COVID-19 Laboratory Response in the Americas: Lessons learned

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PAHO/WHO
27 October
43,457,772 cases
627,817 deaths

11 February
43,102 confirmed cases
1,018 reported deaths
Confirmed cases in the Americas
27 October 2020

Region of the Americas
19,855,519 cases
627,817 deaths
Background

In January 2020, the etiologic agent was identified as a novel coronavirus [provisionally named 2019 novel coronavirus (2019-nCoV)].
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SARS-CoV-2: etiological agent of COVID-19

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The complete genome sequence demonstrated a Betacoronavirus, but different from SARS-CoV and MERS-CoV: **Critical to develop detection and diagnostic protocols**
PAHO LABORATORY RESPONSE
• Laboratory surveillance and response was based on the Influenza and ORV platforms (NICs and National Labs Network)
  • All of them with expertise in taking of samples
  • All of them with molecular platform in place
### PAHO Laboratory Response

#### Hallmark Events

- **Novel coronavirus disease named COVID-19 by WHO**
  - Feb 11

- **WHO declares Public Health Emergency of International Concern (PHEIC)**
  - Jan 30

- **First case of 2019-nCoV reported outside China**
  - Jan 12

- **Isolation of a novel coronavirus confirmed by WHO**
  - Jan 9

- **Notification of unknown pneumonia cluster to WHO**
  - Dec 31

- **Firsts 2019-nCoV genetic sequences released in open platform (Virological and GIxAID)**
  - Jan 30

- **First Molecular Protocol (Charité-Berlin) available on WHO webpage**
  - Jan 14

### PAHO/WHO Laboratory Response

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<thead>
<tr>
<th>PAHO/WHO Laboratory Response</th>
<th>SEVERE PNEUMONIA CASES IN CHINA</th>
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<tbody>
<tr>
<td>Charité Protocol Primers and Probes Ordering</td>
<td>Jan 21</td>
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<td>Charité Protocol Primers and Probes; kits and Positives Control arrives at PAHO</td>
<td>Jan 17</td>
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<td>Charité Protocol Kits ordering</td>
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<td>CARPHA receives reagents (TTJ)</td>
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<td>May 2</td>
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**Note:** The timeline and activities are based on the information provided in the document. The dates and events are specific to the context of the PAHO Laboratory Response to the 2019-nCoV outbreak.
PAHO Laboratory Response

PCR reagents (kits, primers, probes, controls) purchased and distributed starting January 27
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7 in-country missions for implementation
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**7 in-country missions** for implementation

**2 hands-on subregional workshops**: BRA and MEX (18 countries)
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**29 countries with reagents and detection protocol implemented**

**7 in-country missions** for implementation

**2 hands-on subregional workshops:** BRA and MEX (18 countries)
Currently, NICs and NPHL in 35 countries have detection capacity.
• 35 countries/40 labs reported results
• 38 labs scored 5 out of 5
• 1 lab scored 4 out of 5
• 1 lab scored 3 out of 5
Regional COVID-19 Genomic Surveillance Network

Objetivos Principales:
- Desarrollar y fortalecer una red de vigilancia genómica de COVID-19 en la región de las Américas.
- Contribuir para hacer disponible más datos de secuenciación genética (GSD) de los países de América Latina y el Caribe.

Resultados esperados:
- Aumentar los datos disponibles de secuenciación genética de SARS-CoV-2 circulantes en la Región de las Américas para la comunidad mundial para apoyar el desarrollo de protocolos de diagnóstico, información para el desarrollo de vacunas y antivirales.
- Análisis filogenético para comprender mejor la evolución genética y la epidemiología molecular del SARS-CoV-2.
- Fortalecimiento de la capacidad de respuesta de laboratorio en los países participantes.
- Análisis regional con metadatos para su difusión a través de la comunidad científica.
- Red regional de vigilancia genómica para SARS-CoV-2

18 Países participantes:
- Países de cada subregión:
  - América del Norte: México
  - Caribe: Bahamas, Barbados, Haití and Jamaica
  - América Central: Costa Rica, Guatemala e Honduras
  - Región Andina: Colombia, Ecuador, Perú y Venezuela
  - Cone Sur: Argentina, Bolivia, Brasil, Chile, Paraguay and Uruguay
PAHO Laboratory Response

Laboratory Diagnosis of Novel Coronavirus (nCoV) infection

Directrices provisionales de bioseguridad de laboratorio para el manejo y transporte de muestras asociadas al nuevo coronavirus 2019

Directrices de laboratorio para la detección y el diagnóstico de la infección por el virus responsable de la COVID-19

8 de julio del 2020
PAHO Laboratory Response

LAB MATERIAL SHIPMENTS

6,734,206
Number of reactions

772
Kits Master

493
Set Primers

945
Enzymes

195
Extraction Kits

Procured supplies

Number of reactions by Country

SARinet
Severe Acute Respiratory Infections network

PAHO
Organization of American States

PAHO Surveillance
Severe Acute Respiratory Infections Network
Challenges and lessons learned

• There is a very strong laboratory (NICs) network at PAHO Region; it was advantageous for COVID-19 response
  – Sampling
  – Molecular capacity/interpretation
  – Quality assurance and biosafety

• Nevertheless, the labs went overloaded and the capacity became insufficient.
  – Centralized response
  – Backlog and increased turnaround
  – Lack of material (global shortage)
  – Other pathogens surveillance was impacted

• There were too many voices at the same time... there were not clear/homogeneous global testing strategies
Challenges and lessons learned

- Decentralization processes should be a priority (virological tests)
  - Strengthen National networks

- Because of the shortage, we had to “learn” alternative ways to work

- It is necessary to develop/update the laboratory contingency plans

- Testing strategies should be clear; decisions should be coordinated with the laboratories
  - Type of test (virologic vs serologic)
  - When and how
  - Interpretation...
Challenges and lessons learned

• Still too many things to learn...
  – Alternative samples
  – Immune response
  – Co / Re-infections
  – Vaccines

• Are we ready to move to an integrated-routine Influenza/COVID-19 laboratory surveillance...?
  – Careful and gradual transition
  – Clear laboratory algorithms
  – Pilots to better test the implementation
Gracias!!

PAHO
Laboratory Response Team
PAHO Influenza: http://www.paho.org/influenza
PAHO FluID: http://ais.paho.org/phi/viz/flumart2015.as
Influenza Regional Reports: http://www.paho.org/influenzareport
Severe acute respiratory infections network – SARI: http://www.sarinet.org
Gracias!
ricoj@paho.org