COVID-19 Genomic Surveillance Regional Network

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COVID-19 Genomic Surveillance Regional Network

Implementation of a SARS-CoV-2 genomic surveillance network in the Americas region
Regardless of geographic location, an outbreak or epidemic represents an emergency and a potential international threat.

There are no countries or institutions that have the complete capacity to respond by themselves to epidemics, especially those generated by new (emerging) pathogens with pandemic potential.

For this reason, a system is required that coordinates alert and response mechanisms at the global and regional levels.
Beyond surveillance of endemic pathogens, WHO Member States should be prepared to detect and characterize in a timely manner the emergence of new agents with epidemic potential*

Mechanisms for a timely access to National and Regional reference laboratories as well as laboratory networks, must be granted

Quality of the results should be ensured

*Core capacity #8 IHR
BACKGROUND
The response to COVID-19 pandemic

- Firsts genomic sequences released in open platform (Virological and GISAID) (Jan 10)
- Charité Protocol Primers and Probes Ordering (Jan 17)
- First SARS-CoV-2 molecular diagnostic implementation Latin America (Jan 30)
- Notification of unknown aetiology cluster of pneumonia to WHO (Dec 31)
- First Molecular Protocol (Charité-Berlin) available on WHO webpage (Jan 14)
BACKGROUND

Phylogenetic analysis of SARS-CoV-2
BACKGROUND
SARS-CoV-2 sequences in GISAID

- Some regions were underrepresented
- Some regions were overrepresented
GISRS in the Americas Regions

- WHO Collaborating Center
- Centers for Disease Control and Prevention (CDC)
- 29 National Influenza Centers (NICs)
- 25 Countries / WHO Member States

SARInet
Molecular Diagnostics
Influenza detection – IRR reagents – WHO CC at US-CDC
SARS-CoV-2

Genetic Sequencing
Influenza Sequencing Project
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Viral isolation
Only for influenza and after SARS-CoV-2 infection have been excluded

Antigenic characterization
Standard antiserum against the influenza strains present on the vaccine composition

Antiviral resistance assays
Genetic sequencing
NA inhibition (NAI) assay

Laboratory capacity in the Americas Region
COVID-19 Genomic Surveillance Network

Main objectives:

- Develop and strengthen a COVID-19 genomic surveillance network in the Americas region
- Contribute to timely make available more genetic sequencing data (GSD) from the Latin America and Caribbean countries.

Analysis Objectives:

- Clarification on transmission patterns, especially in signal events (cruise ship-related or other cluster events, importations, etc.);
- Identification of mutations putatively involved in host adaptation, virulence or transmissibility;
- Identification of mutations potentially affecting diagnostic protocols;
OPS/OMS

GISRS in the Americas Regions

Methodology:
• Next Generation Sequencing Platform: Full genome sequencing
• Samples mild, severe or death cases (Ct< 30)
• 2 Regional Sequencing Laboratory: FIOCRUZ (Brazil); ISPCH (Chile)
• Genetic Sequence Data (GSD): Timely release of sequences on open platform GISAID
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Participating countries:

- 19 countries from each subregion:
  - **North America**: Mexico
  - **Caribe**: Bahamas, Barbados, Haiti and Jamaica
  - **Central America**: Costa Rica, Guatemala, Honduras and Panama
  - **Adrian Region**: Colombia, Ecuador, Perú and Venezuela
  - **South Cone**: Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay
Other Regional Sequencing Project – Influenza

Outcomes

- Southern Hemisphere Influenza Season Summary Report for WHO Influenza Vaccine Composition Meeting in September
- Empowerment of the National Influenza Center in the National Surveillance Context
- More high quality Genetic Sequence Data

Abstract

Regional genetic evolution analysis of influenza virus circulating in Latin America
COVID-19 Genomic Surveillance Network

Responsibilities

- Support shipping to the reference sequencing laboratories
- Reagents for NGS at the reference sequencing laboratories
- Sustainability of the network
- Develop together with the countries a regional analysis with metadata for data sharing through the scientific community
- Provide necessary documents for samples shipping.
- Sequence by NGS
- Timely release NGS to GISAID
- Send a genetic information report to the submitter laboratory (English or Spanish).
- Ship samples to one of the reference sequencing laboratories.
- Timely release GSD to GISAID
- Send reporting Excel File to PAHO
- Send reporting Excel File to PAHO

Genomic sequence data belongs to the country
Additional COVID-19 Genomic Surveillance Project Activities

- Teleconference with each country for participation in the Project
- NGS virtual trainings for country as requested by the ISP-Chile and FIOCRUZ
- Metadata sent by countries
- Countries shipping samples to FIOCRUZ and ISP-Chile
- Regional NGS training by ISP-Chile
- ISP-Chile providing primers to countries in the project
- Argentina, Brazil, Chile, Colombia, Costa Rica, Paraguay, Peru and Uruguay in house sequencing and uploading to GISAID
- Regional analysis in collaboration with participating laboratories/countries
- Samples sent to FIOCRUZ and ISP-Chile for sequencing
Critical actions for response to COVID-19 pandemic in the Americas

**SAVE LIVES**
- Reorganize health services & plan workforce surge
- Maintain infection prevention & control (IPC) in all health services
- Optimize clinical management along a continuum of care
- Assure supply chain

**PROTECT HEALTH CARE WORKERS**
- At work & in community

**SLOW SPREAD**
- Detect & isolate cases, trace & quarantine contacts
- Engage actively with community on basic IPC practices & following measures
- Implement social distancing & travel-related measures

Keep up surveillance & reference laboratory | Generate evidence for action
Final Remarks

• Increase genetic sequence data of SARS-CoV-2 circulating in the Americas Region available to the global community to support development of diagnostic protocols, information for vaccine development.

• Phylogenetic analysis to better understand the genetic evolution and molecular epidemiology of SARS-CoV-2

• Strengthening of laboratory response capacity in participating countries

• Regional analysis with metadata for dissemination through scientific community

• Regional Genomic Surveillance Network for SARS-CoV-2

• Generate data that can be used for developing mechanism to mitigate the COVID-19 pandemic
Webpages

• COVID-19 Genomic Surveillance Regional Network:

• Red Regional de Vigilancia Genómica de COVID-19:
Stop the spread. Save lives.

COVID-19

Together we can overcome this public health emergency.

www.paho.org
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Thank you!
Merci!
Obrigada!