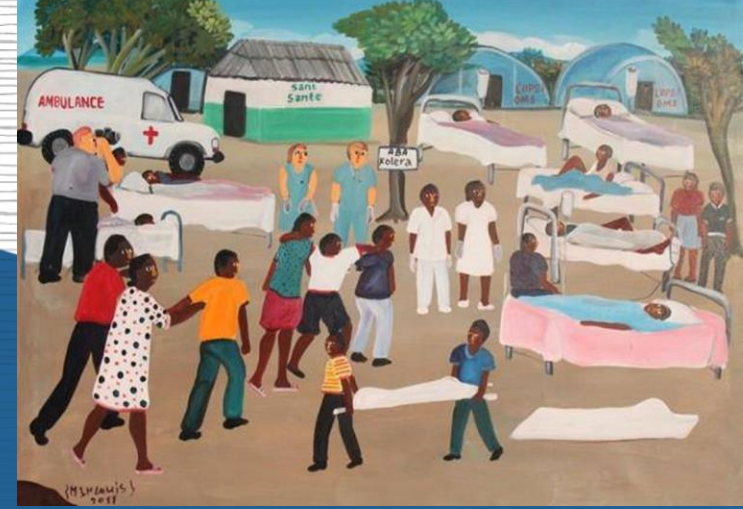


PAHOC
120th
ANNIVERSARY



CHOLERA IN HISPANIOLA

Haiti & Dominican Republic

Meeting of the global Task Force on Cholera Control (GT FCC)

Maputo, Mozambique

03 May 2023

Dr. Jean-Marc GABASTOU

gabastouj@paho.org

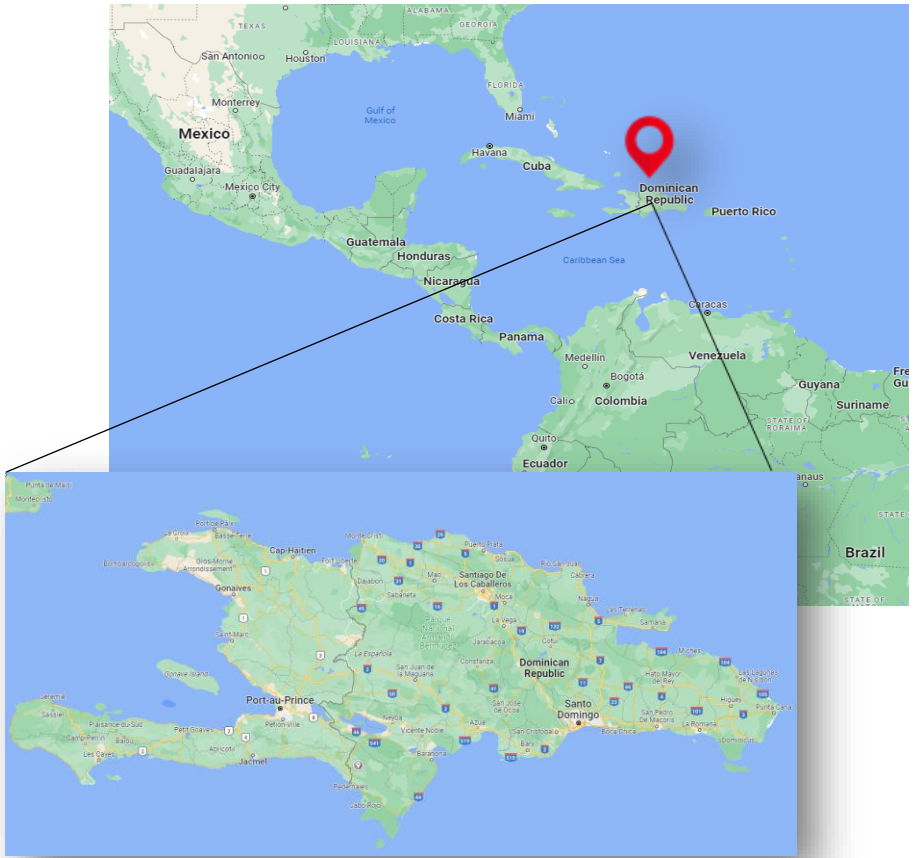
PAHO HEALTH EMERGENCIES/INFECTIOUS HAZARDS MANAGEMENT



Cholera situation

Haiti

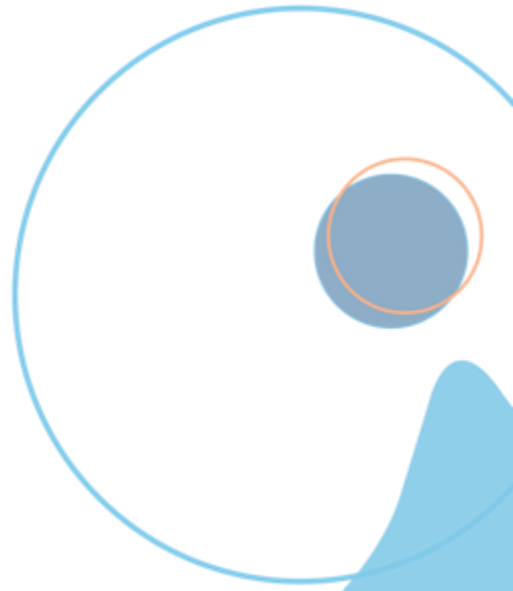
Dominican Republic



The Island of Hispaniola

- Oct 2010: Cholera epidemic, 820,000 cases and 9,792 reported deaths
- Jan 2019: the last confirmed case was recorded
- Feb 2022: three years without documented cholera case
- Sept-2022: new outbreak began in Port-au-Prince.

- Oct-2022: first imported cholera case, confirmed in the province of La Altagracia.





MINISTÈRE DE LA SANTÉ PUBLIQUE ET DE LA POPULATION (MSPP)

DIRECTION D'ÉPIDÉMIOLOGIE, DES LABORATOIRES ET DE LA RECHERCHE (DEL R)



Numéro: 195

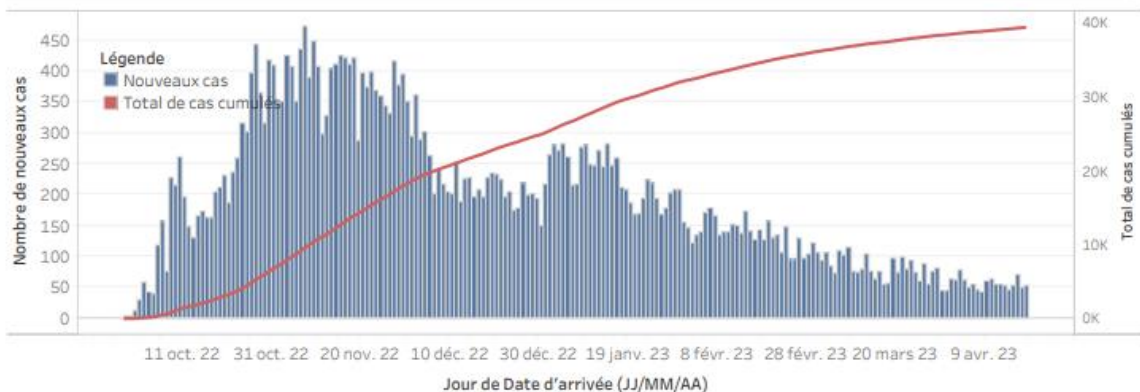
20 Avril 2023 6:00 p.m.

SITUATION ÉPIDÉMIOLOGIQUE DU CHOLÉRA. 19 avril 2023. HAÏTI

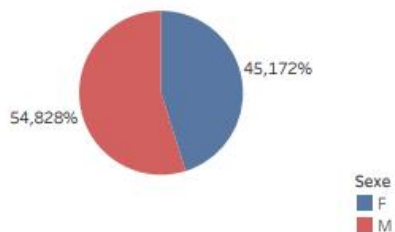
39 486	2 677	35 127	448	222	17 ANS
TOTAL CAS SUSPECTS	(5 nouveaux) TOTAL CAS CONFIRMÉS	(49 nouveaux) TOTAL CAS HOSPITALISÉS	(0 nouveau) DÉCÈS INSTITUTIONNELS	(0 nouveau) DÉCÈS COMMUNAUTAIRES	ÂGE MEDIAN DES CAS HOSPITALISÉS

7 605	7 605	35,20%
# D'ÉCHANTILLONS REÇUS	# DE TESTS RÉALISÉS	TAUX DE POSITIVITÉ

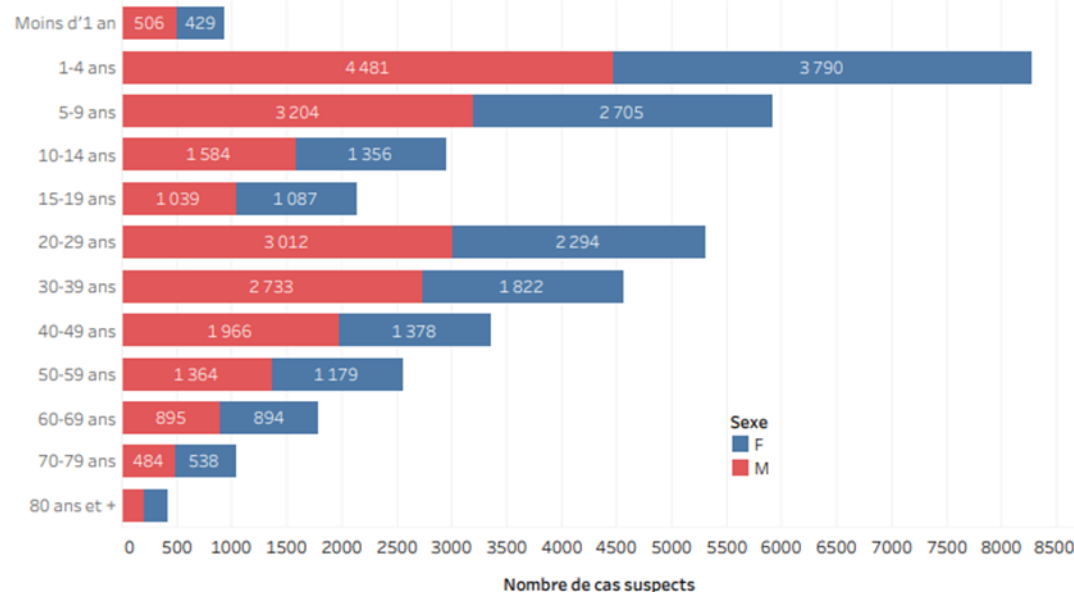
DISTRIBUTION DES CAS SUSPECTS PAR JOUR JUSQU'AU 19 AVRIL 2023, HAÏTI



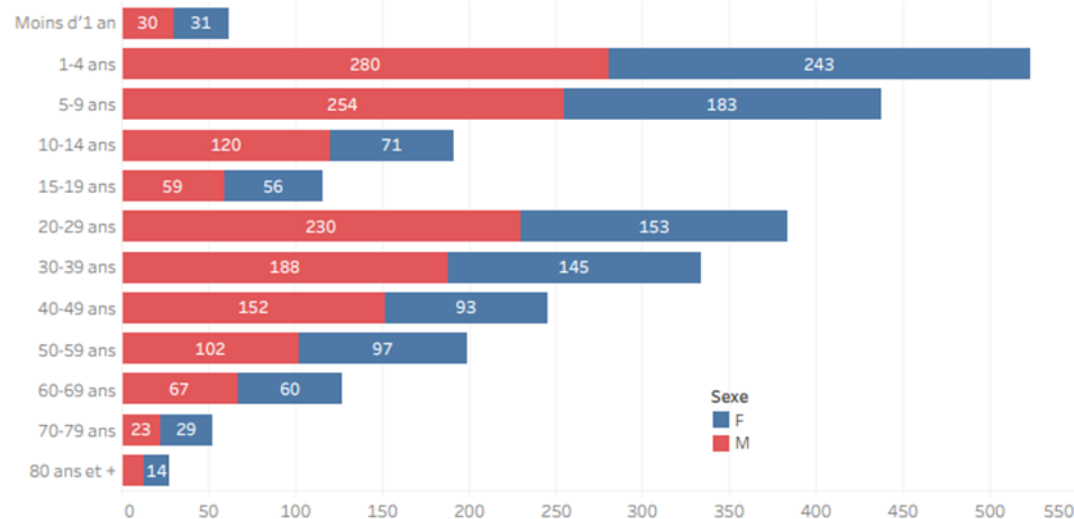
DISTRIBUTION DES CAS SUSPECTS CUMULÉS PAR SEXE JUSQU'AU 19 AVRIL 2023, HAÏTI

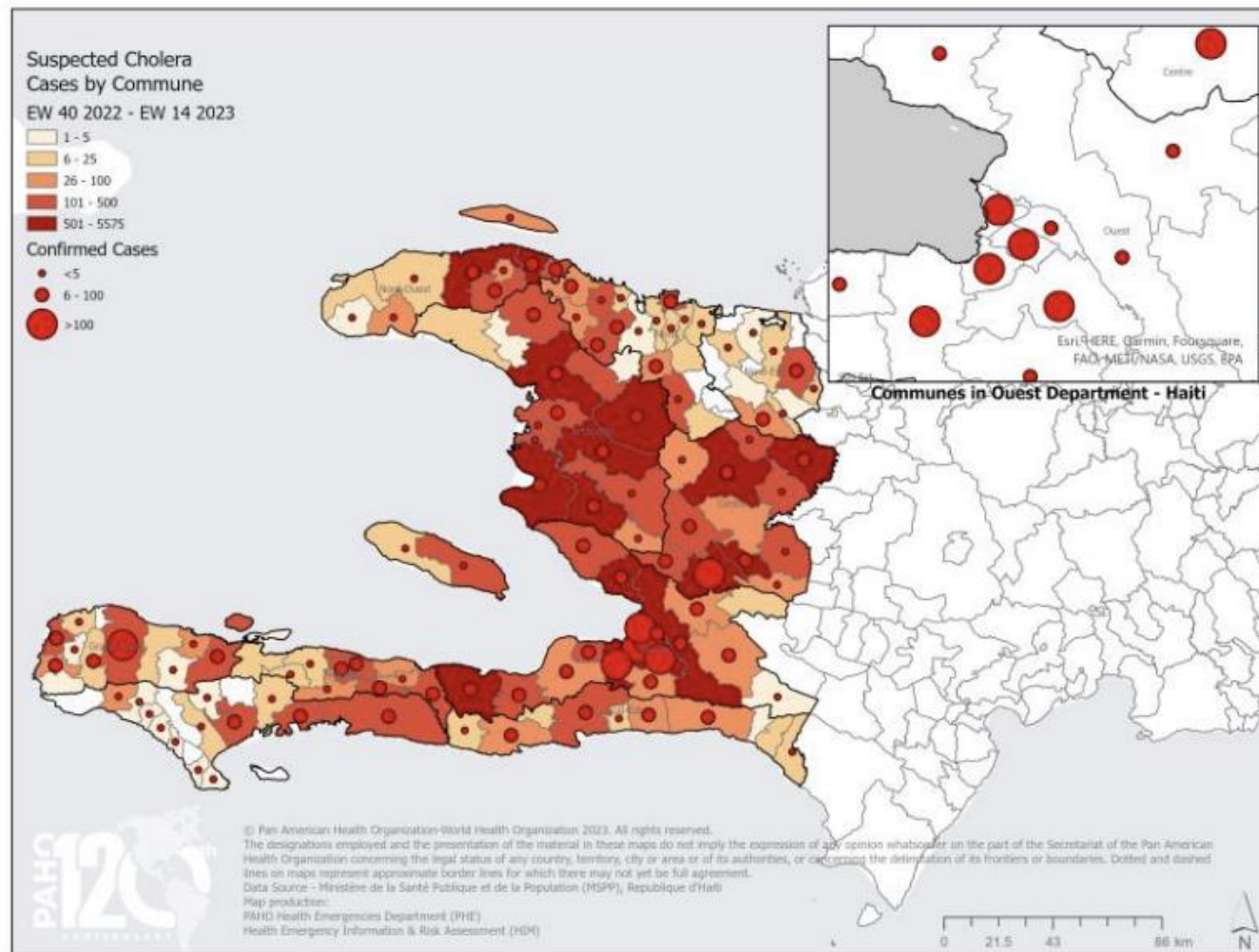


DISTRIBUTION DES CAS SUSPECTS CUMULÉS PAR TRANCHE D'ÂGE ET PAR SEXE JUSQU'AU 19 AVRIL 2023, HAÏTI



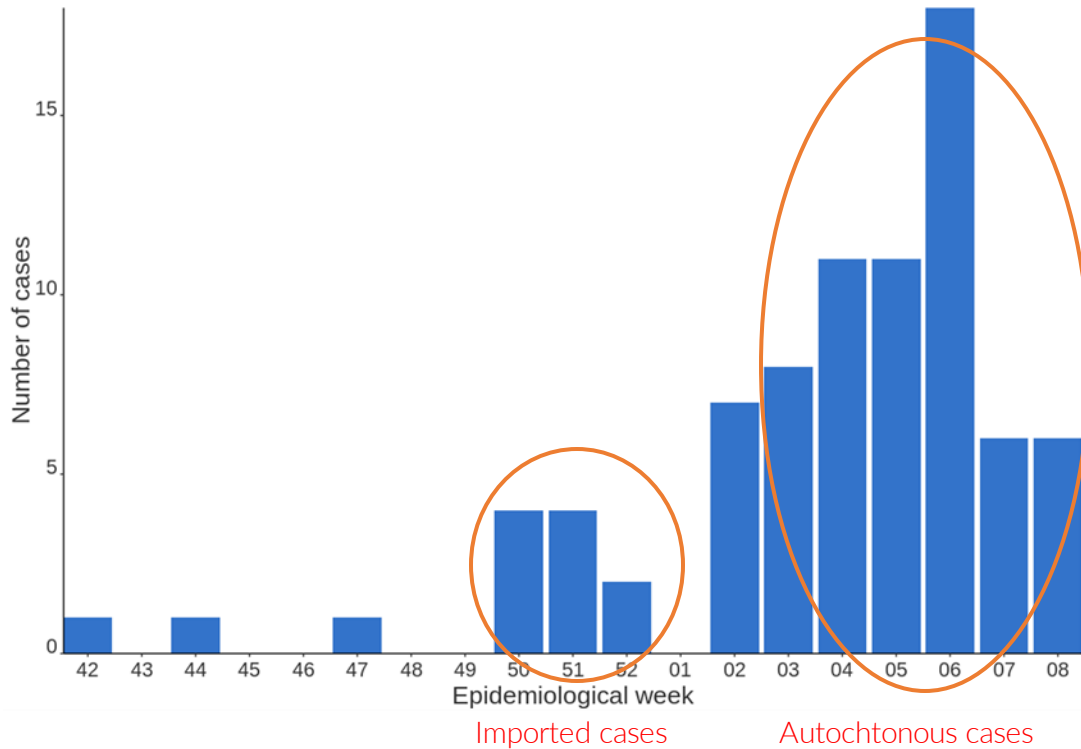
DISTRIBUTION DES CAS CONFIRMÉS CUMULÉS PAR TRANCHE D'ÂGE ET PAR SEXE JUSQU'AU 19 AVRIL 2023, HAÏTI



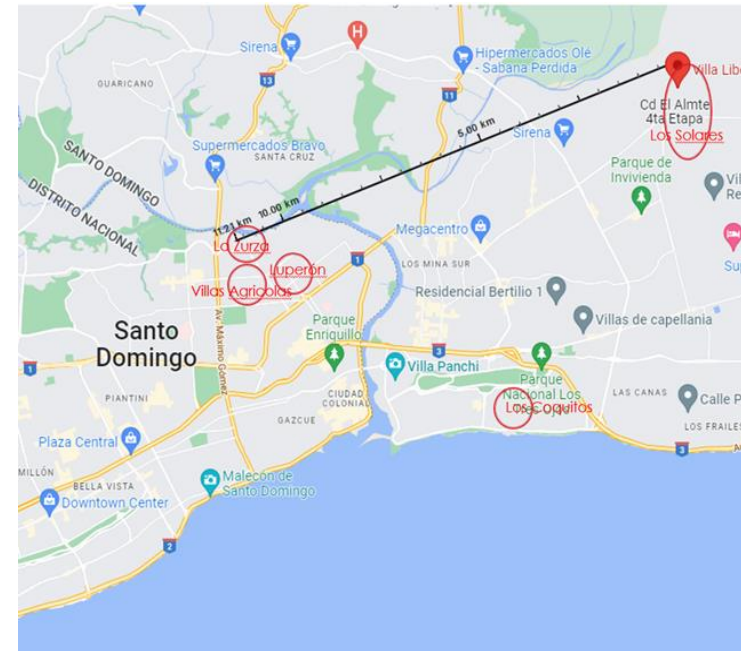


Reported Suspected Cholera Cases in Haiti by Department as of 7 April 2023

Source: Haïti Ministère de la Santé Publique et de la Population (MSPP). Data generated by PAHO/WHO



- 99 confirmed cases reported
- >75% in the capital and its barriers
- 0 death



Dominican Republic Sequencing Strain

INCIENSA, Costa Rica and INEI C. Malbrán, Argentina, Laboratorio Nacional de Salud Pública, Dr. Defilló, Dom. Rep. (Unpublished data*, INCIENSA Courtesy)

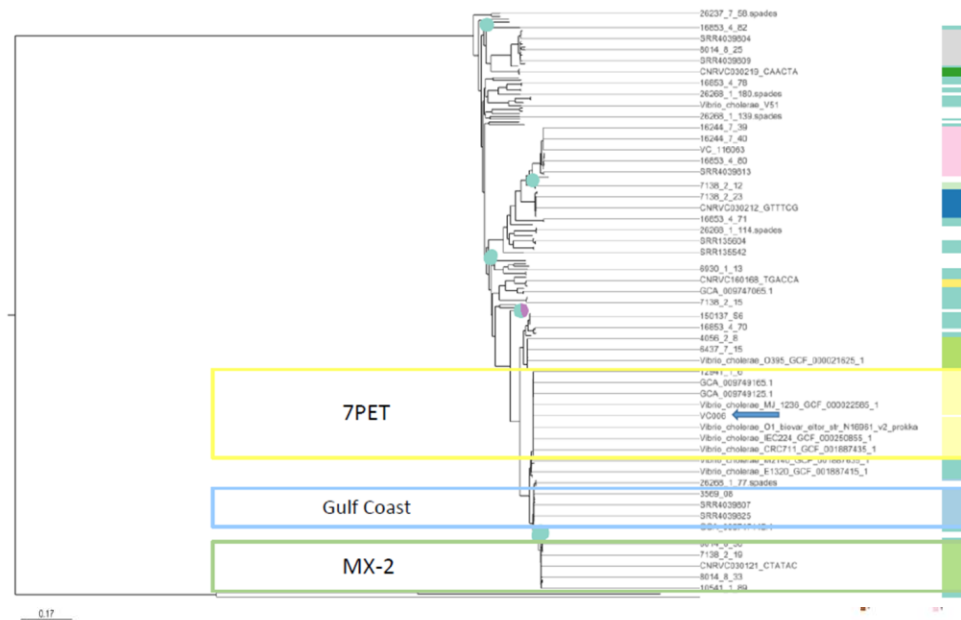


Figura 1: Árbol de máxima verosimilitud construido a partir de las SNVs obtenidas del alineamiento de genes core de 380 genomas de *V. cholerae*, más un grupo externo de tres especies de *Vibrio* relacionadas (383 secuencias en total) en las que se encuentra el árbol enraizado, utilizando Roary + SNP-sites + IQ-TREE. 1000 bootstrap

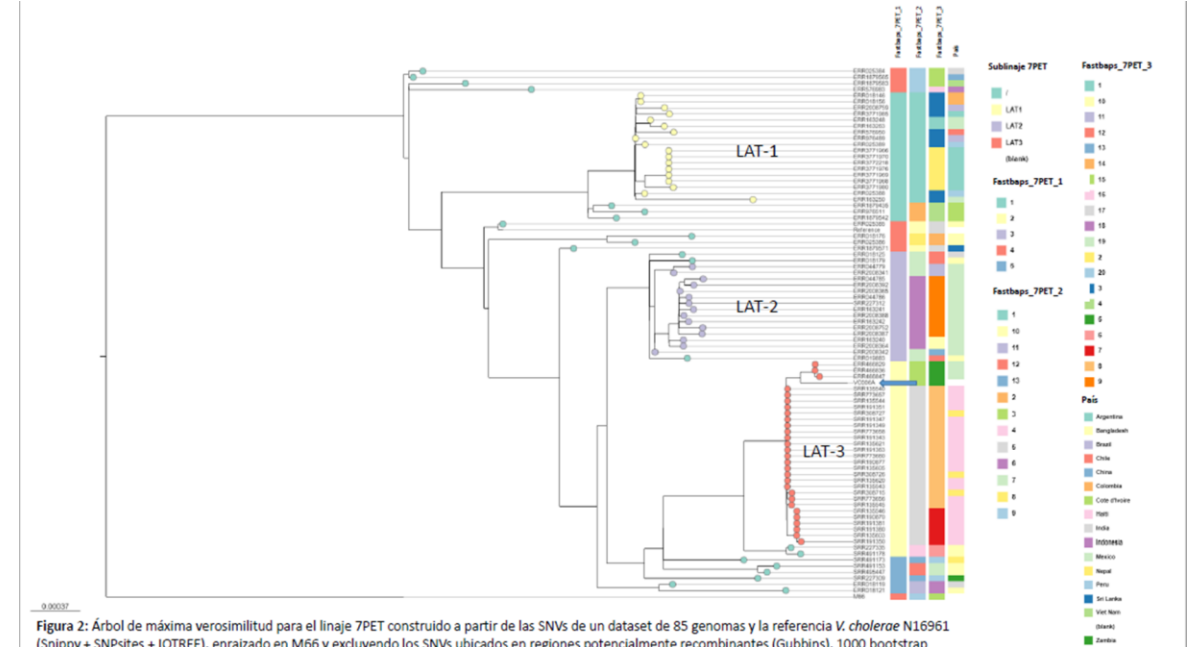


Figura 2: Árbol de máxima verosimilitud para el linaje 7PET construido a partir de las SNVs de un dataset de 85 genomas y la referencia *V. cholerae* N16961 (Sniiovv + SNP-sites + IQ-TREE, enraizado en M66 v excluyendo los SNVs ubicados en regiones potencialmente recombinantes (Gubbins). 1000 bootstrap

- ✓ Imported case: *V. cholerae* confirmed, carrier of the cholera toxin genes, [sequence type ST69](#), and identifying various determinants of [resistance to antibiotics](#) (Sulfametometoxazole R, Trimethoprim-Sulfametoxazole R, Ciprofloxacin I).
- ✓ This strain, isolated in the Dominican Republic, October 2022, corresponds to the [7PET pandemic lineage](#) (7 Pandemic EL Tor, fig. 1) and to the [LAT3 sub-lineage](#) (figure 2)
- ✓ [LAT3 sub-lineage](#) circulated in 2010 during Haiti/Dom Rep. epidemic and later in Mexico in 2013 (Domman et al., 2017)

Haiti Sequencing Strains

- Permanent presence of the bacterium in the **environment** and permeability among environment, peri-domestic areas and domestic areas (Haiti)? *
- Has this *V. cholerae* strain **persisted in environmental reservoirs**? **
- Suggests that the re-emergence of cholera in Haiti 2022 was caused at least in part by a **descendent** of the *V. cholerae* strain that caused the 2010 epidemic **
- Suggests a strong phylogenetic relationship to **previously circulating *V. cholerae* in Haiti** as opposed to external introduction as the source of the outbreak ***
- This re-emergence distinctly **demonstrates the epidemic potential of a strain that cause multiple explosive cholera outbreaks over extended period** ***

* INCIENSA, Costa Rica, INEI C. Malbrán, Argentina, Laboratorio Nacional de Salud Pública, Dr. Defilló, Dom. Rep. and PAHO (Unpublished data)

** Rubin, D. H. F., Zingl, F. G., Leitner, D. R., Ternier, R., Compere, V., Marseille, S., Slater, D., Harris, J. B., Chowdhury, F., Qadri, F., Boncy, J., Ivers, L. C., & Waldor, M. K. (2022). *Reemergence of cholera in Haiti. The New England Journal of Medicine*, 387(25), 2387–2389. <https://doi.org/10.1056/NEJMc2213908>

*** Walters, C., Chen, J., Stroika, S., Katz, L. S., Turnsek, M., Compère, V., Im, M. S., Gomez, S., McCullough, A., Landaverde, C., Putney, J., Caidi, H., Folster, J., Carleton, H. A., Boncy, J., & Lee, C. C. (2023). *Genome sequences from a reemergence of *Vibrio cholerae* in Haiti, 2022 reveal relatedness to previously circulating strains. Journal of Clinical Microbiology*, 61(3), e0014223. <https://doi.org/10.1128/jcm.00142-23>

● ● ● What has been done: an integrated approach

- ✓ **Control morbidity and mortality** by **supporting the MoH** and partners through **case detection and investigation** for timely and **adequate case management**.
- ✓ **Update Diagnosis, Surveillance and Treatment guidelines** (DOR)
- ✓ Reduce the spread of the disease and prevent transmission to **protect vulnerable groups at risk** of infection through targeted **risk communication** and **oral vaccination** against cholera: Haiti 850,067 doses, 76% coverage; DOR 53,205 doses, Health Care Workers and neighborhood contacts.
- ✓ **Strengthening of inter-institutional and inter-sectorial coordination** to ensure adequate supply of **WASH** in affected provinces (HAI)
- ✓ **Prepare and improve readiness** for investigation, detection, confirmation, and early response to **cholera alerts in the countries of the region (AMRO)** by supporting the capacities of the MoH.
- ✓ Virtual **Training on Laboratory Diagnosis and Molecular characterization of *V. cholerae*** addressed to Central America and the Caribbean's.
 - Based on **WHO updated guidelines** (Case definitions, Testing, RdTs, Culture, PCR, Shipping, Surveillance)
 - Purchase of **essential supplies**
 - **Stock** in Panama
 - Genomic Sequencing implemented at LNSP Haiti
- ✓ **Hispaniola SitReps and Alert sharing weekly** - **PAHO Dashboard pipeline**
- ✓ **Stakeholders/Partners:** CDC, Public Health National Laboratory (LNSP), International Committee of the Red Cross (ICRC), UNICEF, United Nations Humanitarian Air Service, and many more.

● ● ● Outcomes and key achievements

- ✓ Laboratory personnel trained (INCIENSA Costa Rica) and National Public Health Laboratories in Central America and the Caribbean's equipped for early diagnosis and confirmation of *V. cholerae*
- ✓ Personnel certified for the transport of infectious substances
- ✓ Labo moto reactivated in Haiti and Sentinel sites activated and doted for alert and early response in DOR and LAC
- ✓ Active community case investigation and neighborhoods contact tracing (RdTs, sampling) and timely vaccination (DOR)
- ✓ Ongoing missions to evaluate the quality of case management in CTCs
- ✓ Risk Communication developed in French, Spanish and Creole
- ✓ Engage with the International Coordinating Group on Vaccine Provision (ICG) in requesting to use the remaining doses of the Oral Cholera Vaccine (OCV) to vaccinate inmates in prisons in Haiti.
- ✓ In Haiti, PAHO/WHO leads the coordination of the Health Sector Group, which includes the participation of the United Nations agencies, INGOs as well as the donor community.

● ● ● What are the Challenges

Haiti

- **Complex humanitarian and socio-political crisis:**
 - High levels of insecurity
 - Fuel shortages and economic instability, continue to impact response capacity.
- **Limited access to health and basic water and sanitation services, as well as food and water supplies:**
 - Continue to hamper epidemiological surveillance, the installation of Oral Rehydration Points (ORP) and Cholera Treatment Centers (CTCs)
 - Affect the **transport of patients to CTCs**, and health promotion, as well as water access, hygiene, and sanitation activities at the community level
 - **Negative impact** on the response and **distribution of life-saving cholera medicines and supplies**
- **Limited Qualified Health Care Workers and Epidemiologists**
- **High demand for medical and non-medical supplies**, including for the oral vaccine, resulting in limited cholera commodities for immediate distribution.

Dominican Republic

- **Limited access to water and sanitation services** and safe water supplies in most of the urban and rural area at the country level
- **Limited follow-up in epidemiological surveillance** in the **border provinces**
- Pre-electoral period and elections of municipal and local authorities.