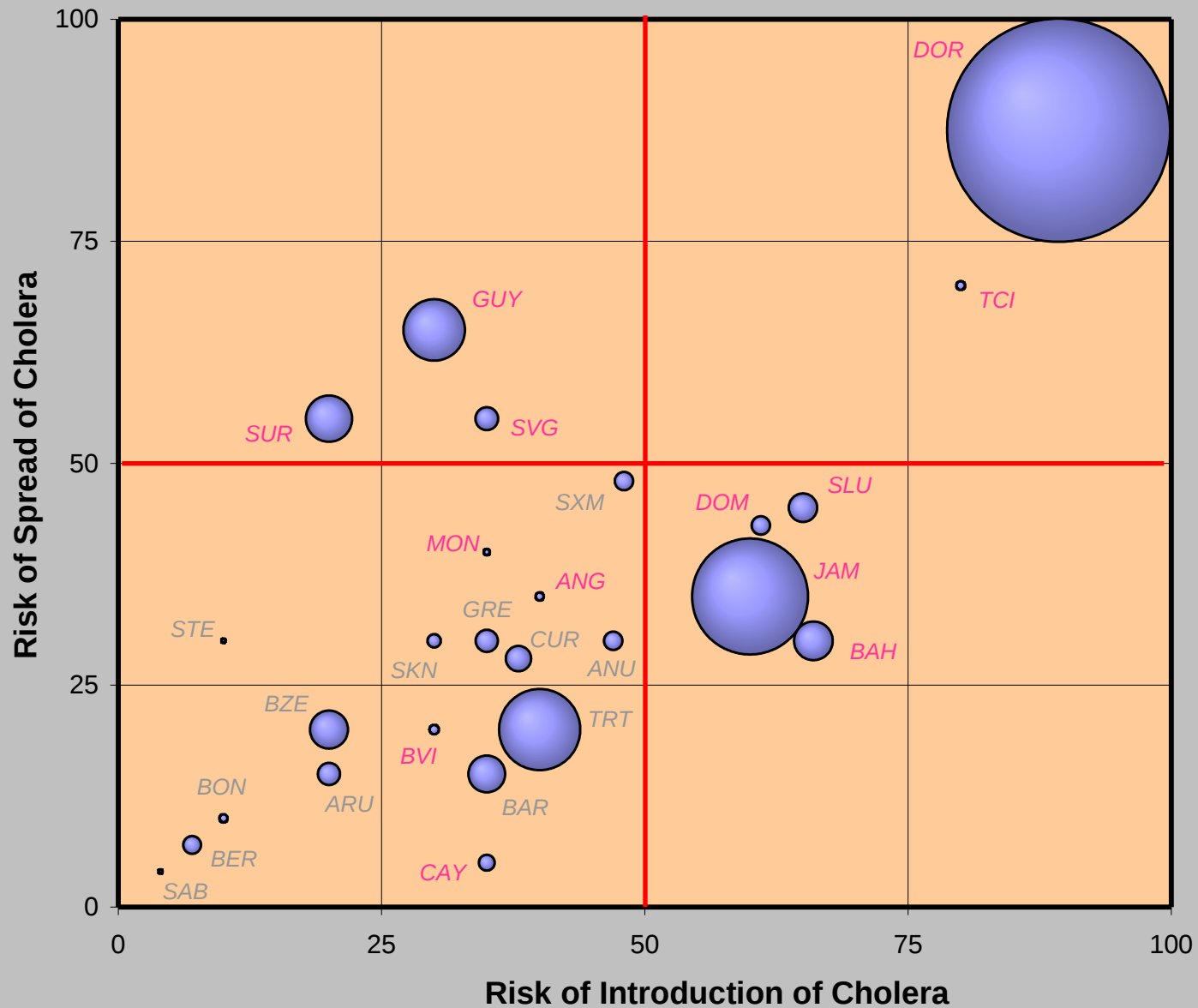
Risk of Cholera in the Caribbean



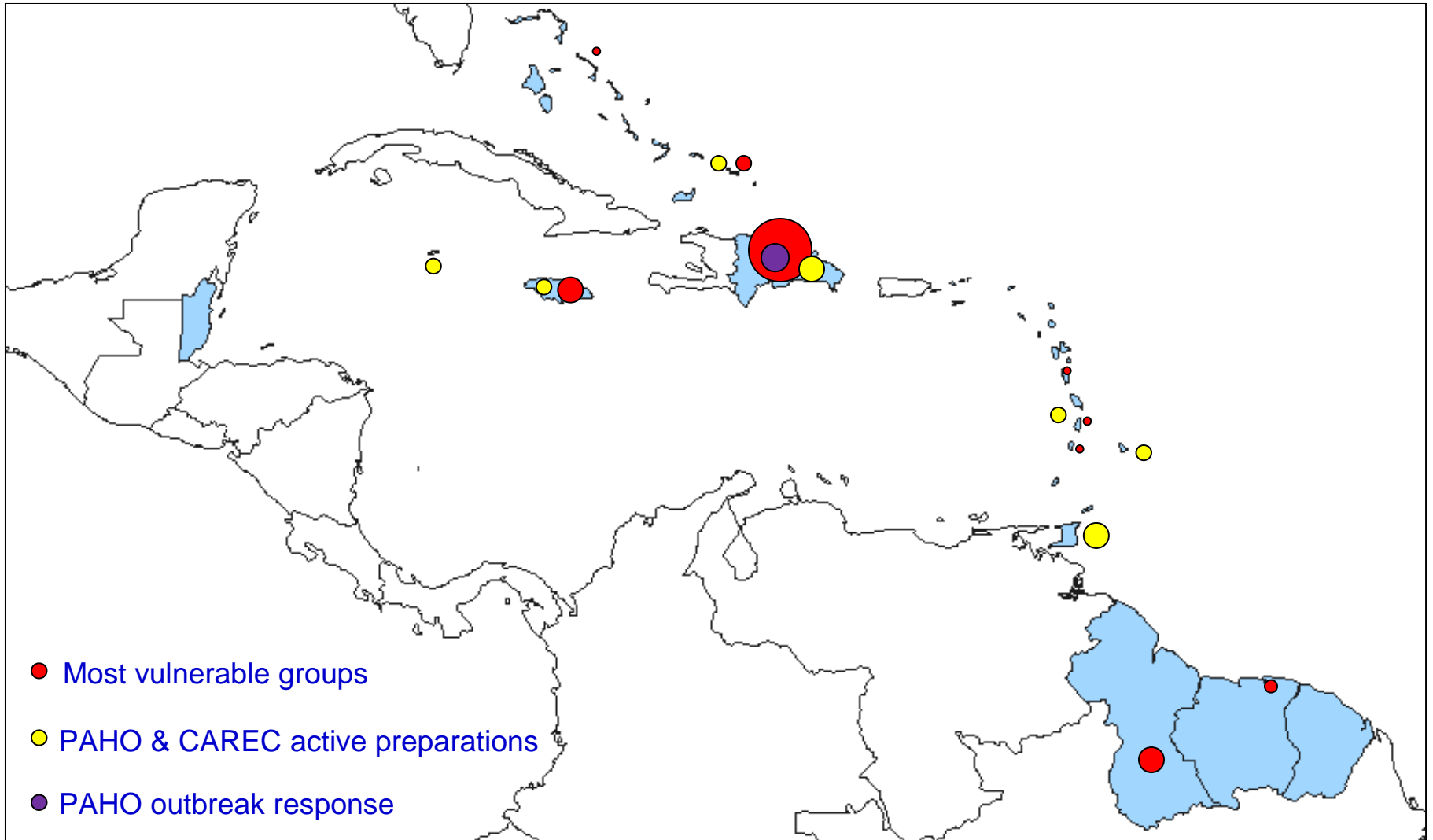
Risk of Cholera in the Caribbean



Risk of Cholera in the Caribbean



Cholera Outbreak Vulnerability



Thank You
