GIHSN 11TH GLOBAL ANNUAL MEETING

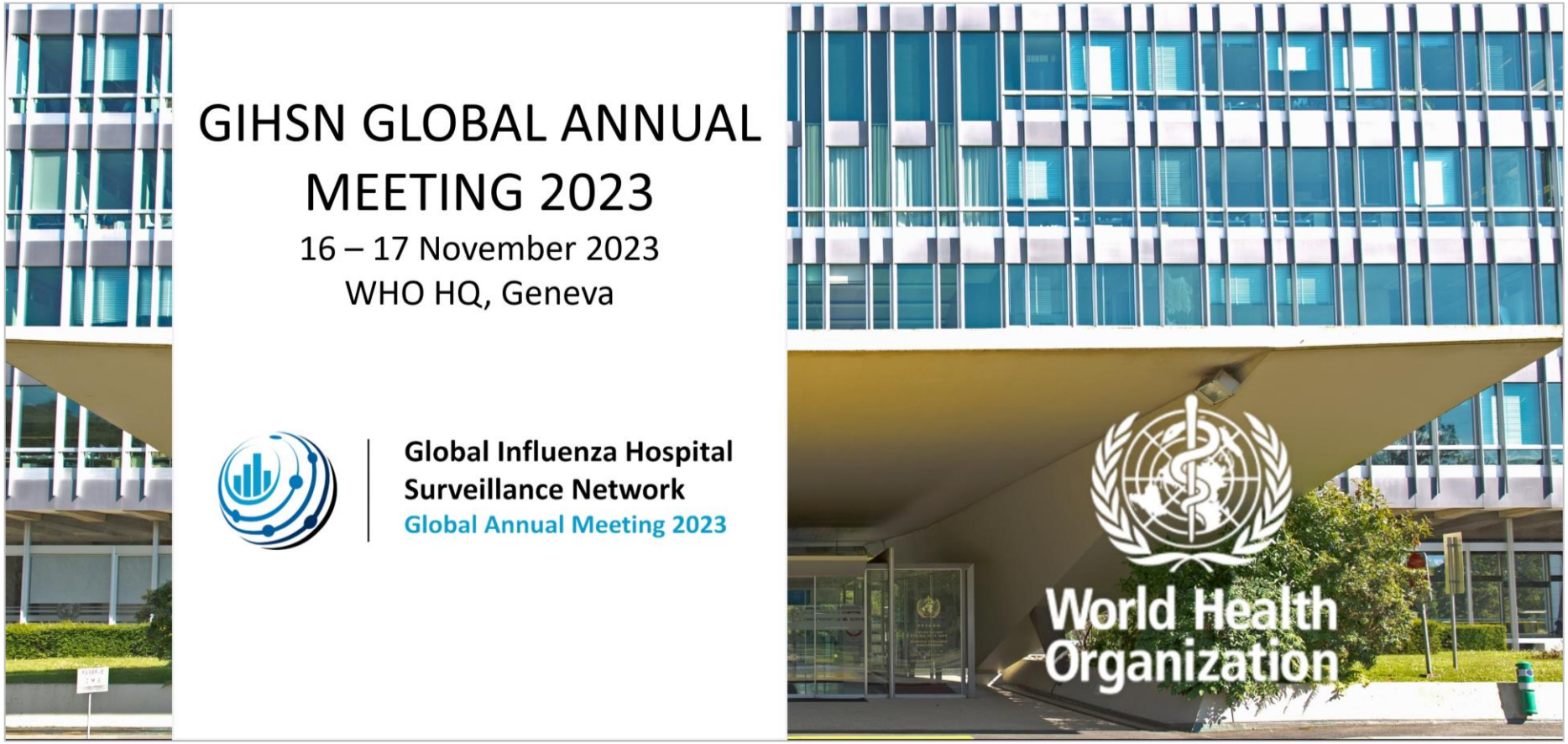
16-17 November 2023

Foundation for
Influenza
Epidemiology

Sous l'égide de

Fondation
de
France

WELCOME AND INTRODUCTION TO DAY 2



AGENDA DAY 2 AM

Time	Topic	Speaker
8:30 - 8:40	**Welcome & introduction to Day 2**	
8:40 - 10:10	**Building collaborations across networks to improve respiratory surveillance** *Presentations & discussion* - **The potential roles of GIHSN within the Mosaic respiratory surveillance framework** - **Strategic Action plan or the vision of Expanded GISRS** - **The Abbott Pandemic Defense Coalition**	Moderator: J A Mott J A Mott, WHO J-M Heraud, WHO F Averhoff, Abbott
10:10 - 10:30	Coffee break	
10:30 - 12:30	**Workshop: Excellence in implementation** *(GIHSN Sites + ISC members + FIE + all interested)* - **Protocol & timeliness of reporting** - **Sites' survey** - **Data quality & completeness** - **Laboratory protocol** - **Dashboard pilot**	Moderators: M Nunes & S Chaves
12:30 - 12:40	**Closing of the meeting**	W Zhang & C Mahé
12:40 - 14:00	Open lunch at WHO cafeteria	

Global Influenza Hospital Surveillance Network

BUILDING COLLABORATIONS ACROSS NETWORKS TO IMPROVE RESPIRATORY SURVEILLANCE

Moderator: Joshua MOTT, WHO

Foundation for Influenza Epidemiology

-Joshua MOTT, WHO
-Jean-Michel HERAUD, WHO, GIP
-Francisco AVERHOFF, Abbott

GIHSN 11TH ANNUAL MEETING, 16-17 NOVEMBER 2023

GIHSN AND THE MOSAIC RESPIRATORY SURVEILLANCE FRAMEWORK

Dr Joshua MOTT, WHO

Foundation for
Influenza
Epidemiology

GIHSN and the Mosaic Respiratory Surveillance Framework

Dr. Joshua Mott
Epidemic and Pandemic prevention and preparedness (EPP) Department, HQ/WPE/WHE, World Health Organization

Email: mosaic@who.int

WHO webpage: https://www.who.int/initiatives/mosaic-respiratory-surveillance-framework/

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Why do we have a Mosaic Framework?

- It is impossible to address the many complex needs of respiratory virus surveillance with a single surveillance system.

- Multiple systems and special studies must each be fit-for-purpose to specific priority surveillance objectives, and only together can they provide all needed information to policy-makers.

- In essence, each surveillance system or study fit together as “tiles in a mosaic” that allow to see the full picture of respiratory viruses.

- This mosaic framework therefore places systems represented by existing guidance into a context where they may address the objectives for which they are best intended.

- Member States requested a coordinated approach to **sustainable** monitoring of respiratory pathogens moving forward

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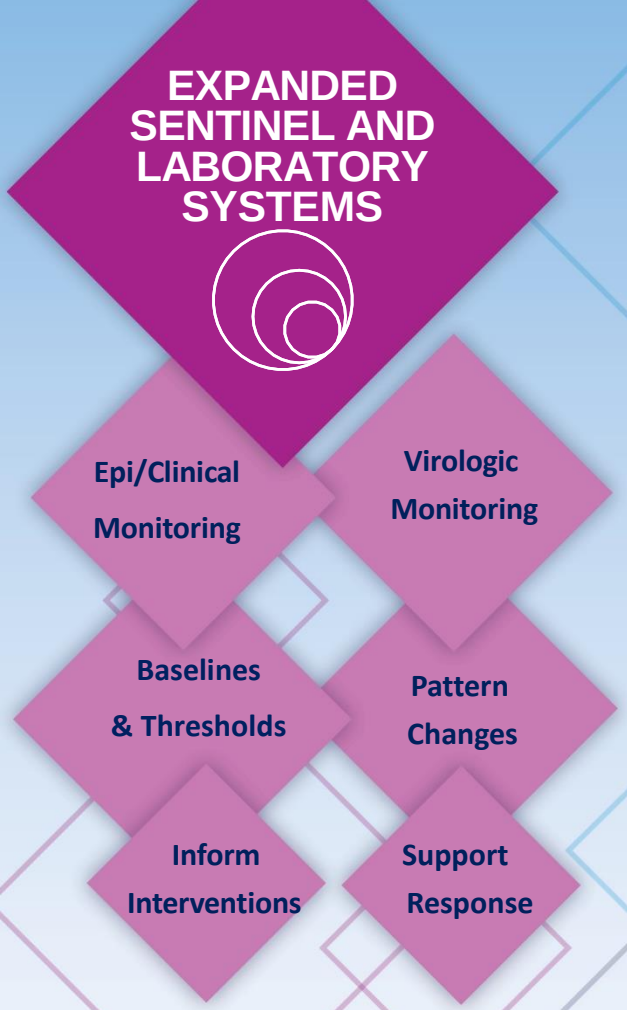

- **No surveillance system can be "everything to everyone"**
- Global need for a **strategic framework** to guide **countries** on using coordinated surveillance systems
- GIHSN has an important role to play in global collaborative surveillance

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EXPANDED SENTINEL AND LABORATORY SYSTEMS

- Epi/Clinical Monitoring
- Virologic Monitoring
- Baselines & Thresholds
- Pattern Changes
- Inform Interventions
- Support Response

ANIMAL-HUMAN INTERFACE

- Novel Viruses
- Emerging Variants

EVENT-BASED SURVEILLANCE

- Electronic Signal Monitoring & Verification
- Community & Heath Care EBS

OTHER SYSTEMS

- Notifiable Diseases
- Hospital Capacity Monitoring
- Clinical/ Hospital Platforms
- Mortality Monitoring
- High Risk Groups
- Medical Records Monitoring
- Participatory Surveillance
- Additional Lab Networks
- Wastewater Surveillance
- Pharmacovigilance

INVESTIGATIONS & STUDIES

- Transmission studies
- Vaccine studies
- Clinical care pathways evaluation
- Health & Economic Burden

Data ≠ Knowledge → each targeted to high priority local objectives, and fit-for-purpose to be resilient

GIHSN can play a critical role in collaborative surveillance

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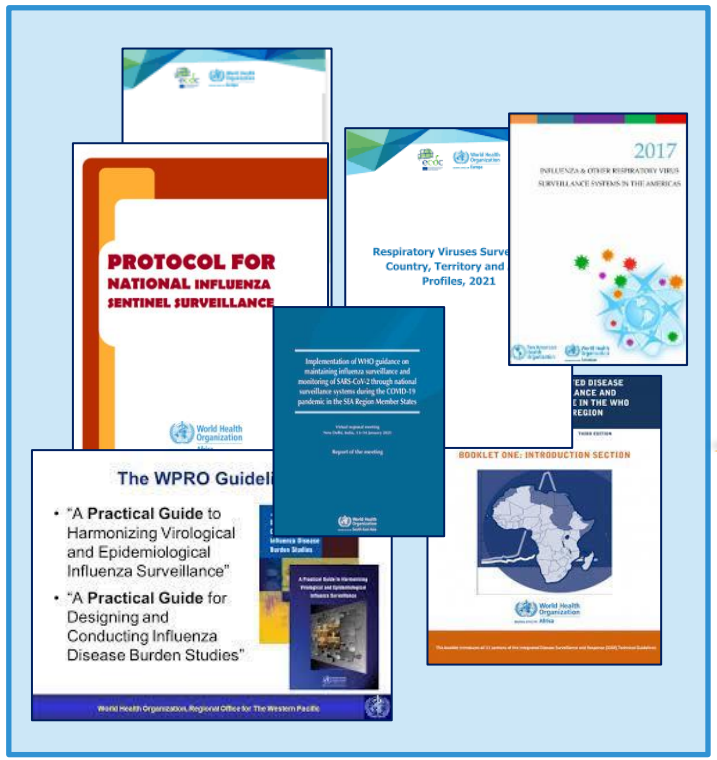
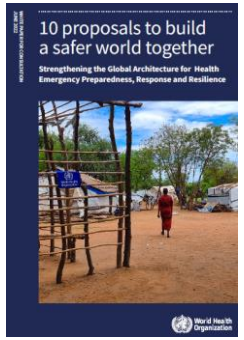
Mosaic Framework = Strategic framework

- Supports tactical implementation of HEPR & PRET ‘Collaborative Surveillance’
- Does not supersede other guidance, but provides context for their use

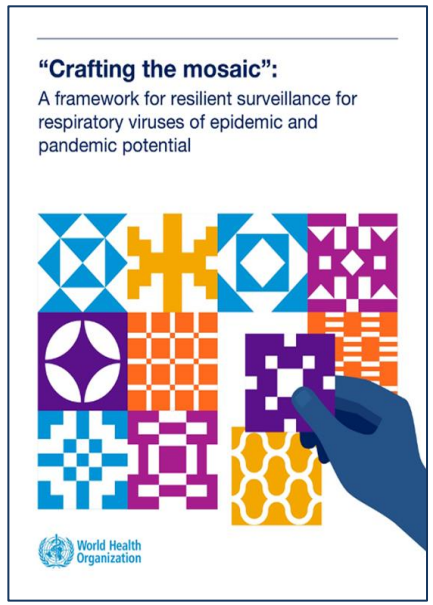
Regional Guidance



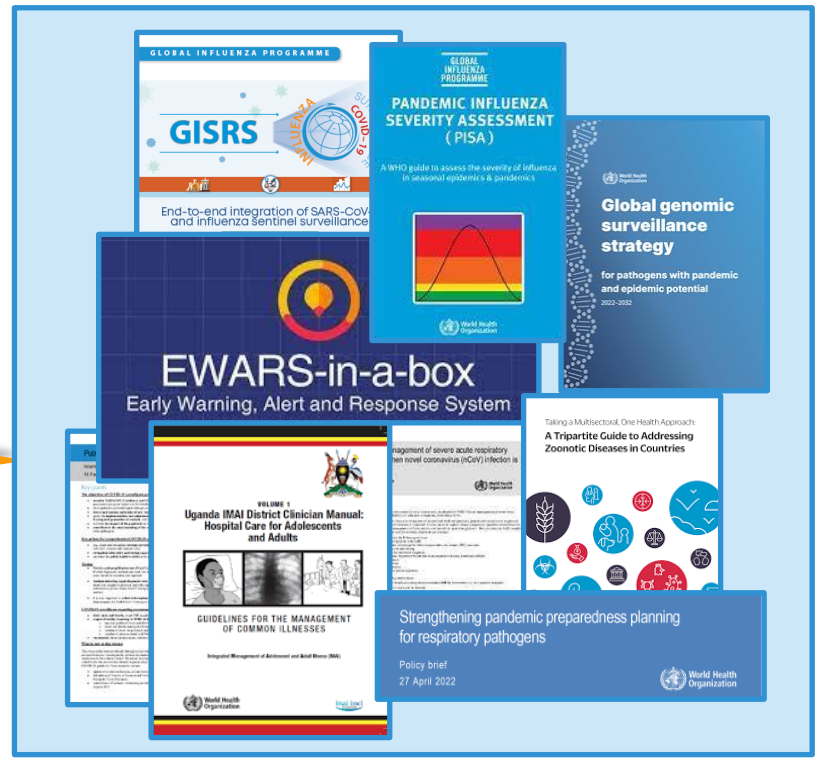


Global architecture (HEPR , PRET): under “Collaborative Surveillance”

PRET
Preparedness and Resilience for Emerging Threats



Global Guidance



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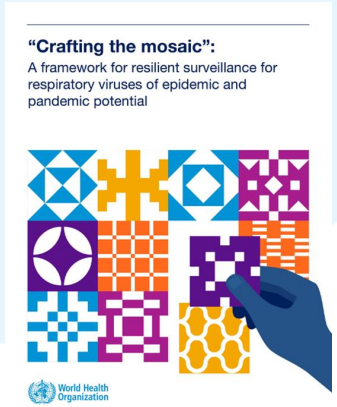
A framework for resilient surveillance for respiratory viruses of epidemic and pandemic potential: "CRAFTING THE MOSAIC"

SCOPE

A mosaic of efficient and well-coordinated surveillance systems to detect and monitor respiratory viruses with epidemic & pandemic potential



Surveillance domains

Domain I
DETECTION AND ASSESSMENT

Domain II
MONITORING EPIDEMIOLOGICAL CHARACTERISTICS

Domain III
INFORMING USE INTERVENTIONS

FOCUSED IMPLEMENTATION

Aim 1
Identify priority unmet surveillance objectives, and the systems that may be used to meet those objectives in a resilient manner over time

Aim 2
Prioritize needed surveillance enhancements drawing on lessons from the COVID-19 pandemic

Aim 3
Develop implementation plans to enhance surveillance according to their context and needs

Aim 4
Strengthen synergies between surveillance systems to meet different objectives and enhance response

Aim 5
Prioritize local and international partner technical assistance and financial investments

ENABLERS

- Governance
- Local priorities
- Technology
- Financing
- Innovations
- M&E

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Targeting surveillance approaches to the objectives they best address

Domain I:
Detection and assessment of an emerging or re-emerging respiratory virus

Surveillance objectives

1. Rapidly detect emerging or re-emerging respiratory virus outbreaks and other events
2. Assess transmissibility, risk factors for transmission, and extent of infection from an emerging or re-emerging respiratory virus
3. Describe clinical presentation and risk factors for severe outcomes associated with an emerging or re-emerging respiratory virus

Domain II:
Monitor epidemiological characteristics of respiratory viruses in interpandemic periods

Surveillance objectives

1. Monitor epidemiologic and clinical characteristics of illness over time
2. Monitor virologic and genetic characteristics of circulating viruses
3. Monitor situation in high-risk settings and vulnerable populations
4. Monitor impact on and coping abilities of health care systems

Domain III:
Informing use of human health interventions

Surveillance objectives

1. Monitor the impact of non-medical interventions in the population
2. Provide candidate vaccine viruses for vaccine composition, production, and risk assessment
3. Monitor vaccine coverage, effectiveness, impact, and cost-effectiveness
4. Monitor the effectiveness of antivirals and other therapeutics
5. Monitor the effectiveness of diagnostic tests
6. Monitor the effectiveness of clinical care pathways, including Infection, Prevention and Control (IPC)
7. Monitor adverse events to vaccines and therapeutics

Framing objectives into policy-relevant questions

- Is there an emerging respiratory of virus of pandemic potential in my country?
- Does this emerging virus spread easily in humans?
- How severe is the clinical presentation of this emerging virus?
- Who are the high-risk groups for infection and severe complications?

- Are we moving into an epidemic period or season for virus circulation?
- Is this season or a “bad season” compared to others?
- Are my health care systems coping?
- What are the genotypic and phenotypic characteristics of circulating viruses?
- What are the clinical and epidemiologic characteristics associated with infection? Have they changed?
- What is the impact in high-risk groups and settings?

- Are current vaccines and medications effective?
- How can we improve our clinical care?
- Is the vaccine well-matched to viruses in our country?
- Have PHSM affected the transmission of viruses in our country?
- What is the uptake of current interventions and are there adverse events?

Mosaic developed with regions and countries

- ✓ **Country inputs** gathered using regional surveys, online country-level surveys, focused country discussions, regional country consultations.
- ✓ Consolidated results then served as the foundation for a **WHO global consultation** in May 2022, with attendees from countries, WHO, and external partner and donor organizations
- ✓ Rounds of inputs on draft documents through internal WHO WG (**HQ all Dep & ROs)** and **external partners & donors**
- ✓ **Public comments** period on WHO web

	WHO REGIONS					
	AFR	EMR	EUR	AMR	SEAR	WPR
Country-level survey	X		X		X	X
Regional office survey	X	X	X	X	X	X
Country focused discussions	X		X			
Country consultations		X	X	X	X	

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https://www.who.int/initiatives/mosaic-respiratory-surveillance-framework/

Global Regions Select language

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Health Topics Countries Newsroom Emergencies Data About WHO

Mosaic Respiratory Surveillance Framework

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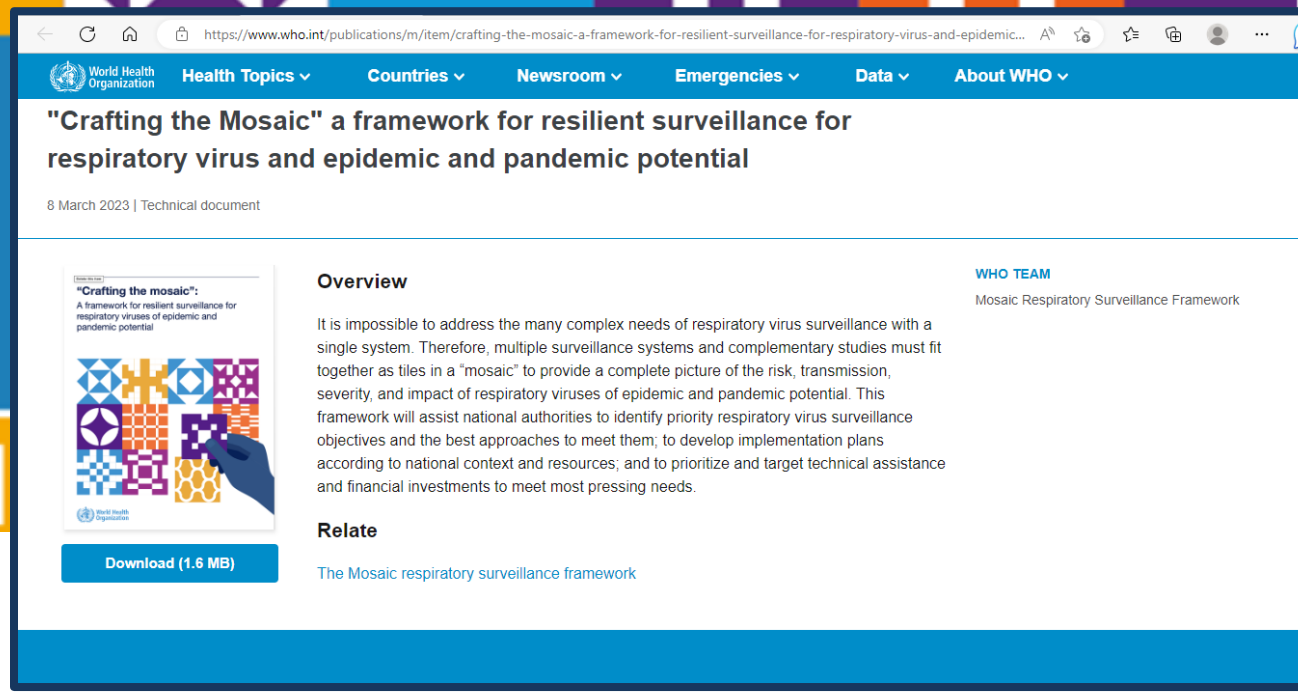

Mosaic compass

Mosaic framework

The **mosaic compass** Click to view → (pages 1-15) provides the key recommendations of the complete mosaic framework, including suggested core and enhanced surveillance approaches to be used within early warning, sustainable monitoring and intervention assessment surveillance domains. These surveillance approaches are presented for quick review by domain within figures.

The **mosaic framework** Click to view → (pages 16-66) may also be read as a stand-alone document. This longer document includes all descriptions and rationale for each surveillance approach, additional topics, and case studies of implementation in context.

Click to view more

Within both the **mosaic compass**, and **mosaic framework** the reader is encouraged to click on each of the surveillance approaches within the mosaic figures to be taken to a more detailed description of the surveillance approach and the rationale for its suggested positioning within the mosaic.

Furthermore the viewer can click on the variety of special topics, global initiatives, innovations in surveillance, case studies and a section on implementation planning to obtain more topic-specific information.

To then return to relevant key sections of the document, the viewer can utilize the navigation bar at the bottom of the page.

Contents | Mosaic compass | Mosaic Framework | Cross-cutting surveillance | Scaling | Implementation

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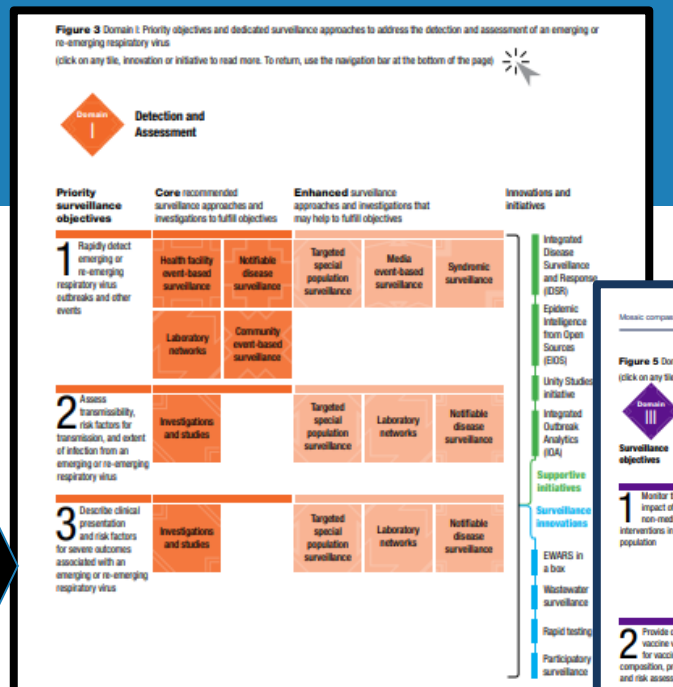
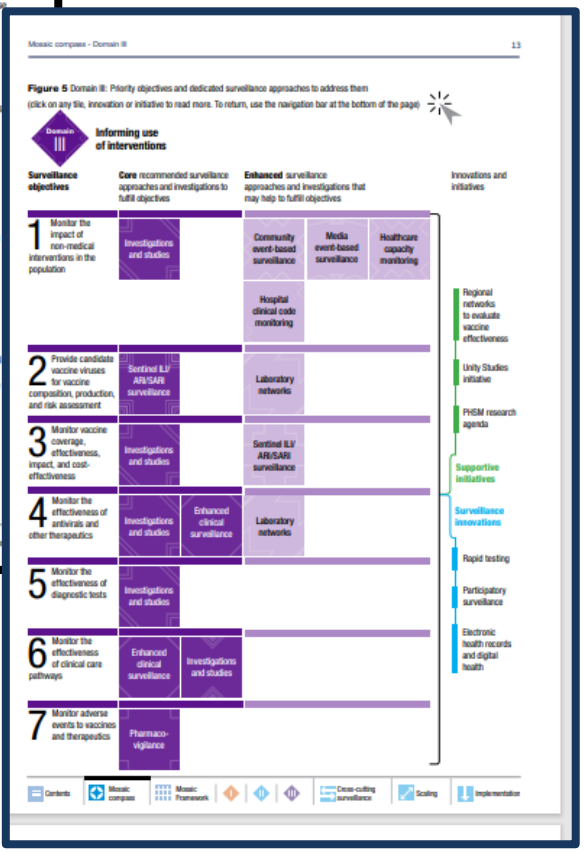
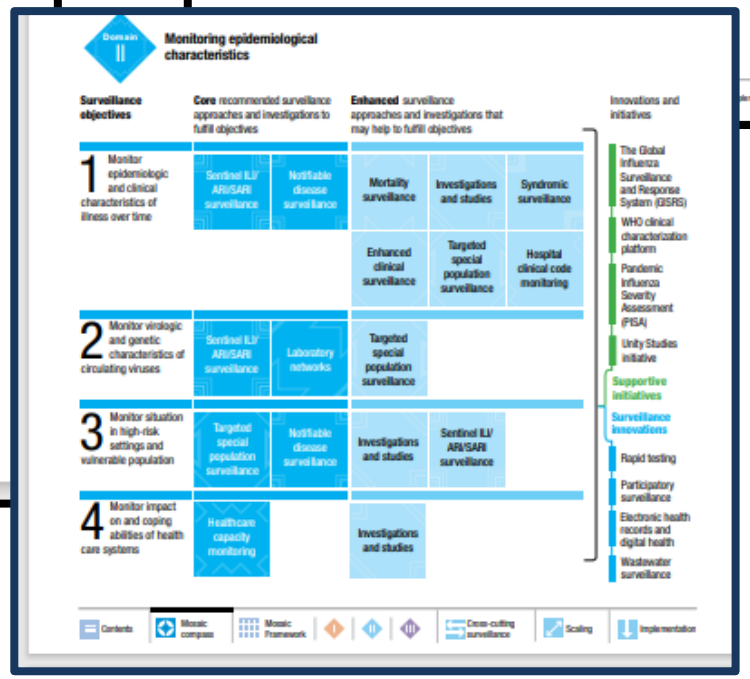
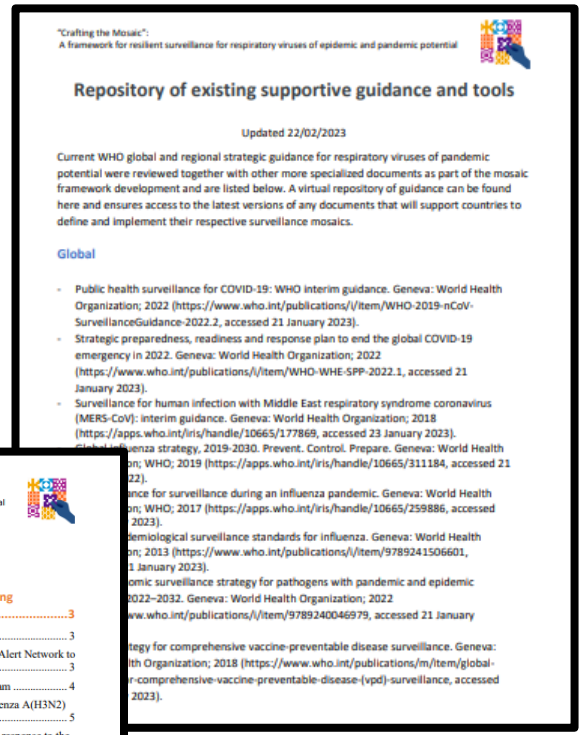






Added topics and resources

Translated into:
Arabic
English
French
Mandarin
Portuguese
Russian


"Crafting the Mosaic":
A framework for resilient surveillance for respiratory viruses of epidemic and pandemic potential

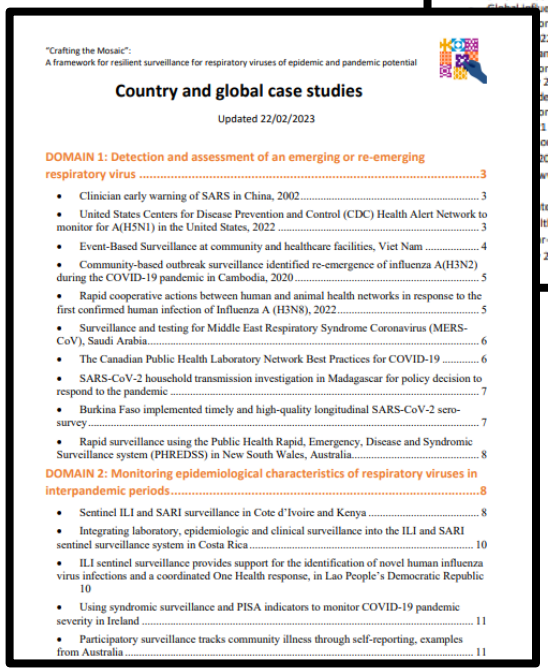
Repository of existing supportive guidance and tools

Updated 22/02/2023

Current WHO global and regional strategic guidance for respiratory viruses of pandemic potential were reviewed together with other more specialized documents as part of the mosaic framework development and are listed below. A virtual repository of guidance can be found here and ensures access to the latest versions of any documents that will support countries to define and implement their respective surveillance mosaics.

Global

- Public health surveillance for COVID-19: WHO interim guidance. Geneva: World Health Organization; 2022 (https://www.who.int/publications/i/item/WHO-2019-nCoV-SurveillanceGuidance-2022.2, accessed 21 January 2023).
- Strategic preparedness, readiness and response plan to end the global COVID-19 emergency in 2022. Geneva: World Health Organization; 2022 (https://www.who.int/publications/i/item/WHO-WHE-SPP-2022.1, accessed 21 January 2023).
- Surveillance for human infection with Middle East respiratory syndrome coronavirus (MERS-CoV): interim guidance. Geneva: World Health Organization; 2018 (https://apps.who.int/iris/handle/10665/177869, accessed 23 January 2023).


"Crafting the Mosaic":
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Country and global case studies

Updated 22/02/2023

Also…

- **Brochures**
- **Slide sets**
- **Publications**
- **Implementation tools**

Addressing clinical monitoring needs together within in a respiratory surveillance mosaic

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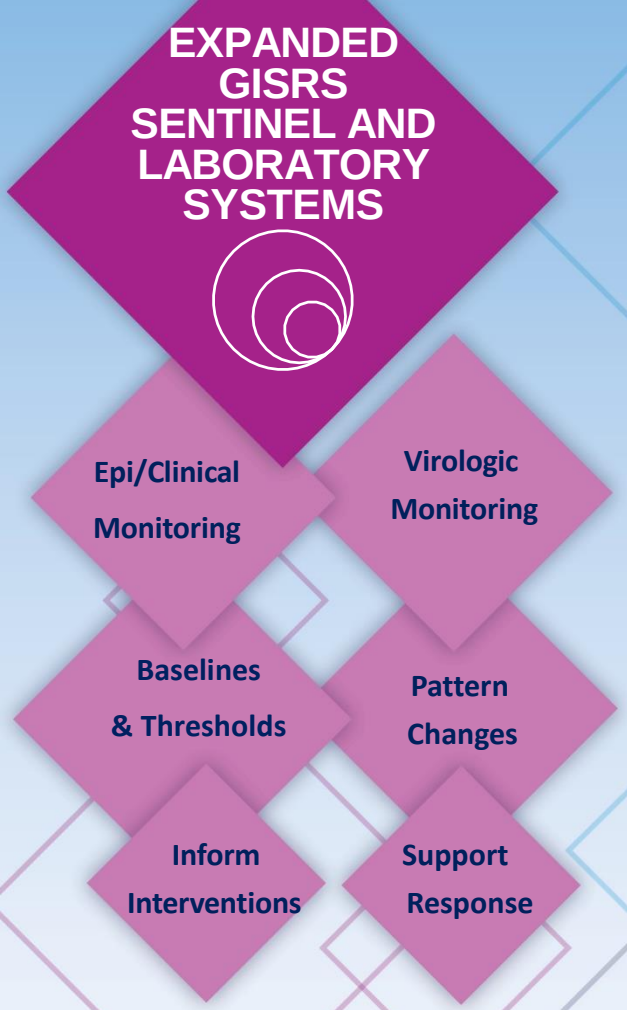

*Primary * objectives of expanded GISRS surveillance*

1. Monitor epidemiologic and clinical characteristics of acute respiratory infections at the national, regional, and global level

2. Monitor virologic patterns, and viral and genetic characteristics of circulating viruses causing acute respiratory infections at the national, regional, and global level

3. Provide platforms, tools, and evidence base to guide national, regional and global public health action

4. Function as part of broader early warning surveillance

Adapted from WHO Mosaic Respiratory Surveillance Framework and the WHO End-to-end integration of SARS-CoV-2 and influenza sentinel surveillance: revised interim guidance

*** all countries would be expected to address these for pathogens under surveillance**

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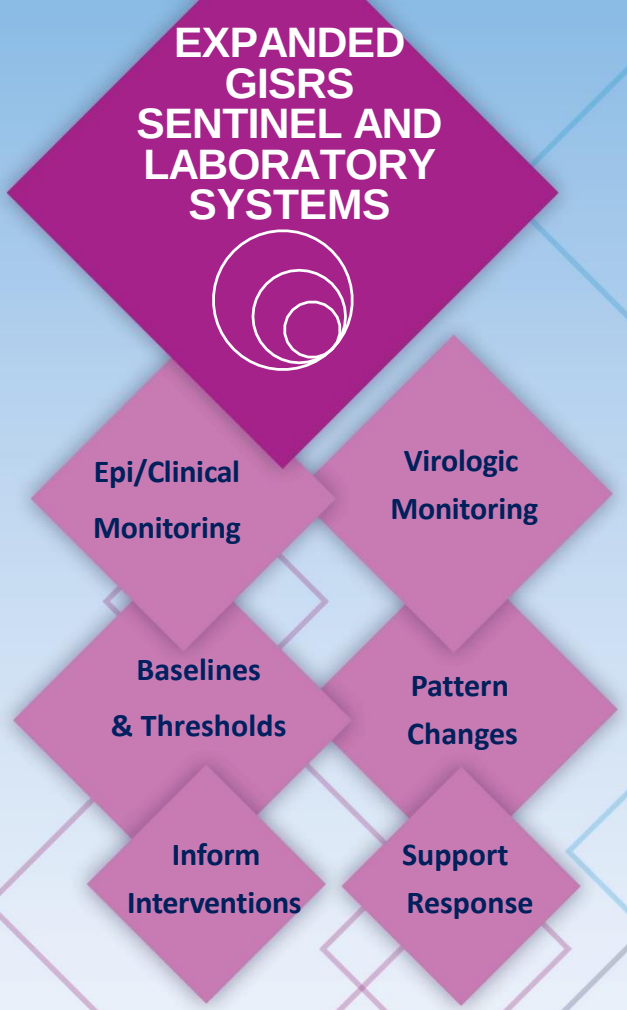

*Secondary ** objectives of expanded GISRS surveillance*

1. Monitor clinical seriousness of disease, and/or high risk groups or settings in sentinel sites

- Estimate case fatality proportions in the health care setting, monitor ICU admissions and/or deaths etc.
- Collect routine data to inform clinical care pathway improvements
- Monitor specific high-risk populations and groups beyond those defined by age and basic demographic characteristics

**** some countries might address these objectives for pathogens under surveillance**

NOTE 1: Secondary objectives may be primary in some countries depending on local needs and capacity
NOTE 2: COVID-19 patterns need to be monitored to establish thresholds over time, and some threshold setting may not be feasible yet.

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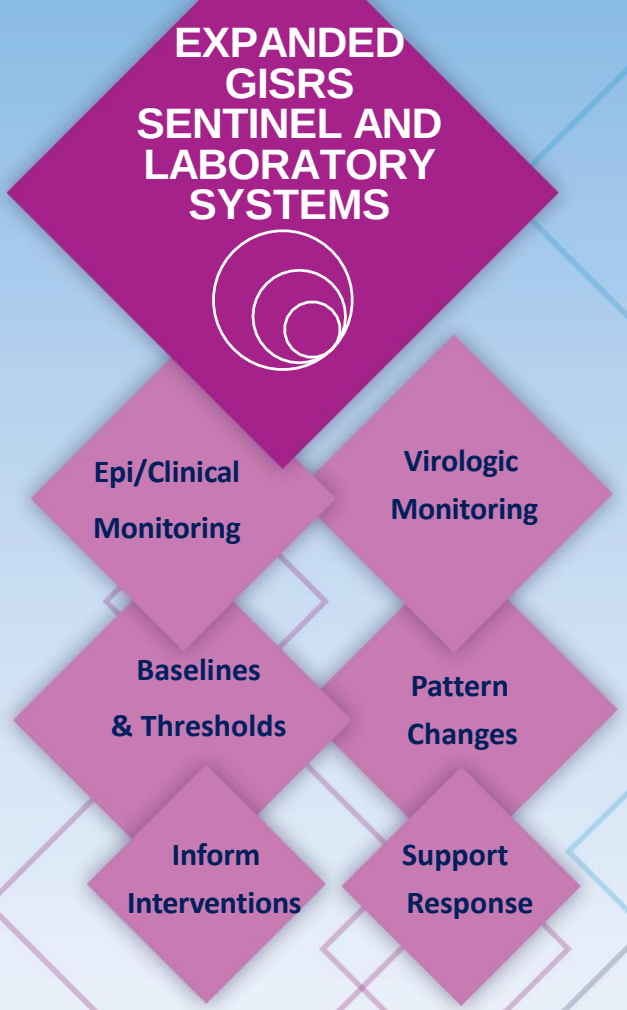

*Secondary ** objectives of expanded GISRS surveillance*

2. Provide a platform for special investigations or time-limited specialized surveillance

- Monitor vaccine and treatment effectiveness
- Monitor antiviral resistance patterns and inform treatment guidelines
- Monitor specific short and longer-term outcomes
- Support estimation of population-based burden of disease
- Support pilot studies to assess the feasibility of additional virus integration
- Support targeted assessments of cost effectiveness of interventions
- Support evaluation of the impact of public health and social measures
- Additional studies

**** some countries might address these objectives for pathogens under surveillance**

NOTE 1: Secondary objectives may be primary in some countries depending on local needs and capacity
NOTE 2: COVID-19 patterns need to be monitored to establish thresholds over time, and some threshold setting may not be feasible yet.

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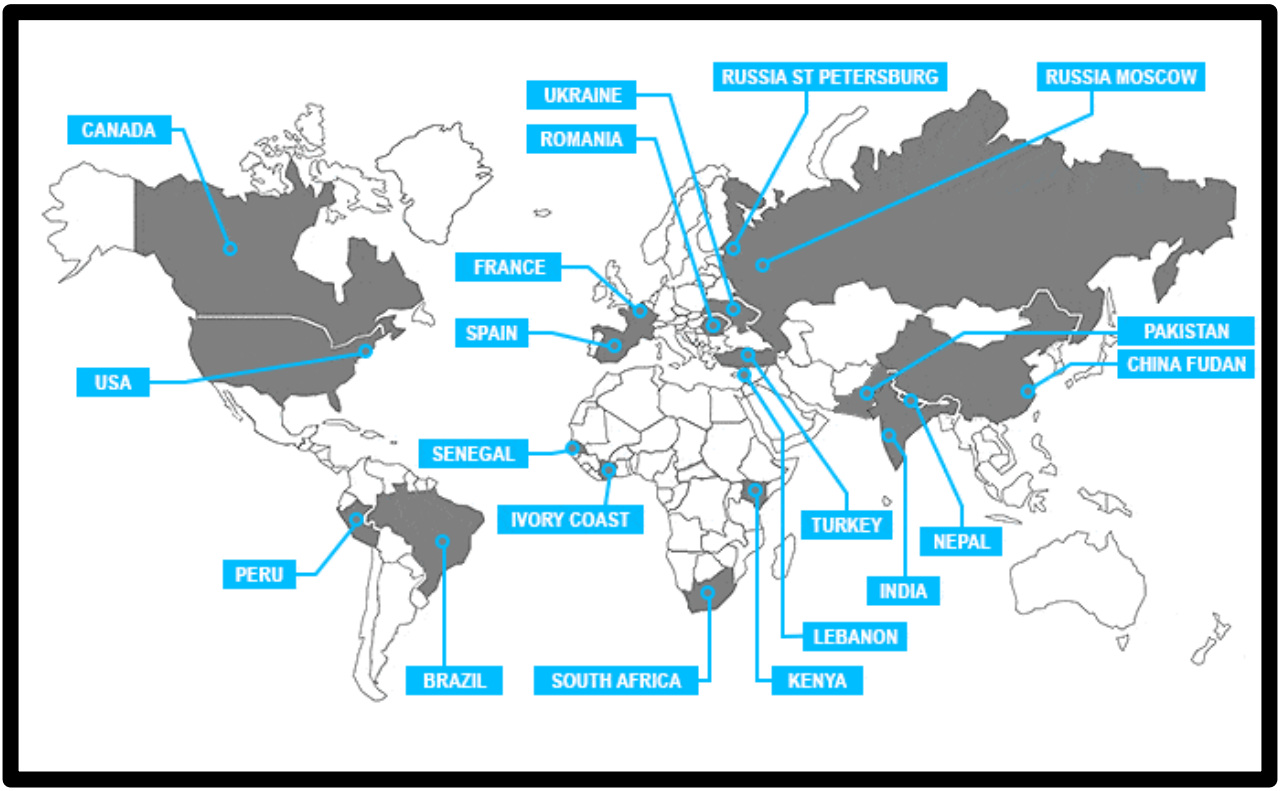
Summary : Possible GIHSN contributions to national mosaics for influenza and ORV



- Estimate critical parameters for disease severity in the health care setting
- Collect and analyze data to inform treatment effectiveness and clinical care pathway improvements
- Monitor specific high-risk populations and groups beyond those defined by age and basic demographic characteristics
- Monitor specific short and longer-term clinical outcomes
- Support evaluation of the impact of public health and social measures
- Additional surveillance and studies!

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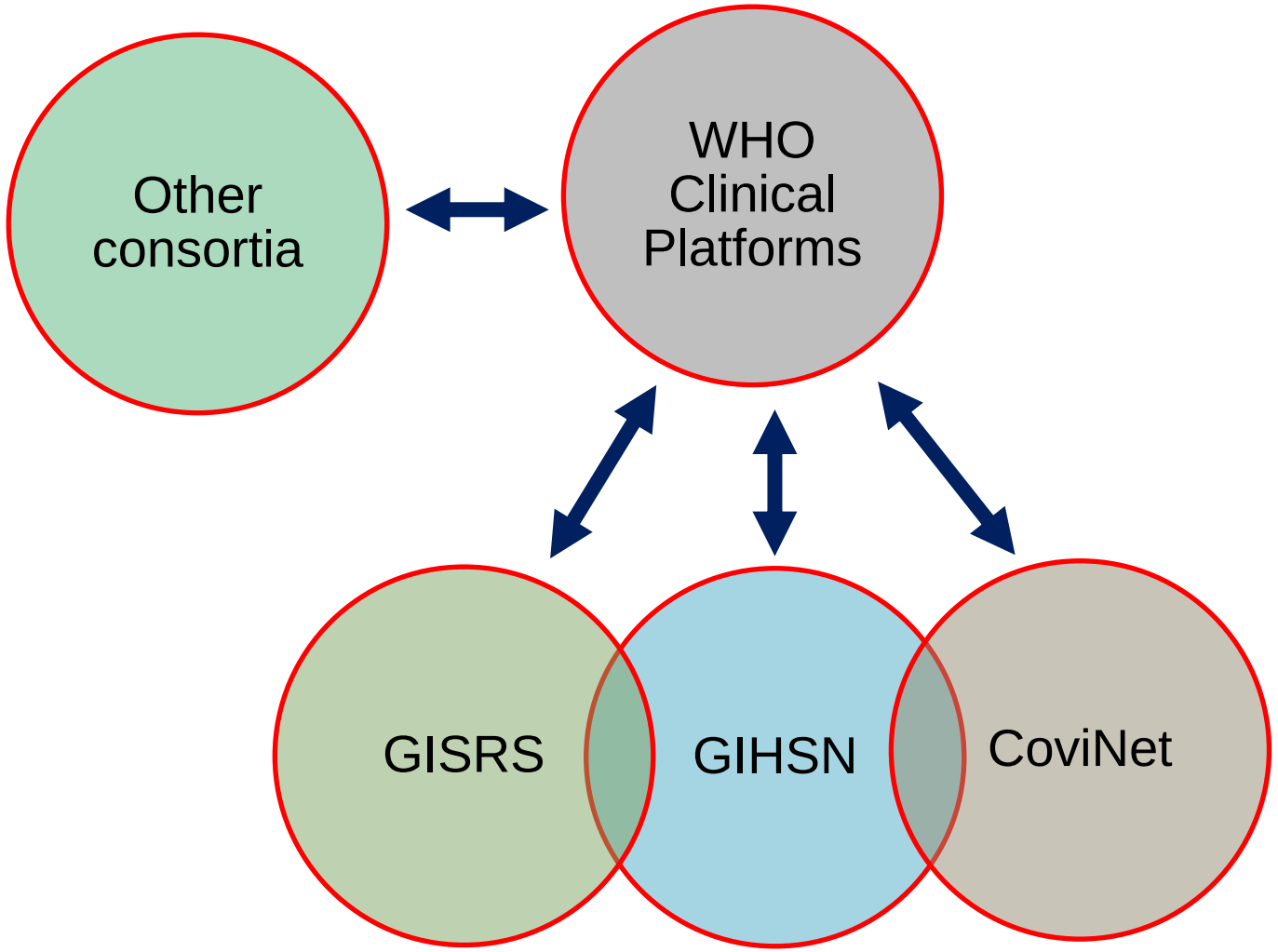
GIHSN collaboration with additional clinical networks, platforms, and protocols



and additional networks…

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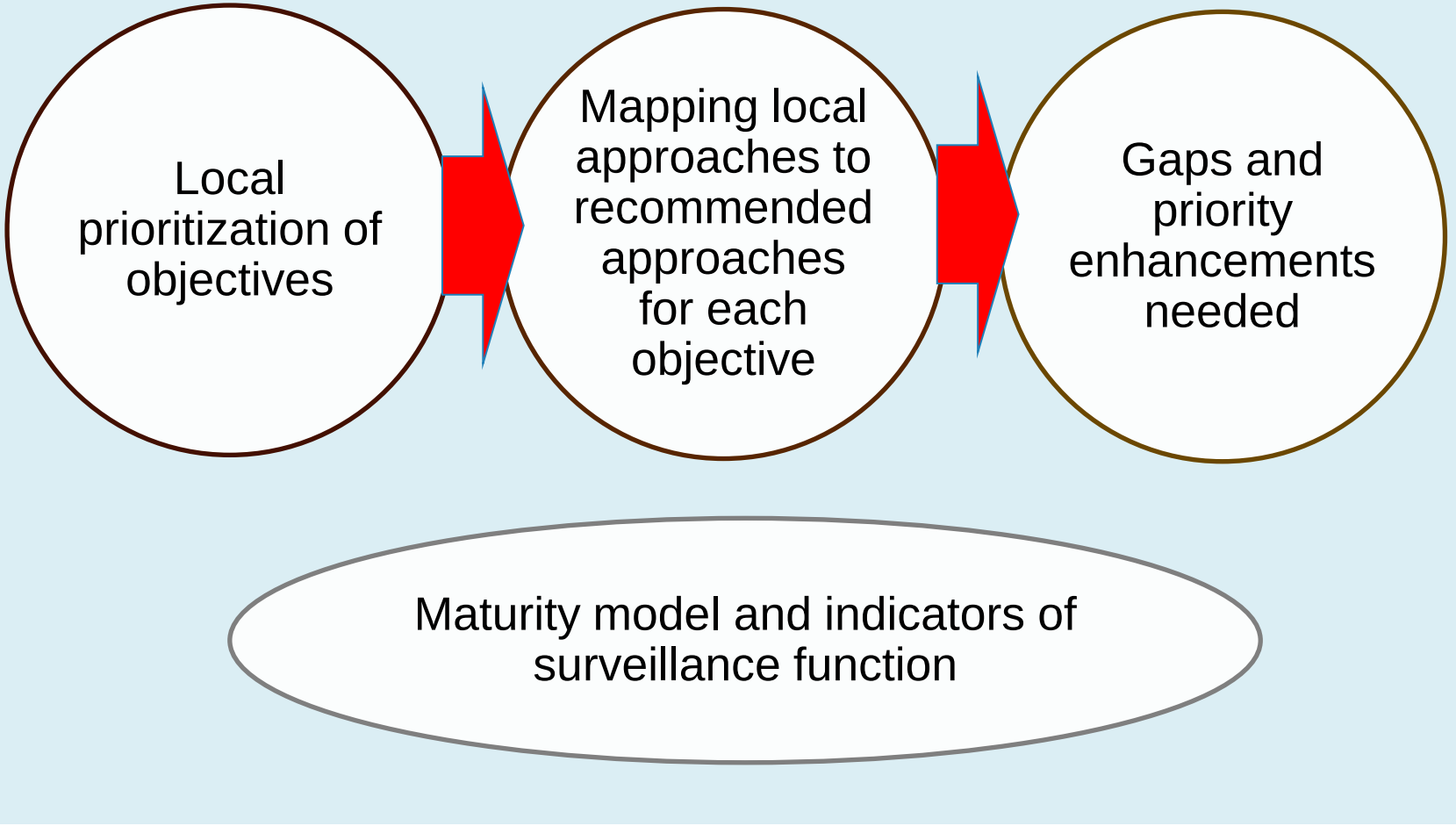
Moving forward: GIHSN integration into mosaic national workshop discussions?

"Crafting the mosaic":
A framework for resilient surveillance for respiratory viruses of epidemic and pandemic potential



Email: mosaic@who.int

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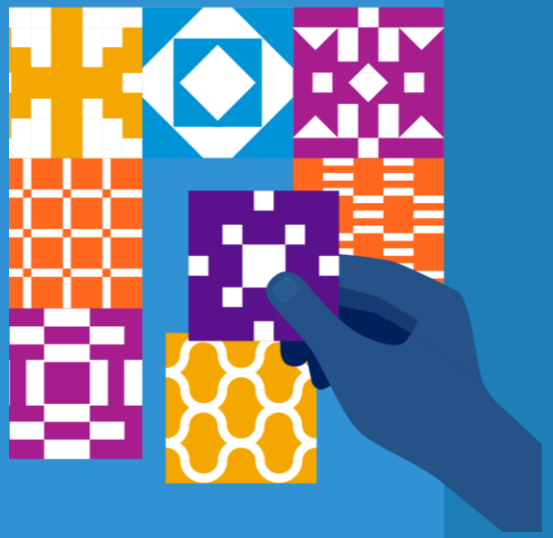

Acknowledgements:
WHO Member States, Technical Working groups members, partners and donors involved in developing the framework

Thank you

WHO Mosaic Respiratory Surveillance Framework (https://www.who.int/initiatives/mosaic-respiratory-surveillance-framework/)

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Contact: mosaic@who.int

GIHSN 11TH ANNUAL MEETING, 16-17 NOVEMBER 2023

EXPANDED GISRS

Dr Jean-Michel HERAUD, WHO, GIP

Foundation for
Influenza
Epidemiology

Expanded GISRS:

Advancing GISRS beyond influenza

Global Influenza Programme (GIP), WHO HQ

Dr Jean-Michel HERAUD

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Why expanded GISRS?

More than 70 years of experience in detecting & monitoring influenza annually and through multiple pandemics.

GISRS operates in 129 WHO Member States, covering most areas of the world.

Pivotal role during outbreaks due to influenza, but also to non-influenza viruses

GISRS can be used as a “backbone” for leveraging non-influenza respiratory viruses for public health needs.

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The value of expanding GISRS

An efficient global system of integrated surveillance and response to influenza and other priority respiratory viruses with epidemic or pandemic potential

Scope of *e*-GISRS

***e*-GISRS** will focus on Influenza and other priority respiratory viruses

***e*-GISRS** will take a collaborative public health intelligence approach. Establish/strengthen coordination with other networks for the early detection of outbreaks, monitoring spread and evolution, and informing countermeasures.

Virus with a predominant respiratory mode of transmission

novel or known with epidemic or pandemic potential

Surveillance directly informs prevention and control.

Can be integrated cost-effectively and seamlessly into the existing GISRS operation

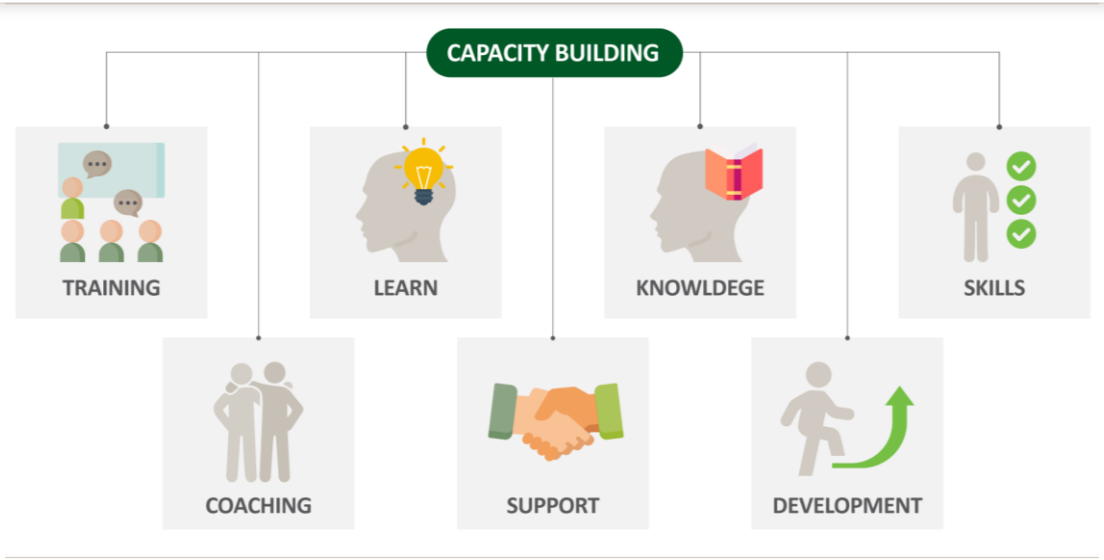
Function of *e*-GISRS

Provide guidance, best practices, expertise and technical support to partners

Continue operating mechanisms for **global vaccine strain selection**.

Support national, regional, and global **influenza pandemic preparedness** activities

Primary Focus



Capacity-building at national and regional/global levels for the integrated surveillance of influenza and other respiratory viruses **using the existing GISRS system** (infrastructure, workforce, trust and confidence)

Expanding GISRS to non-influenza respiratory viruses (including SARS-CoV-2 and RSV)

Epidemiologic surveillance

- Support countries for implementation of integrated surveillance
- Produce charts/dashboards on relative co-circulations of influenza and SARS-CoV-2 at different level
- Analytical tools developed for influenza being reviewed and expanded for use in non-influenza virus surveillance
- Operational tools for integrated surveillance being reviewed and updated (e.g., case definitions, sizing, …)

Integrated surveillance into GISRS is generating results *&* considered as the sustainable approach for the surveillance of respiratory viruses globally

Laboratory surveillance

- Capacity building for the detection of non-influenza viruses (SARS-CoV-2) (training, reagents, EQAP)
- Leverage where needed genomic surveillance capacity
- Support NICs (algorithms and reagents being reviewed and updated to integrated surveillance)
- Standards, norms, best practices from GISRS influenza surveillance being adapted for non-influenza respiratory viruses

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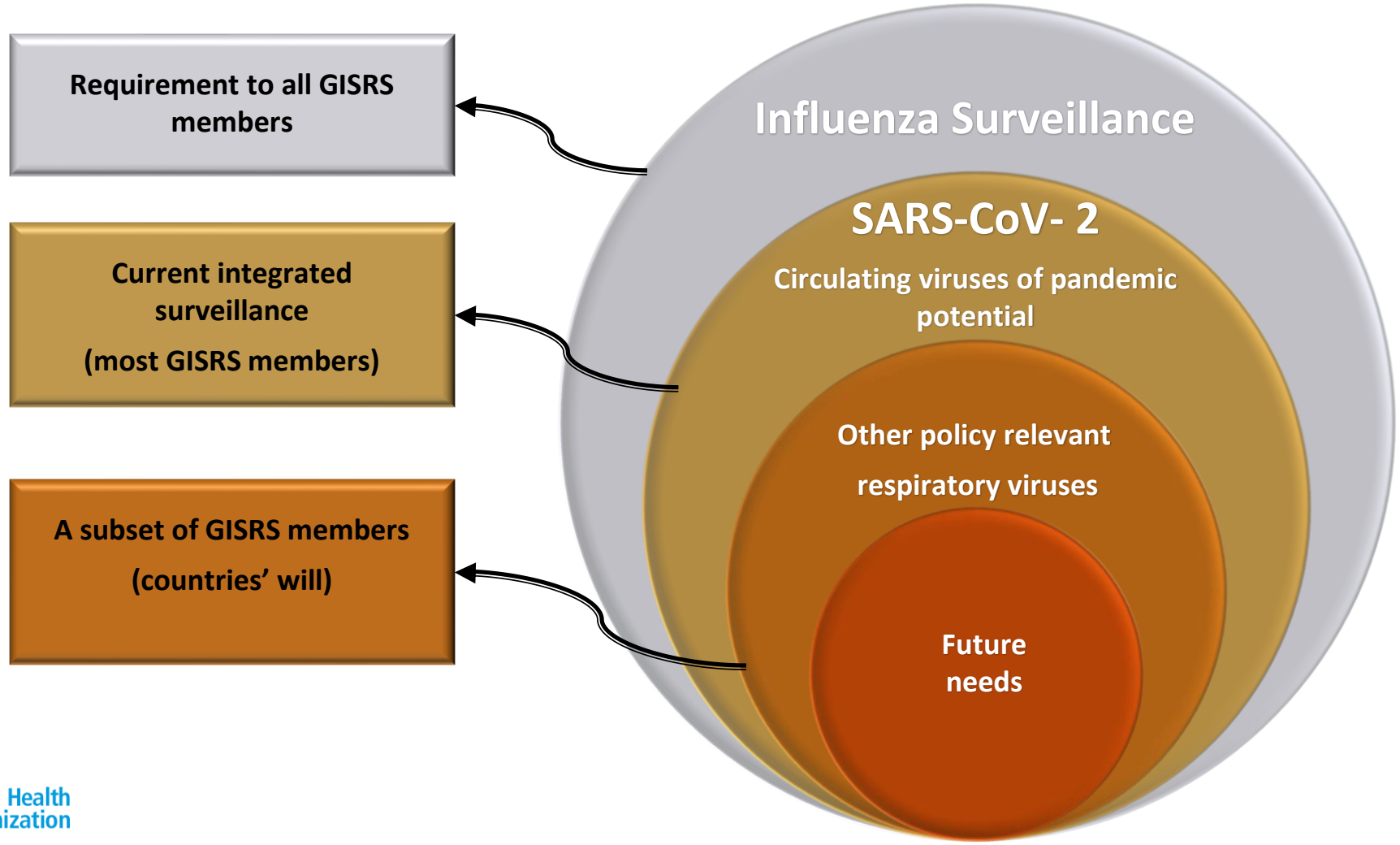
A modular approach adapted to countries' needs



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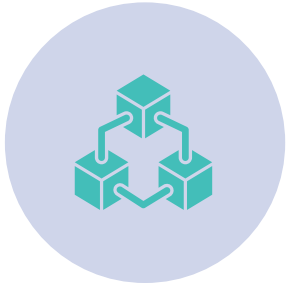
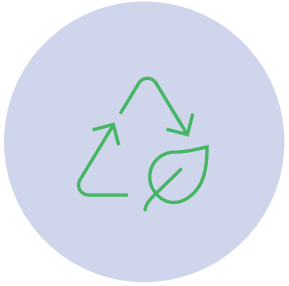
Strategic priority areas

1. ENHANCE GLOBAL SURVEILLANCE OF INFLUENZA AND OTHER RESPIRATORY VIRUSES



2. ESTABLISH A COORDINATION MECHANISM, POLICIES AND GUIDANCES OF THE INTEGRATED SURVEILLANCE OF INFLUENZA AND OTHER RESPIRATORY VIRUSES



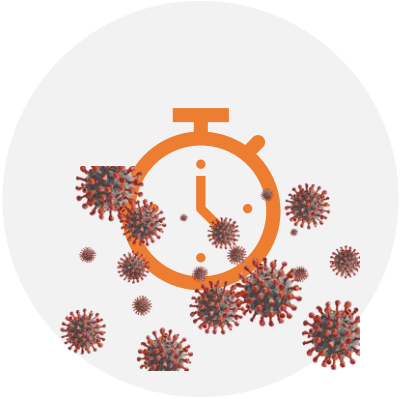
3. IDENTIFY AND PRIORITIZE SUSTAINABLE MECHANISM AND INVESTMENTS FROM STAKEHOLDERS AND TECHNICAL PARTNERS

4. IMPLEMENT COMMUNICATION ON INTEGRATED SURVEILLANCE OF INFLUENZA AND OTHER RESPIRATORY VIRUSES

Conclusions

B E N E F I T S

Expanded GISRS is a great opportunity to leverage global surveillance of respiratory pathogens of epidemic and pandemic potentials



IDENTIFY TIMELY NEW EMERGENCES AND IMPLEMENT RAPID RESPONSE TO CONTAIN AND REDUCE BURDEN

ALTHOUGH SOURCING IS IMPORTANT TO IMPLEMENT AND MAINTAIN THIS SYSTEMS, IT IS LESS COSTLY THAN SEPARATE SYSTEMS (SAME STAFFS, SAME SITES, SAME EQUIPMENT)

COUNTRIES HAVE THE OWNERSHIP OF THEIR DATA AND RESULTS

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Conclusions

CHALLENGES

- Data quality, timeliness and completeness
- Leverage digitalization of data collection and inter-operability between systems (avoiding double entries and reporting)
- Establish an efficient coordination mechanism
- Workload to collect and interpret data, and time to generate reports.
- How to define threshold, intensity, severity for new pathogens without prior historical data?
- Implications of co-circulation and co-infection of viruses (add complexity to public health surveillance)

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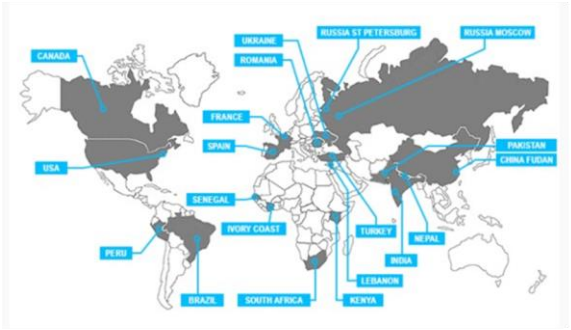
Building collaboration with GISHN

Global Influenza Hospital Surveillance Network

Expanded GISRS: a **global platform** bringing together key players towards public health objectives

GISHN



GISRS

Global Influenza Hospital Surveillance Network

e-GISRS
EXPANDED GLOBAL INFLUENZA SURVEILLANCE & RESPONSE SYSTEM
Uniting the world in the fight against respiratory viruses

- Data Sharing
- Enhanced surveillance
- Severity-Mortality assessment

World Health Organization

Acknowledgements

- **WHO GISRS members**
- **Countries** hosting GISRS institutions
- GISRS **partners**
- WHO **Global Influenza Programme HQ**, WHO Regional Offices

WHO Global Consultation on Advancing GISRS

- **Location:** Abu Dhabi (UAE)
- **Date:** December 11-13, 2023
- **Specific objectives:**
    - Review and revise the integrated surveillance components of GISRS (lab/Epi)
    - Review the surveillance landscape and identify linkages between GISRS and other key partners (non-sentinel surveillance systems, clinical studies, non-influenza experts…);
    - Develop A Coordination Mechanism of Expanded GISRS

World Health Organization

GIHSN 11TH ANNUAL MEETING, 16-17 NOVEMBER 2023

THE ABBOTT PANDEMIC DEFENSE COALITION

Francisco AVERHOFF, Abbott

Foundation for
Influenza
Epidemiology

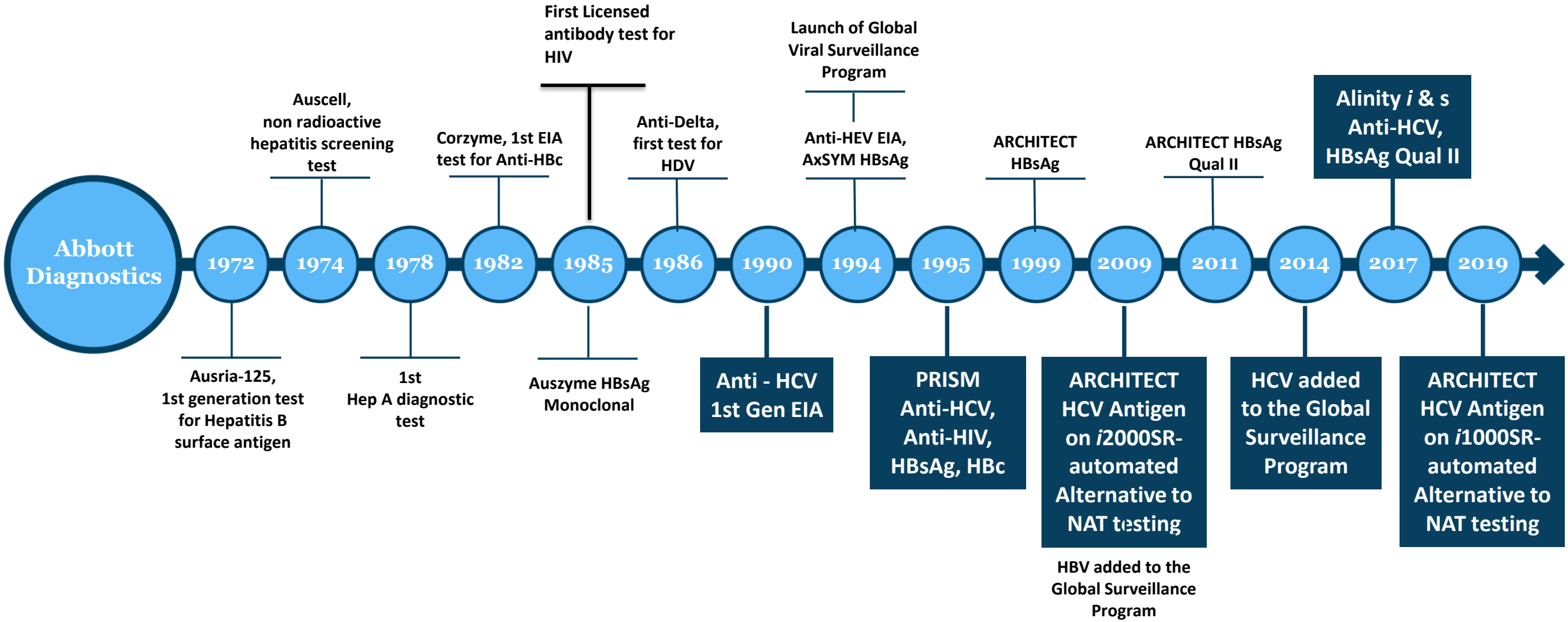
ABBOTT PANDEMIC DEFENSE COALITION

A Public – Private Initiative for Pandemic Preparedness

GIHSN Meeting, Geneva, 16 – 17 Nov 2023

Francisco Averhoff MD, MPH
Medical Director, Infectious Diseases Research

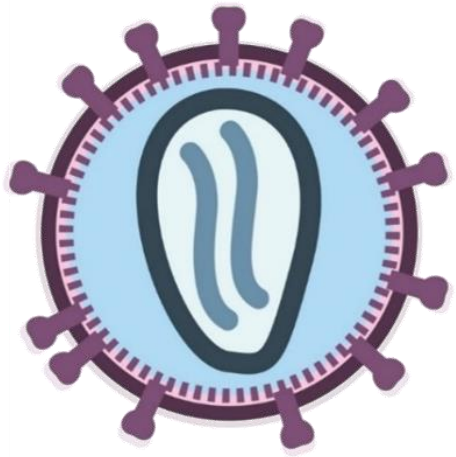
Bloodborne Pathogens (HIV, VIRAL HEPATITIS) Innovation, 1972 - Present



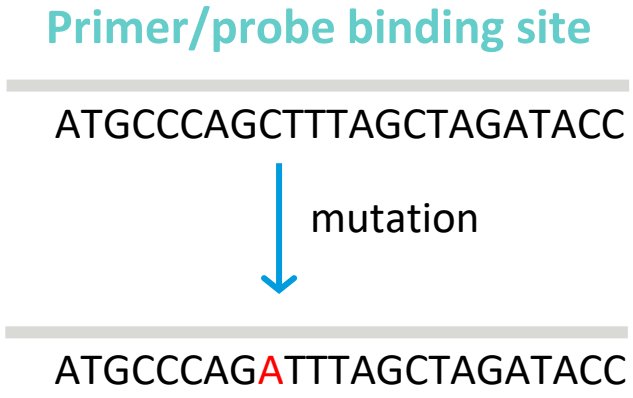
Virus diversity can impact performance of diagnostic and screening tests

Diagnostic and blood screening tests fundamentally rely upon sequence conservation

SEROLOGY



MOLECULAR



Abbott tests are used to screen > 60% of worlds blood supply:
Critical need to ensure tests detect variant/new strains (HIV, HBV, HCB)

GLOBAL BLOODBORNE VIRUS SURVEILLANCE PROGRAM, 1994- PRESENT

- Surveillance for variants of HIV, HBV, HCV (variant surveillance)
- Partners in over 40 countries on six continents
- Over 100,000 specimens collected and studied

PREPARING FOR THE NEXT PANDEMIC

Viral Surveillance enabled Abbott's COVID response

OUTBREAK IDENTIFIED

First cases outside of China

Italy cases spike

European lockdowns begin

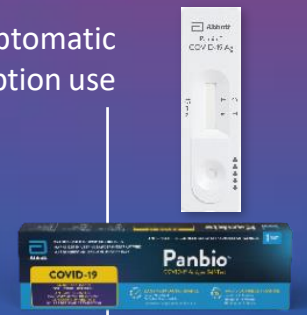
WHO DECLARES GLOBAL PANDEMIC

U.S. stay-at-home order begins

FDA approves at-home use of BinaxNOW

BinaxNOW available for direct purchase

Panbio self-test for asymptomatic over-the-counter non-prescription use



January – February	March	April	May	June	Q3	Q4	2021 – Present

*m*2000

ID NOW

ARCHITECT

ALINITY i

ALINITY m

PANBIO ANTIBODY

PANBIO ANTIGEN

BINAXNOW/ NAVICA

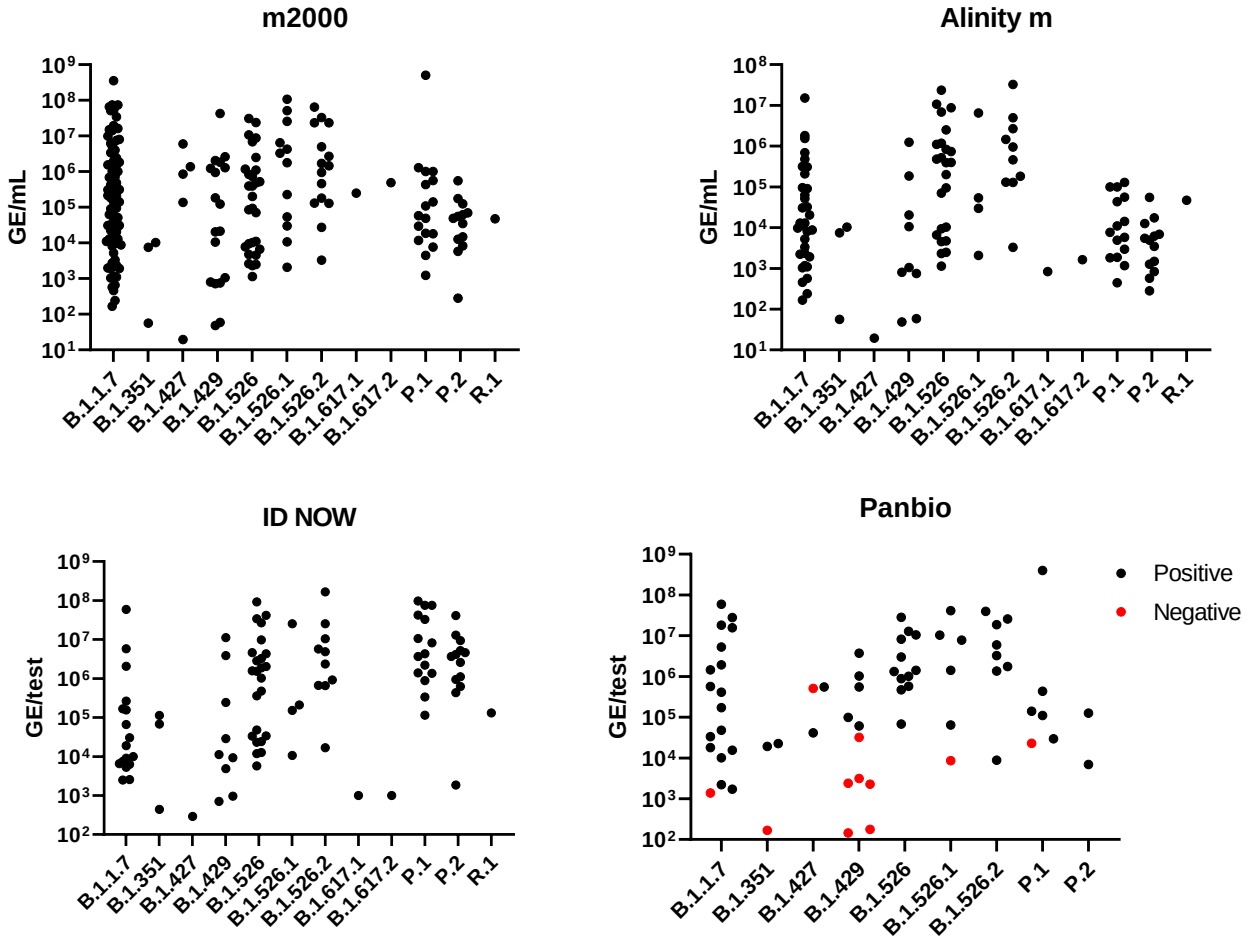
BINAXNOW self-test for asymptomatic over-the-counter non-prescription use

Ensuring diagnostic tests work for pandemic viruses: SARS-CoV-2

3.99M
Sequences analyzed by in silico

88
Lineages tested on Abbott's diagnostic tests

WHO label	Lineages and other names	Number of sequences generated
Alpha	B.1.1.7	238
Beta	B.1.351	11
Gamma	P.1, P.1.1, P.1.2	50
Delta	B.1.617.2, AY lineages	449
Omicron	BA.1-5, BE, BF, XBB, CH	1050
Non-VOC	various	809
Total		2607



Rodgers MA et al, J Clin Vir. (2022) Feb;147:105080

Changing the course of an outbreak before it becomes a pandemic

As new pathogens emerge, time is of the essence.
Early detection and study are critical for effective response:

IDENTIFY
a new pathogen and then generate and publish a complete genome sequence

DEVELOP
molecular, serologic and rapid diagnostic assays with samples from initial cases

DEPLOY
tests around the world for translational research and pandemic prevention

CONDUCT
initial surveillance to understand how many are affected, where it has spread and risk factors (e.g., age, pre-existing conditions)

ASSIST
the public health community in taking appropriate and measured responses

ANTICIPATE
threats…and stop them in their tracks

International Journal of Infectious Diseases 117 (2022) 356–360

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journal homepage: www.elsevier.com/locate/ijid

The Abbott Pandemic Defense Coalition: a unique multisector approach adds to global pandemic preparedness efforts

Francisco Averhoff[a,1,*], Michael Berg[a,1,**], Mary Rodgers[a,1], Saladin Osmanov[b,1], Xinxin Luo[a,1], Mark Anderson[a,1], Todd Meyer[a,1], Alan Landay[c,1], Amiran Gamkrelidze[d,1], Esper G. Kallas[e,1], Karl Ciuoderis[f,1], Juan Pablo Hernandez[f,1], Jean Hugues Henry[g,1], Jorge Osorio[f,1], John Lindo[h,1], Johnson Deshommes[g,1], Joshua Anzinger[h,1], Justen Manasa[i,1], Maia Alkashvili[d,1], Mboup Souleyman[j,1], Pontiano Kaleebu[k,1], Rodrigo Correa-Oliveira[l,1], Sunil Solomon[m,1], Tulio de Olivera[n,1], Yupin Suputtamongkol[o,1], Gavin Cloherty[p,1]

[a] *Abbott Diagnostics, Abbott Park, IL, USA*
[b] *Abbott Diagnostics (deceased), Abbott Park, IL, USA*
[c] *Rush University Medical Center, Chicago, IL, USA*
[d] *National Center for Disease Control, Tbilisi, Georgia*
[e] *University of Sao Paulo, Sao Paulo, Brazil*
[f] *Colombia Wisconsin One Health, University of Wisconsin & National University of Colombia, Medellin, Colombia*
[g] *Quisqueya University, Port-au-Prince, Haiti*
[h] *University of the West Indies, Kingston, Jamaica*
[i] *University of Zimbabwe, Harare, Zimbabwe*
[j] *Institute for Health Research, Epidemiologic Surveillance and Training (IRESSEF), Dakar, Senegal*
[k] *Uganda Virus Research Institute, Entebbe, Uganda*
[l] *Foundation Oswaldo Cruz (Fiocruz), Rio de Janeiro, Brazil*
[m] *Johns Hopkins University School of Medicine, USA & YRG CARE, Chennai, India*
[n] *Centre for Epidemic Response and Innovation, Stellenbosch University, Stellenbosch, South Africa*
[o] *Mahidol University, Bangkok, Thailand*
[p] *Abbott Diagnostics*

Abbott Pandemic Defense Coalition
An elite global network of collaborators

APDC sites are comprised of dynamic, active scientific partnerships, each bringing:

Access to patient samples from unexplained illnesses or high-risk populations

Infectious disease experts on staff who are skilled in spotting unique cases and trends

Strategic locations in high-exposure or high-risk geographies (with proximity to migrant and animal reservoir populations)

Excellence in **technical capabilities**

ABBOTT PANDEMIC DEFENSE COALITION (APDC): A SCIENTIFIC AND PUBLIC HEALTH PARTNERSHIP- LAUNCHED IN 2021

Collaborative Research Agreement (CRA) with sites

Diagnostic Platforms – Molecular, Serologic, Sequencing
Test kits- Licensed, Research use only (RUO), reagents
Technical Assistance, Training, NGS, Bioinformatics, Publishing, Funding
Human Subjects and Intellectual Property Protections

ABBOTT PANDEMIC DEFENSE COALITION (APDC): A SCIENTIFIC AND PUBLIC HEALTH PARTNERSHIP- LAUNCHED IN 2021

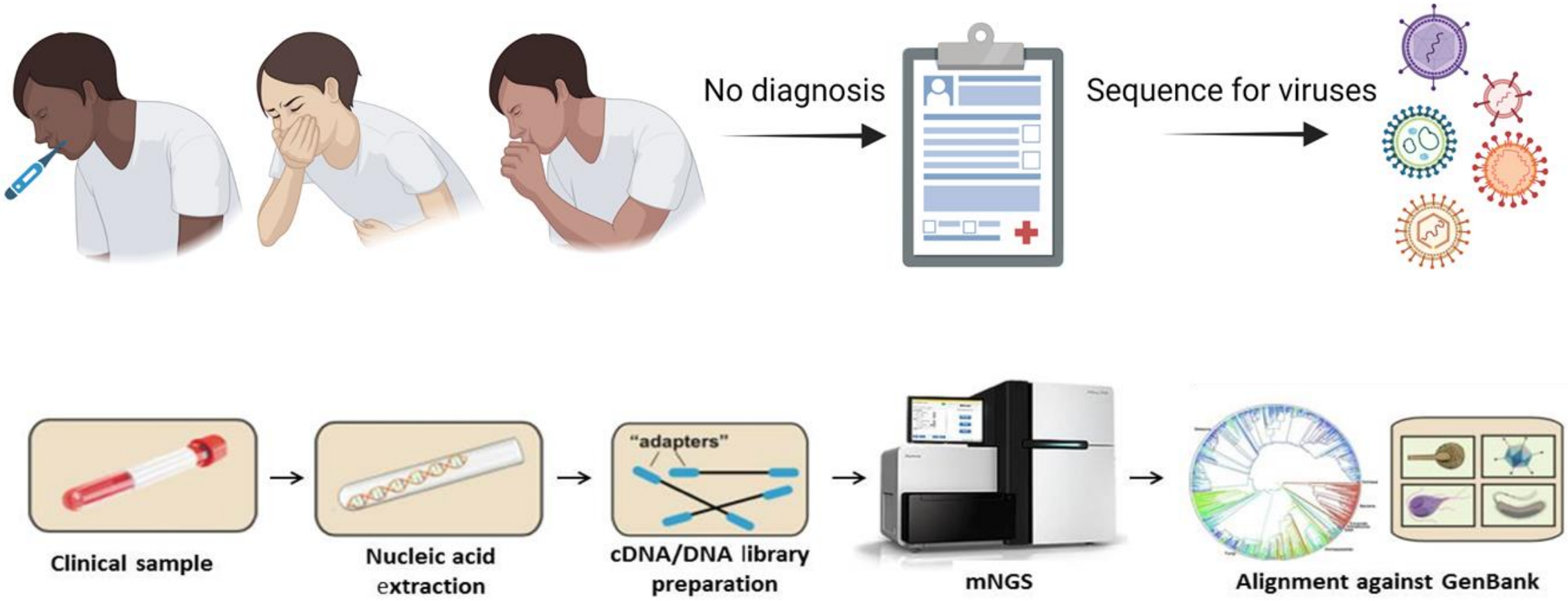
GOALS

Early identification of emerging pathogens: Define epidemiology and notify key public health institutions (WHO, CDC, etc.)
Build capacity in diagnostics, next generation sequencing, bioinformatics and epidemiology in low-and-middle income countries (LMICs)
Molecular surveillance of known pathogens of public health significance (e.g. SARS-CoV-2, HIV, HBV) and increased understanding of endemic infectious diseases
Timely development, validation, and dissemination of diagnostic assays targeting emerging pathogens

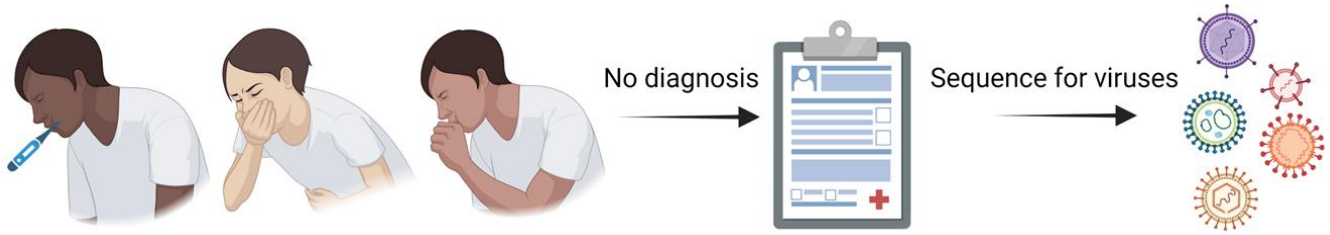
Abbott Pandemic Defense Coalition (APDC), 2023

N= 20 SITES ON 5 CONTINENTS

Case finding and metagenomics

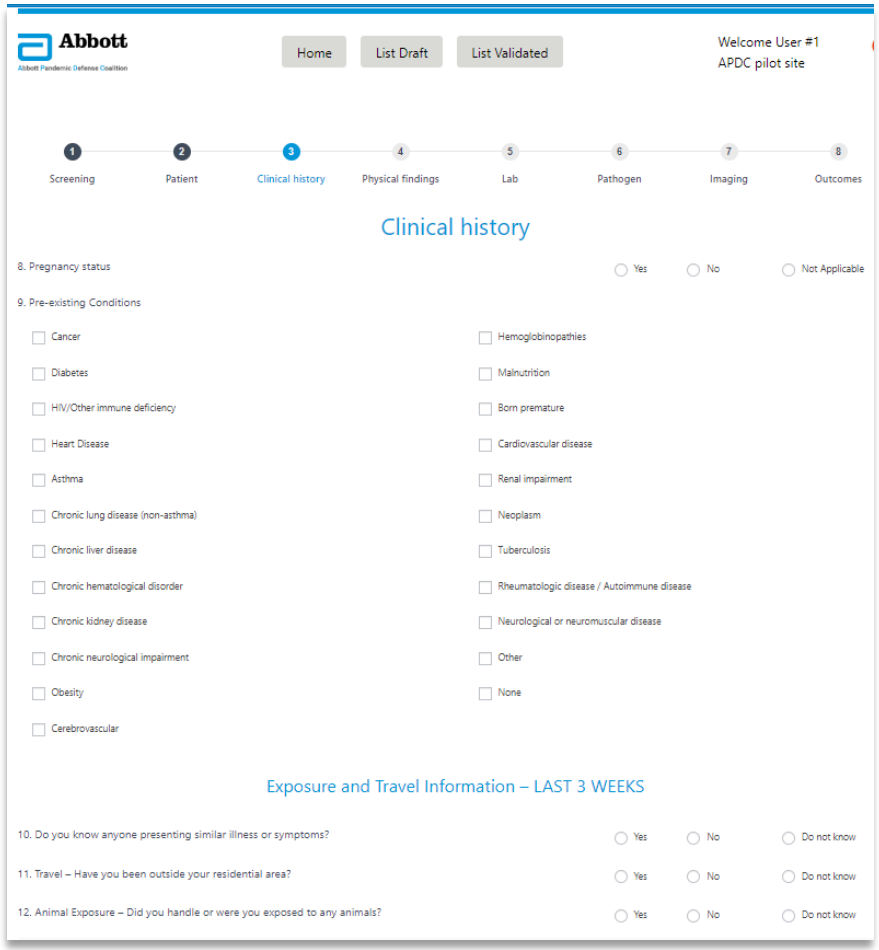


Collection and analysis of patient metadata- Impact Healthcare



Encephalitis/Meningitis

1. **Must meet criteria from a and b below to qualify for pathogen discovery program**
   a. **Temperature ≥ 38 C**
   b. **Absence of other etiologies:**
      i. **Infectious agent/pathogen not if interest for discovery**
      ii. **Autoimmune or rheumatic disease**
      iii. **Drug reaction**
      iv. **Toxic/allergic**
      v. **Metabolic disease**
      vi. **Neoplasm/malignancy**
2. **Additional recommended diagnostics**
   a. **CBC, UA, chemistry panel (liver, renal, other)**
   b. **Blood and/or tissue cultures for bacteria, virus, mycobacterium, fungal**
   c. **Cerebrospinal fluid for cell count (RBC and WBC) and WBC differential, glucose concentration, protein concentration, gram stain, cultures for bacteria, virus, mycobacterium, fungal pathogens**
   d. **Serologic, immunoassay, and antigen testing as appropriate**
3. **Recommended (if indicated) imaging and procedures**
   a. **Computerized tomography (CT) and/or magnetic resonance imaging (MRI)Photograph of the lesions**
   b. **Biopsy**
4. **Recommended specimens for collection**
   a. **Tissue (brain)**
5. **Other considerations**
   b. **Serial serum specimens (paired acute/convalescent serum) at 2 to 4 weeks apart banked**



- Case definitions
  - Respiratory
  - Hepatitis
  - Fever
  - Encephalitis
  - Rash
  - Gastroenteritis
- eCRF form shared across APDC sites
  - Impact Healthcare
- Screening of EMR
  - RUSH Medical Center
  - unknown respiratory
  - 6 individuals selected from >6000 inpatients screened

Example of APDC Model- Detection to Action: Colombia, AFI Surveillance, 2019 - 22

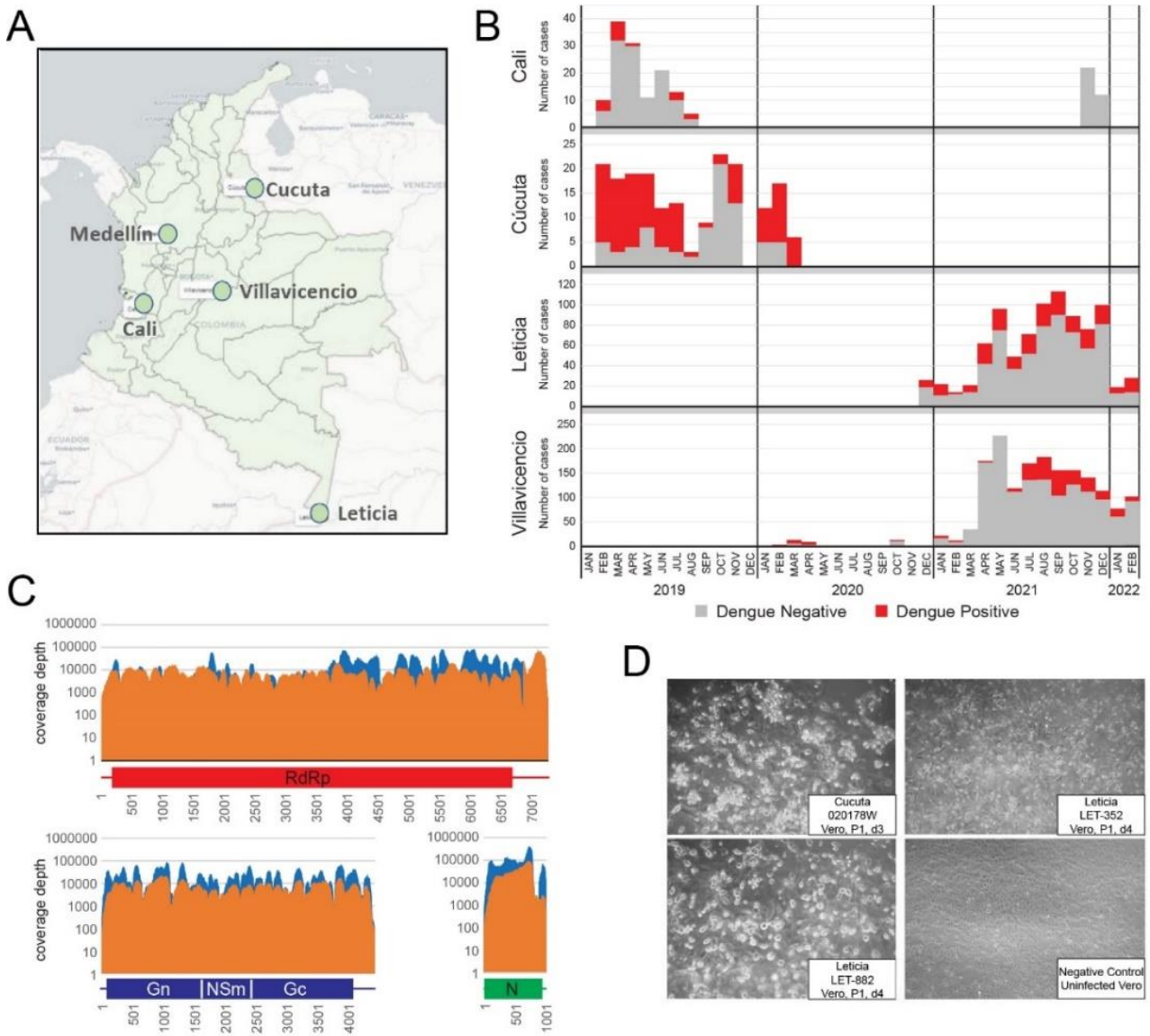
- 2967 patients and with AFI were enrolled in the discovery program
- Serologic specimens were tested for multiple pathogens by RT-PCR and rapid test (Antigen/IgM):

  - Dengue detected in 615/2967 (20.7%)
  - All tested negative for Mayaro, Chikungunya and Zika virus
  - 27/206 (13.1%) with respiratory symptoms tested positive for SARS-CoV-2
  - 3/309 (1.0%) of those tested for malaria, tested positive
  - Overall, 2,314/2967 (78%) off all enrolled AFI patients tested negative/did not have an know etiology by available testing

UNIVERSIDAD NACIONAL DE COLOMBIA

Colombia: AFI Surveillance, 2019 - 22

- 2,314/2967 (78%) remained unknown: 100 DENV negatives were sequenced by mNGS at Abbott
- Detected Oropouche virus by NGS (N = 1)
- Confirmed by PCR and culture



Oropouche Virus

- Oropouche virus (OROV), *Bunyaviridae*, genus *Orthobunyavirus*, first described in Trinidad and Tobago in 1955, febrile forest worker, near village, Vega de Oropouche.

- Transmitted by the midge Culicoides paraensis and some mosquito species. It is maintained in a jungle cycle involving sloths and monkeys.

- Clinically presents as AFI, similar to other arboviral febrile illnesses, such as Dengue, Zika, Chikungunya, and Mayaro fevers.

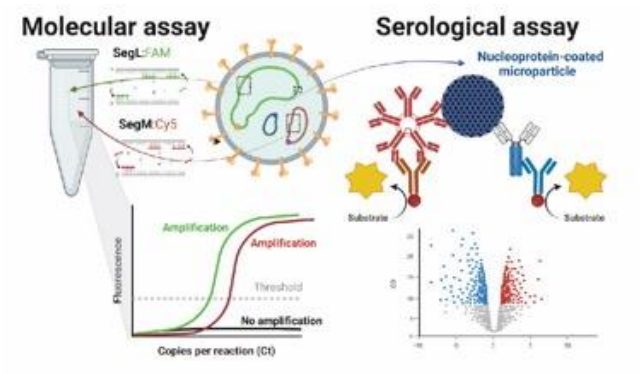
- Reported cases of Oropouche virus (OROV) fever cases/outbreaks have been reported from Brazil, Panama, Peru, and Trinidad and Tobago, first detected/reported in a single case in Colombia, 2017

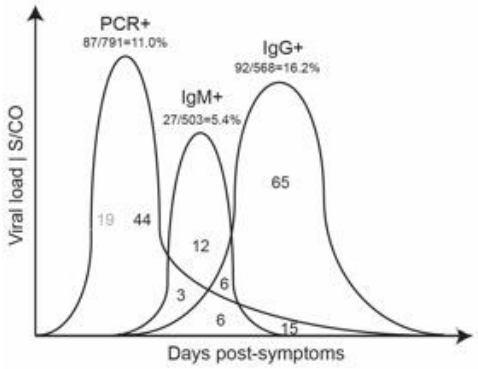
Emerging Microbes & Infections
https://doi.org/10.1080/22221751.2022.2136536

RESEARCH ARTICLE

Oropouche virus as an emerging cause of acute febrile illness in Colombia

Karl A. Ciuoderis[a,d*], Michael G. Berg [b,d*], Lester J. Perez[b,d], Abbas Hadji[b,d], Laura S. Perez-Restrepo[a,d], Leidi Carvajal Aristizabal[a,d], Kenn Forberg[b,d], Julie Yamaguchi[b,d], Andres Cardona[a,d], Sonja Weiss[b,d], Xiaoxing Qiu[b,d], Juan Pablo Hernandez-Ortiz[a,d], Francisco Averhoff[b,d], Gavin A. Cloherty[b,d] and Jorge E. Osorio[a,c,d]





- **In order to better understand the burden, APDC developed RUO RT-PCR test and antibody tests (IgG and IgM) for OROV:**
  - **87/791 (10.9%) tested positive by PCR for OROV- viremic**
  - **27/503 (5.4%) tested IgM positive (including 24 that were also PCR+)**
  - **Finally, of 568 tested for IgG, 16.2% were positive**

Research study only; no clinical Oropouche tests were developed/commercialized.

Emerging Microbes & Infections
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RESEARCH ARTICLE

Oropouche virus as an emerging cause of acute febrile illness in Colombia

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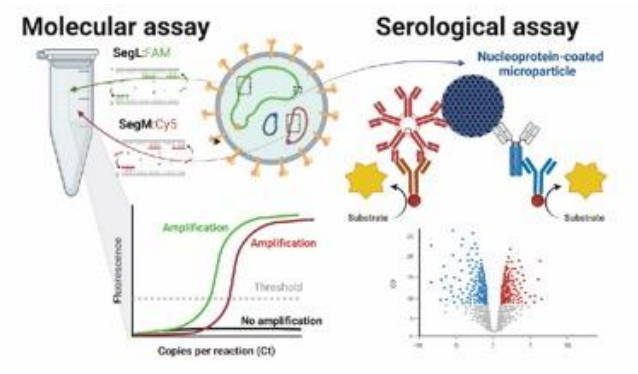
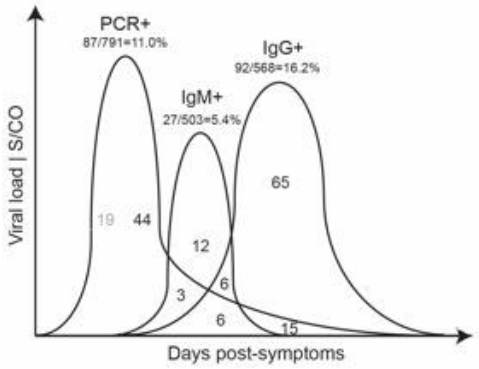




- ***Findings/Conclusions:***
  - ***OROV is widely circulating in Colombia and is a significant cause (>10%) of undifferentiated acute febrile illness (AFI)***
  - ***Proof of concept of APDC capacity to detect emerging/re-emerging pathogens, develop tests, study epidemiology, report to MOH***

Research study only; no clinical Oropouche tests were developed/commercialized.

APDC Special Projects- ongoing

- **Mortuary (Mortality) Surveillance, Uganda**
- **Sever Fever with Thrombocytopenia Syndrome (SFTS), Thailand**
- **Crimean Congo Hemorrhagic Fever (CCHF) negative specimens, Georgia**
- **Etiology of Acute Encephalitis Syndrome, Brazil**
- **Dengue virus, immune response and markers, Colombia, Jamaica, Thailand**
- **HTLV-1 in pregnant women, Jamaica**
- **EV D-68**

Capacity building: training future virus hunters, 2023

EPIDEMIOLOGISTS

8 FETP awardees in 2022
7 awarded in 2023

TEPHINET
Training Programs in Epidemiology and Public Health Interventions Network

ID SCIENTISTS

1 Ph.D. student at CERI
1 nursing student at Rush
3 medical fellows at Rush
10 APDC staff at Abbott Park
10 short-term NGS trainees at CERI
6 summer interns at Abbott Park
2 GVN postdoctoral fellows
2 on-site NGS trainees at YRG

BIOINFORMATICISTS

20 APDC staff virtual sessions by KRISP
2 fellows at CERI

CERI

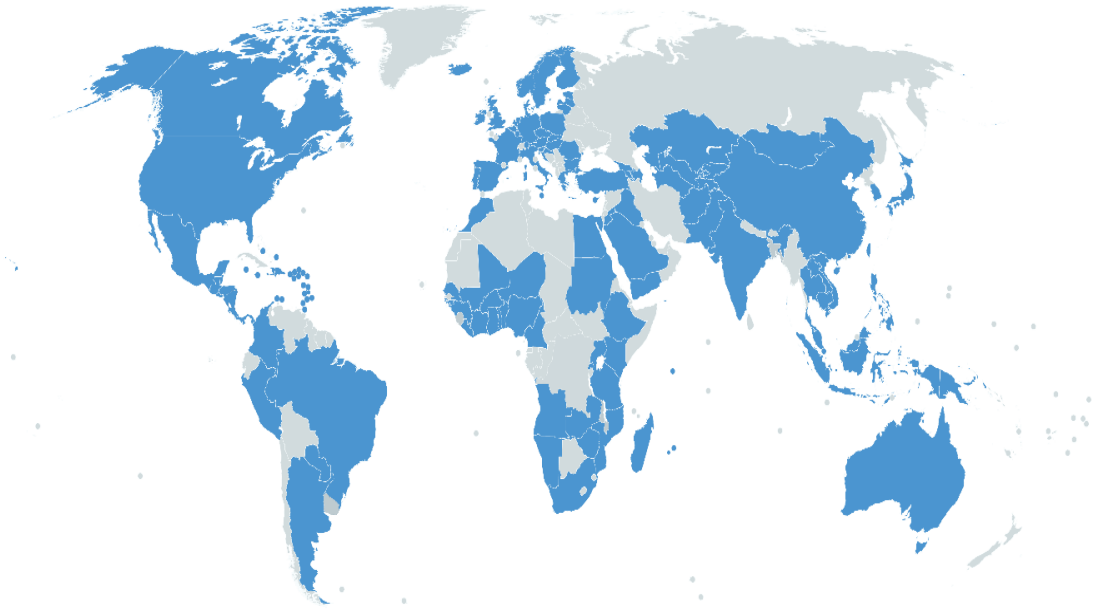
Abbott

TEPHINET
Training Programs in Epidemiology and Public Health Interventions Network

A program of THE TASK FORCE FOR GLOBAL HEALTH

- Established in 1997, Global network of 75 Field Epidemiology Training Programs (FETP) in more than 100 countries

- Strengthen public health systems by developing, connecting, and mobilizing a global field epidemiology workforce to strengthen public health systems and advance health security.



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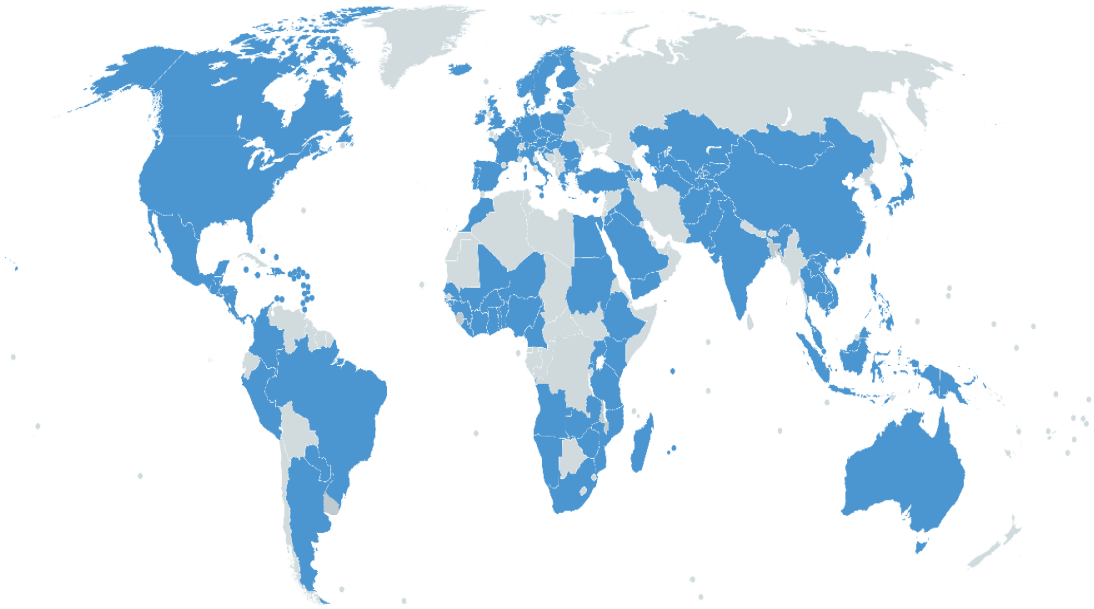
TEPHINET
Training Programs in Epidemiology and Public Health Interventions Network

A program of THE TASK FORCE FOR GLOBAL HEALTH

A Global Public Health Workforce

- Technical and financial support from the US Centers for Disease Control and Prevention (CDC)
- Field based epidemiology training – *"Learn by doing"*
- Imbedded within National Ministry of Health (MOH) in host countries- *epidemic response unit*
- Over 19,000 trained to date (1997 – 2023)



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TEPHINET
Training Programs in Epidemiology and Public Health Interventions Network

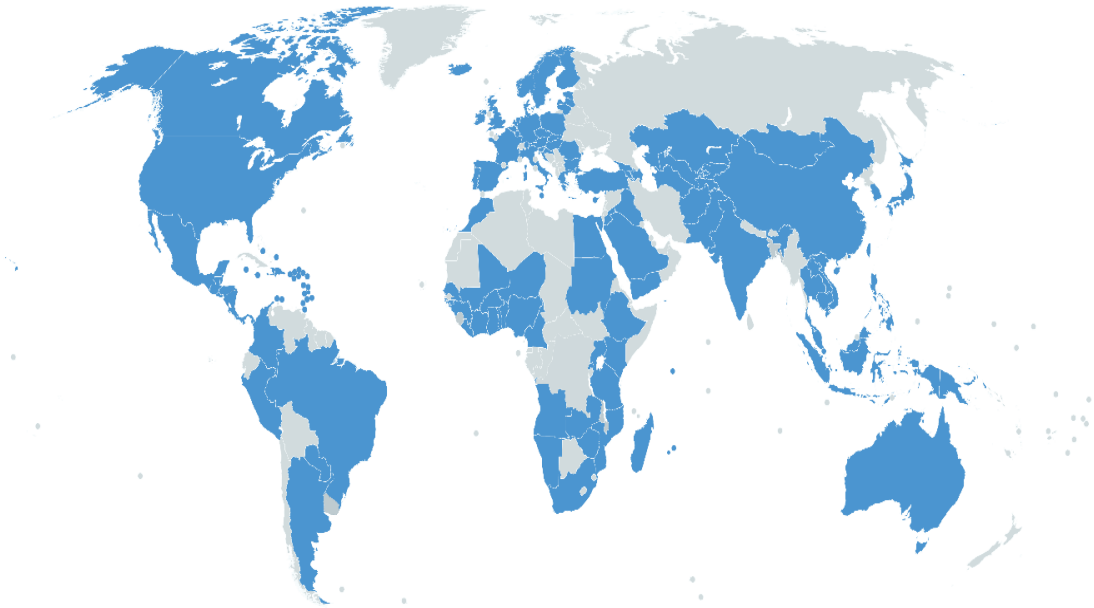
A program of THE TASK FORCE FOR GLOBAL HEALTH

Abbott- APDC Fellowship

- Competitive fellowships in emerging and re-emerging infectious diseases, neglected tropical diseases (NTDs), and non-communicable diseases (NCDs) that interact with infectious diseases

- Funding, mentorship, conference travel and manuscripts

- Agreement signed in 2021, first cohort in 2022



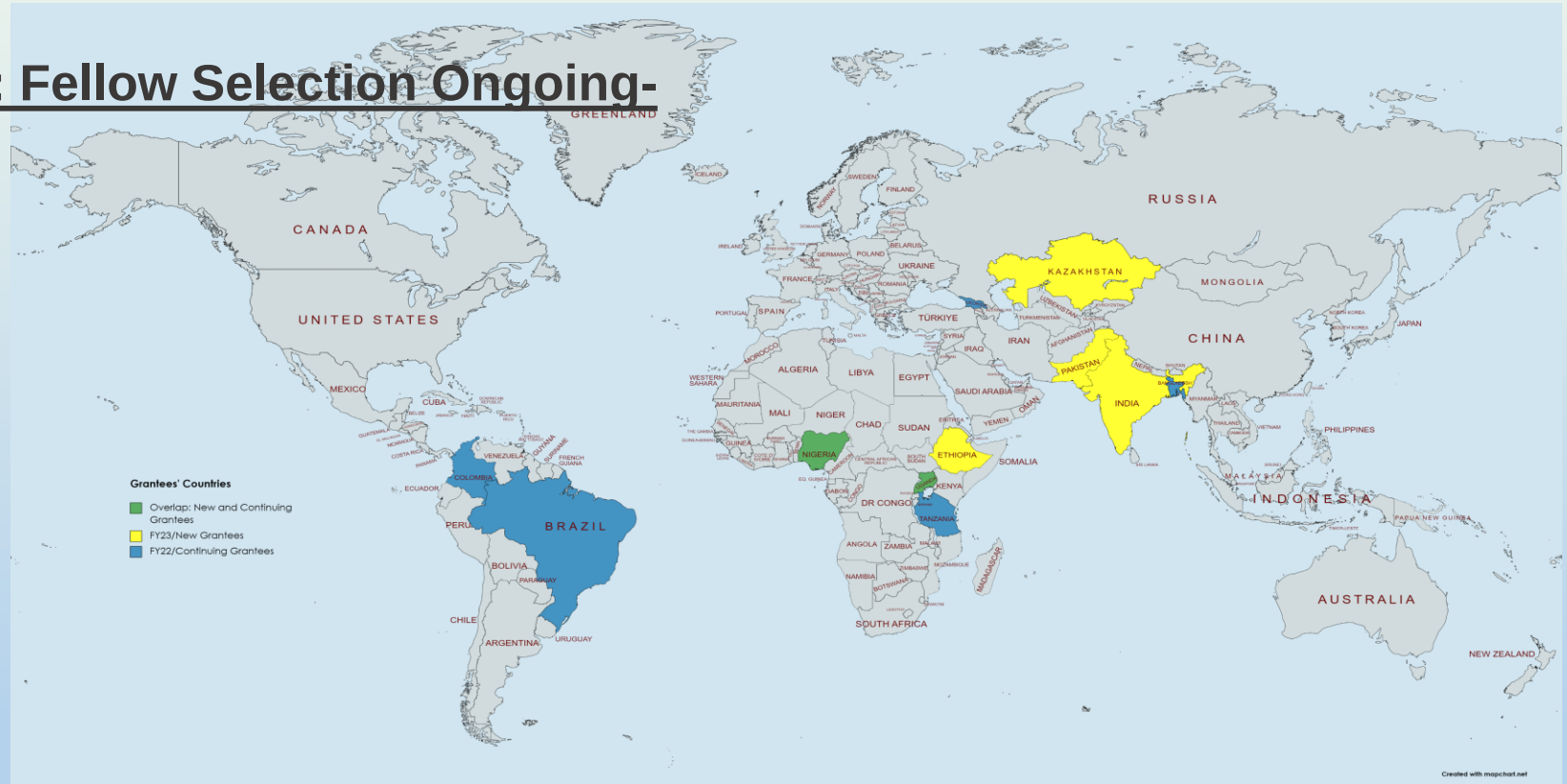
APDC-TEPHINET FELLOWSHIP, 2022 - 2024

HIGHLIGHTS:

- **2022: 8 Fellows, 7 countries: Colombia (ARI/SARI), Brazil (AFI/ARI), Nigeria (2- AFI, Meningitis), Uganda (Malaria/BWF), Tanzania (ARI), Georgia (Liver CA/HCC)**

- **2023: 7 Fellows – 6 countries: Nigeria (Hantavirus), Uganda (2- BWF, Ebola), Ethiopia (Parasitic Dz), Kazakhstan (Hantavirus), Pakistan (Long Covid) and India (Event-based Surveillance)**

- **2024: Fellow Selection Ongoing-**



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2022 Fellowship Awards

TEPHINET
Training Programs in Epidemiology and Public Health Interventions Network

A program of THE TASK FORCE FOR GLOBAL HEALTH

Colombia	**Surveillance of respiratory agents in acute respiratory infections in Antioquia, Colombia**
Georgia	a) Association of Hepatocellular Carcinoma (HCC) and HCV in Georgia b) Establishment of a pathogen discovery surveillance system in Georgia
Brazil	**Respiratory and arbovirus surveillance in slums of Brasilia**
Tanzania	**Re-establish non-influenza respiratory pathogen surveillance Tanzania**
Bangladesh	Establishing Laboratory Capacity for WNV Bangladesh among AFI and Acute Encephalitis Syndrome Surveillance systems
Nigeria	Piloting the Establishment of a Dengue Fever Surveillance System in Bayelsa State, Nigeria
Nigeria	Genomic Sequencing of Meningococcus Serogroup X in the Meningitis Belt, Northern Nigeria

TEPHINET/FETP Project

Impact of Molecular Testing on Surveillance of Acute Respiratory Infections in Antioquia, Colombia, 2022

(Preliminary Data/Findings)

Principal Investigator: M.D. María Angélica Maya Restrepo.

Authors: María Angélica Maya, Celeny Ortiz, Ana Isabel Davila, Diego Bastidas, Seti Buitrago, Francisco Averhoff, Michael Berg, Laura Pérez, Karl Ciuoderis-Aponte, Paulina Rebolledo, Juan P. Hernandez-Ortiz, Jorge E. Osorio.

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ONE HEALTH CONSORTIUM

HOSPITAL SAN VICENTE FUNDACIÓN

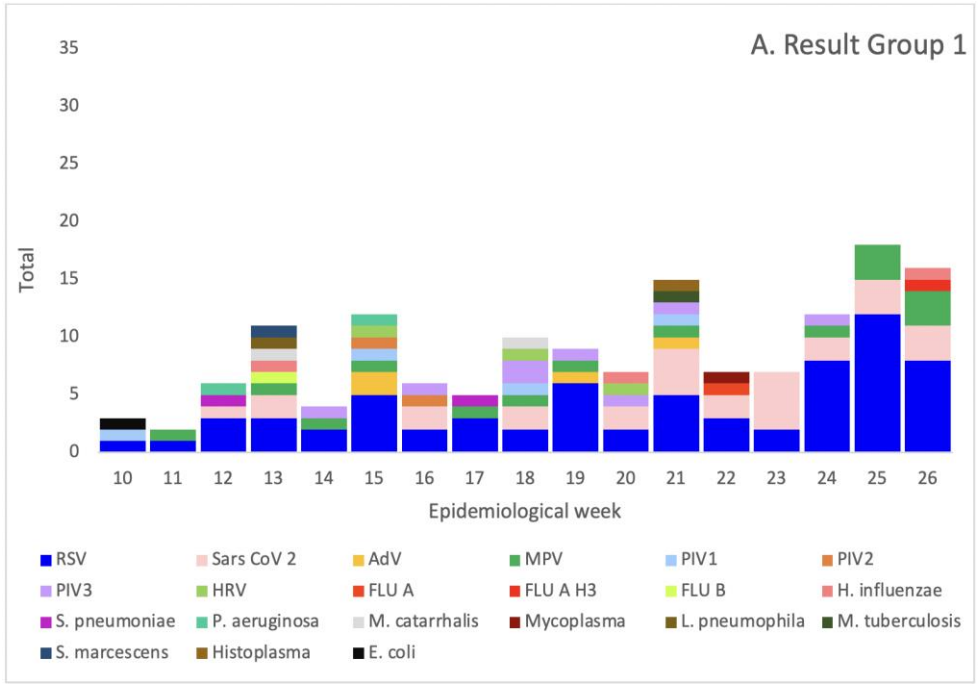
GOBERNACIÓN DE ANTIOQUIA

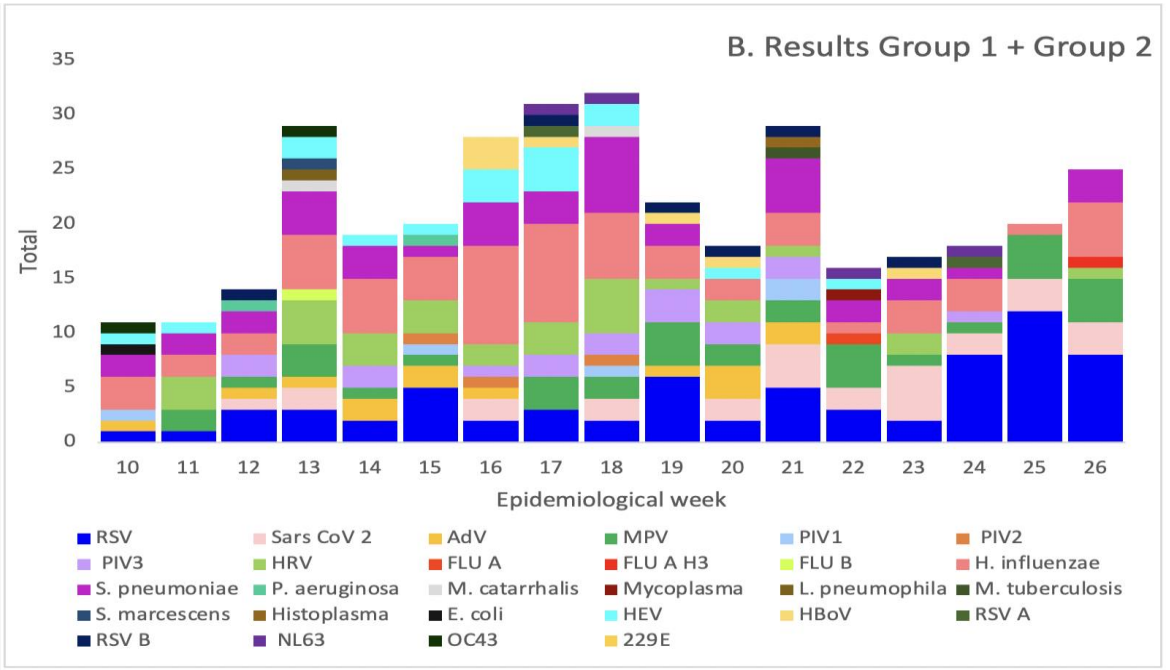
UNIDOS

Abbott

Comparison of DIF (current standard) to addition of PCR Multiplex, respiratory infections, **Antioquia, Colombia, 2022**

Number and percent positive DIF alone (current standard) = 131/340 (38.5%)
Number and percent positive samples DIF + PCR multiplex (157/168; 93.4%) = 288/299 (96.3%)
Number without pathogen after DIF + PCR multiplex = 11/299 (3.7%)





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GOBERNACIÓN DE ANTIOQUIA
UNIDOS
Abbott

TEPHINET/FETP: Second Project

Genomic Analysis of Adenovirus and Its Relationship with Severe Acute Respiratory Infections in Antioquia - Colombia.

Principal Investigator: M.D. María Angélica Maya Restrepo.

Authors: María Angélica Maya, Celeny Ortiz, Ana Isabel Davila, Diego Bastidas, Francisco Averhoff, Michael Berg, Laura Pérez, Karl Ciuoderis-Aponte, Jaime Ususga, Paulina Rebolledo, Alan Landay, Juan P. Hernandez-Ortiz, Jorge E. Osorio.

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HOSPITAL SAN VICENTE FUNDACIÓN

GOBERNACIÓN DE ANTIOQUIA

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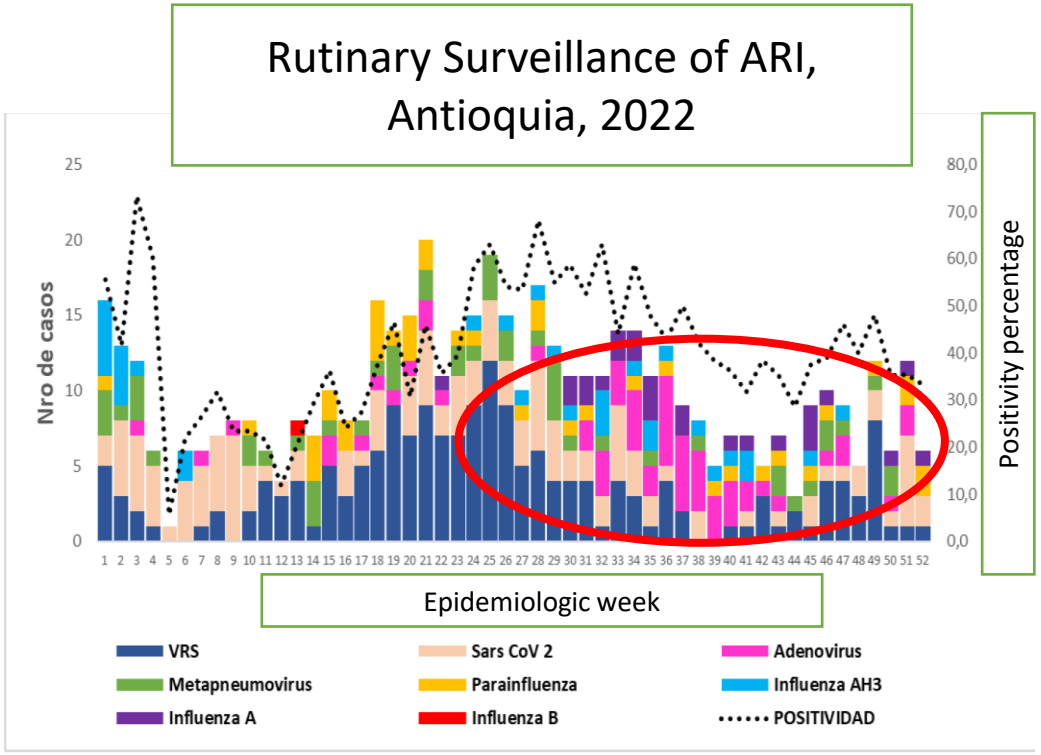
Background and Objectives

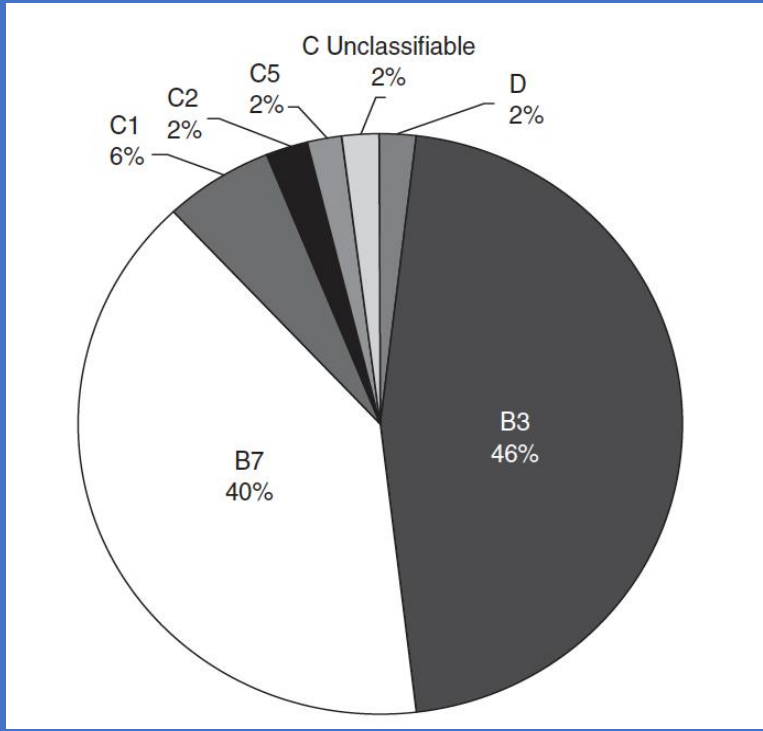


1. Adenovirus outbreak detected during 2022 surveillance study in Antioquia (N = 120)
2. Associated with severe disease in children
3. Objective to analyze Adenovirus genotype in an outbreak in Colombia in 2022.

THE UNIVERSITY OF WISCONSIN – MADISON
ONE HEALTH CONSORTIUM
HOSPITAL SAN VICENTE FUNDACIÓN
GOBERNACIÓN DE ANTIOQUIA
UNIDOS
Abbott

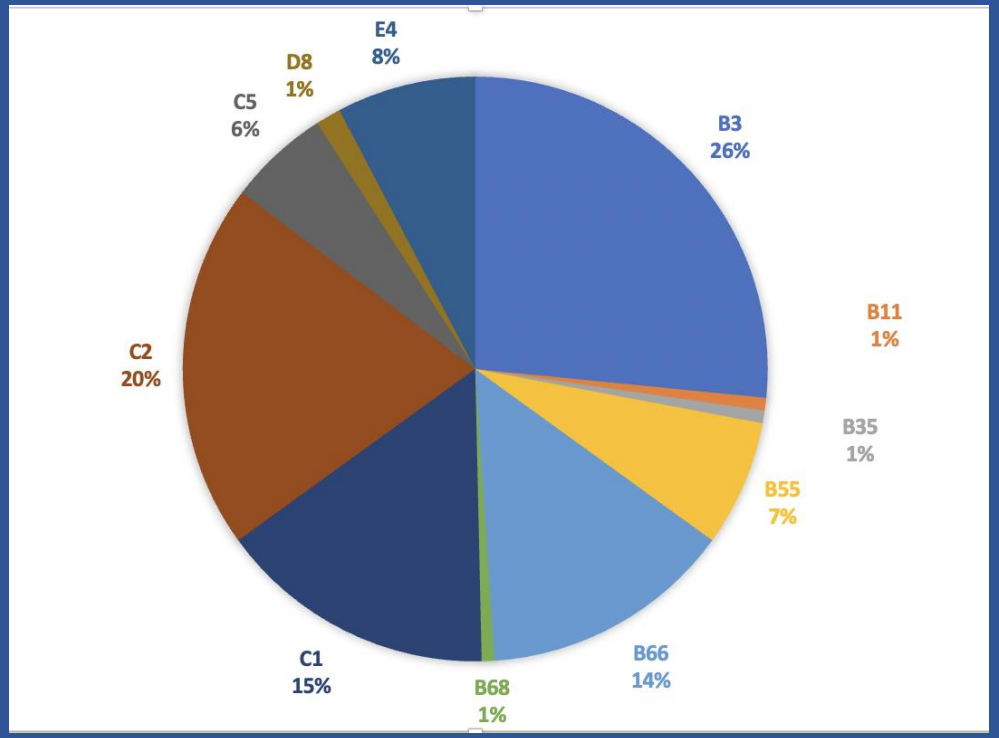
Introduction/Background

Bogotá (Colombia). Distribution of Adenovirus genotypes in children less than 5 years old with ARI.



Epidemiol. Infect. (2012), 140, 818–822.

Buenos Aires (Argentina). Distribution of Adenovirus genotypes in children with ARI (2000 – 2018)



B (50.4%), C (40.4%), D (1.4%) and E (7.8%).

PLoS One. 2021 Mar 8;16(3):e0248191.

ARI: Acute Respiratory Infection.

Detection of Coinfections in Batch 1: Comprehensive Analysis Using Multiplex PCR and Adenovirus Sequencing in 14 Samples

Sample	Co-infection	Ct Human Adenovirus	Adenovirus subgroup
Resp-021	HEV – PIV3 – HRV – SP - HI	28,69	C
Resp-050	HRV – SP - HI	24,04	C
Resp-055	HRV	28,4	C
Resp-076	HRV – Co CO43 - HI	28,42	C
Resp-082	HEV – HBoV – HRV	30,33	C
Resp-103	HEV	39,34	C
Resp-105	HEV – HRV - HI	39,43	C
Resp-106	HEV – HBoV – HRV – SP - HI	30,03	C
Resp-136	HI	30,36	C
Resp-182	MPV – HEV – PIV3 – HBoV – HRV – Co 229E – CoNL63 – SP - HI	31,28	C
Resp-227	HEV – PIV3 – HRV - HI	34,57	B
Resp-228	HI	28,1	C
Resp-233	HBoV - Co 229E – SP - HI	30,21	C
Resp-245	HBoV – HRV - Co 229E - Co NL63 - Co CO43 - HI	28,79	C

HEV: Enterovirus
PIV1: Parainfluenza 1
PIV3: Parainfluenza 3
HRV: Rhinovirus
SP: Streptococcus pneumoniae
HI: Haemophilus influenza
Co NL63: Coronavirus NL63
Co CO43: Coronavirus CO43
Co 229E: Coronavirus 229E
HBoV: Bocavirus
RSV: Respiratory Sincitial Virus

Discussion and Conclusions (Preliminary Findings)

1. Outbreak of Adenovirus ARI detected, associated with severe disease

2. Coinfections were frequent in respiratory infection by Adenovirus

3. Dominance of Adenovirus C subgroup in patients with acute respiratory infection in Antioquia, 2022 (new to South America)

1. Similar Adenovirus OB detected by Brazil GIHSN site (in discussion for collaboration)

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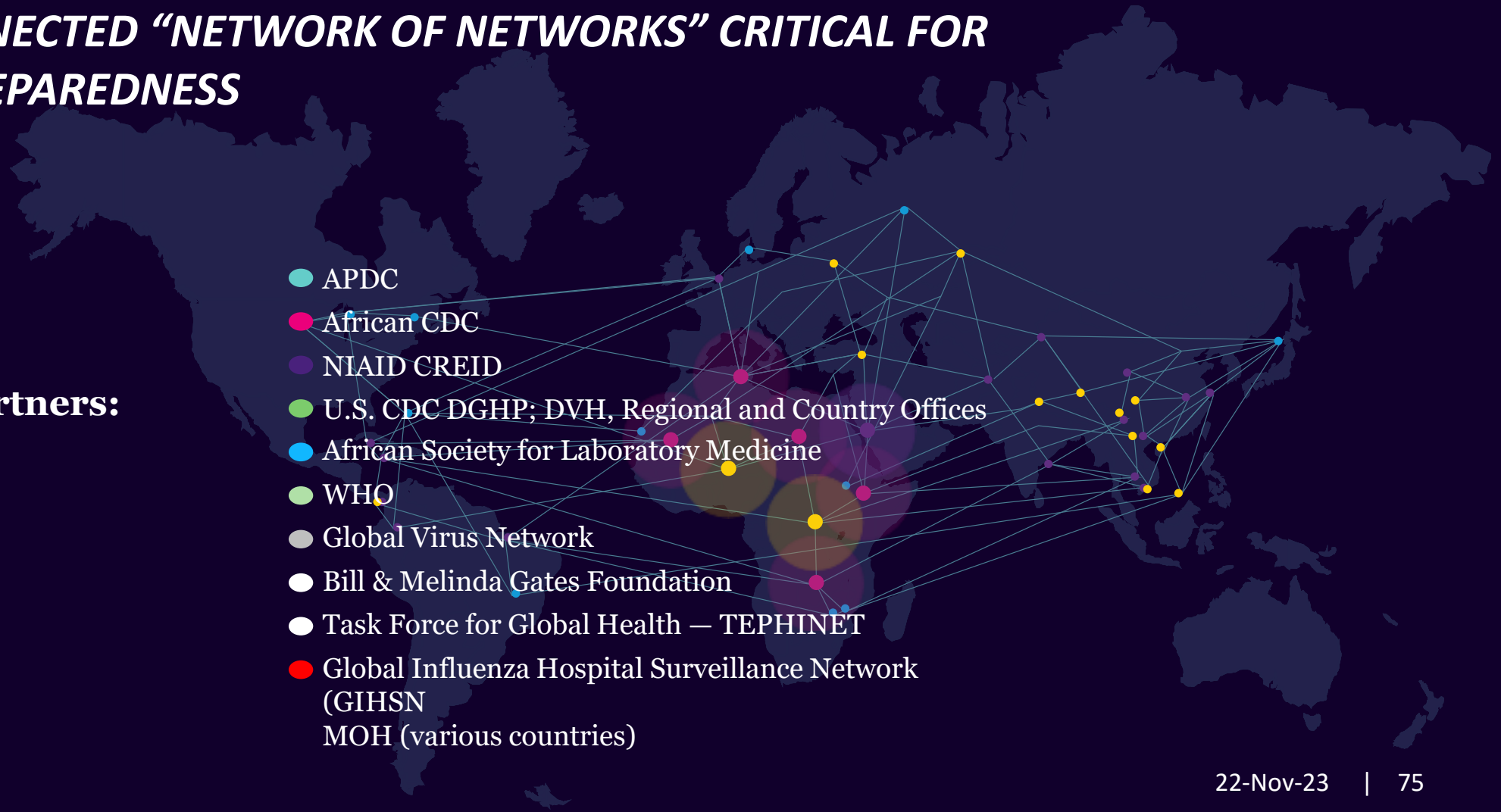
APDC Public Health & Network Partners

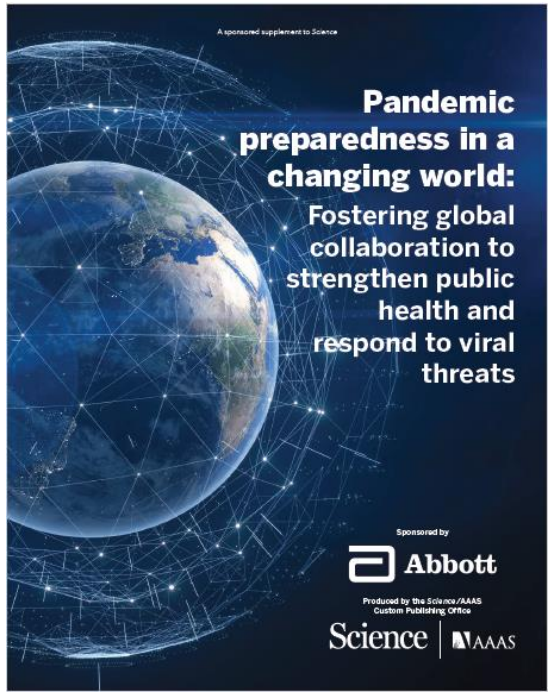
AN INTERCONNECTED "NETWORK OF NETWORKS" CRITICAL FOR PANDEMIC PREPAREDNESS

Example:

EV D-68 study, partners:
- **GIHSN**
- **CDC**
- **APDC**



APDC: 2021 – 2023 Output



abbott-discovery.com

Metrics

- **281,135** tests delivered to sites
- **7,228** specimens sequenced
- **21** new prototype tests
- **36** publications
- **64** new virus hunters trained

Conclusions

- **Abbott Pandemic Defense Coalition (APDC), unique Public – Private Partnership (PPP)**

- **Can support global pandemic preparedness with some unique capacities- outcome oriented**
  - Rapid development and deployment of high-quality tests (RUO)

- **“Network of Networks”- APDC can support global respiratory virus surveillance and research “mosaic model”**
  - GIHSN and CDC Collaboration, EV D-68 example

Thank You for attention

Contact: francisco.averhoff@abbott.com

COFFEE BREAK

GIHSN ANNUAL MEETING, 17 NOVEMBER 2023

GIHSN PROTOCOL IMPLEMENTATION 2023-24

Foundation for Influenza Epidemiology

Sandra CHAVES, MD, MSc, Executive Officer
Foundation for Influenza Epidemiology

Sous l'égide de
Fondation de France

Same protocol as last year!

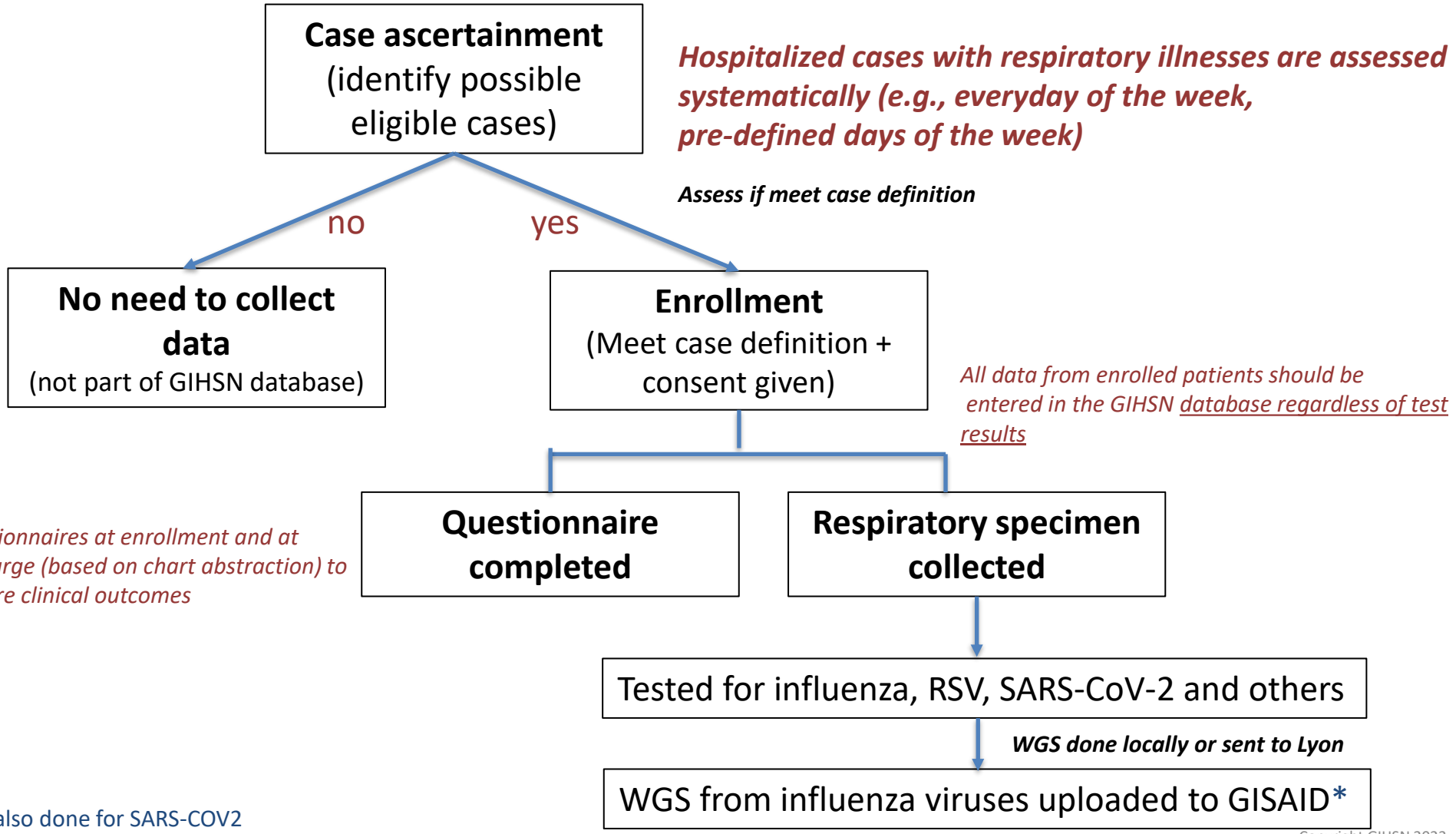
- Screening and inclusion of hospitalized patients with respiratory illness meeting protocol case definition year-round (**November 2023 to October 2024**)
- Collection of epidemiologic and clinical data for all participating patients (i.e., those who meet case definition and consent to participate), with a standardized questionnaire **administered at enrolment** and a **chart abstraction** at patient **discharge/death**
- Enrolled patients would have respiratory specimen collected shortly after hospital admission (within first 72 hours) and sent for testing at the local and/or reference laboratory or National Influenza Centre
- Specimens: A number of respiratory specimen types may be used, including swabs, brush, aspirate, and wash, and specimens may be collected from numerous sites, including the anterior and posterior nasopharynx, oropharynx, and nares
    - **Ideally combined nasal swab and throat swab performed similarly to nasopharyngeal aspirate or swab sampling and can improve yield for other respiratory viruses**

Comparison of Respiratory Specimen Collection Methods for Detection of Influenza Virus Infection by Reverse Transcription-PCR: a Literature Review - PMC (nih.gov)

Laboratory

- PCR test for influenza and SARS-CoV2 (priority) and for other respiratory viruses (strongly encouraged – especially if using multiplex)
- Storage (-20C or -70C) of respiratory samples (swabs) from **all swabbed patients for a minimum of one year**. This can facilitate retrospective investigations on pathogen discovery, or evaluation of new diagnostic tools
- WGS for a minimum of **50 to 100 influenza viruses** will be expected. **If number of influenza positive cases are low, site is encouraged to complete WGS of SARS-COV-2**
    - WGS for influenza is a priority. If WGS data available for other respiratory viruses (e.g., SARS-Cov2, RSV) it would be beneficial to share in GISAID with the link to clinical data
    - WGS data uploaded to GISAID by site in a reasonable timeframe, so results are available for the WHO Vaccine Composition Meeting
    - Link between WGS data uploaded in GISAID and clinical data in GIHSN required

PROCESS FOR IDENTIFICATION OF CASES AND DATA COLLECTION - GIHSN



*WGS also done for SARS-COV2

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SAMPLING STRATEGY

Sampling strategy needs to be systematic and done in a way to avoid potential biases

Full universe of cases hospitalized with respiratory illness. Includes all the potentially eligible cases but not all are ascertained for inclusion as part of the surveillance

Patients that should be included in GIHSN (regardless of test results), Representing a sample of the cases hospitalized that met GIHSN surveillance definition

If we only have these patients, we will not tell a complete story…

Describe the percentage positivity for the various pathogens would also be important to understand/document virus circulation year-round

TIMELINESS OF DATA REPORTING

- In the grant agreement, the FIE request that sites submit data as real time as possible
- For those sites using the eCRF, initial data entry can be done once patient is enrolled and the data can be updated as more information becomes available (until discharge/death)
- For those sites using excel file transfer (9 sites), monthly uploads have been requested. Uploads can be updated once more information on the patients becomes available

For this past season, only 3 sites have uploaded monthly excel files

What can be do to improve timely of reporting?

GIHSN ANNUAL MEETING, NOVEMBER 2023

SITES' SURVEY DISCUSSION - 2022/23

Foundation for Influenza Epidemiology

Marta NUNES, PhD
Independent Scientific Committee, Chair

Sous l'égide de Fondation de France

Global Influenza Hospital Surveillance Network

www.gihsn.org

GIHSN ANNUAL MEETING, NOVEMBER 2023

DATA QUALITY AND COMPLETENESS - 2022/23

Foundation for Influenza Epidemiology

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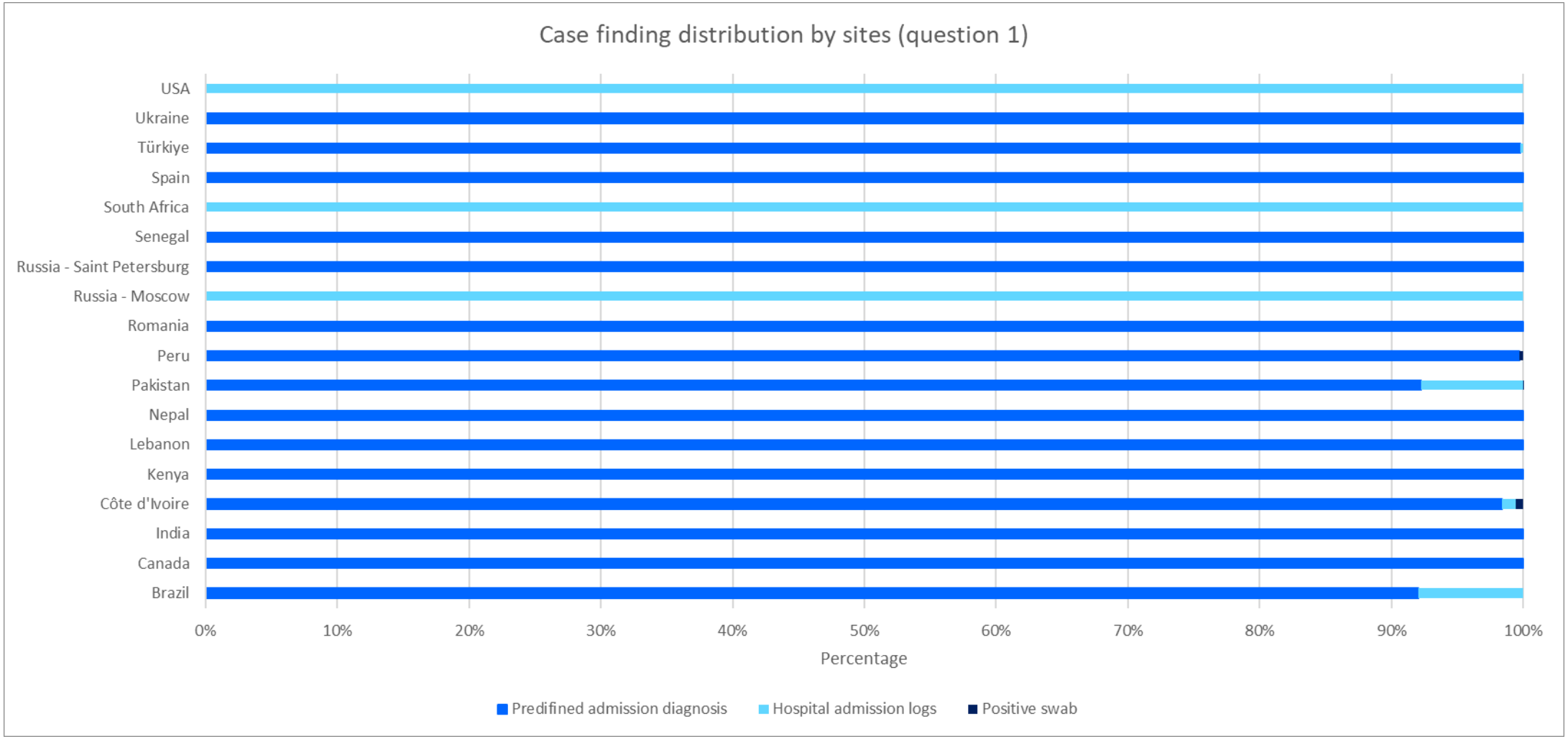
Fondation de France

CASE FINDING DISTRIBUTION BY SITES - Q#1 OF THE QUESTIONNAIRE (BASED ON DATA COLLECTED FOR SEASON 2022-23)



PRE-DEFINED ICD CODES FOR CASE FINDING – IMPLEMENTED AT BEGINNING OF THE NETWORK

For patients less than 5 years	ICD 9 Codes	ICD 10 Codes
Acute upper or lower respiratory disease	382.9; 460 to 466	J00-J06, J20-J22
Dyspnea, breathing anomaly, shortness of breath, tachypnea (polypnea)	786.0; 786.00; 786.05-786.07; 786.09; 786.9	R06.0, R06, R06.9, R06.3, R06.00, R06.09, R06.83, R06.02, R06.82, R06.2, R06.89
Acute asthma or exacerbation	493.92	J45.901
Pneumonia and influenza	480 to 488	J09-J18
Acute respiratory failure	518.82	J96
Acute heart failure	428-429.0	I50-I50.9; I51.4
Myalgia	729.1	M79.1
Altered consciousness, convulsions, febrile convulsions	780.01-780.02; 780.09; 780.31-780.32	R40.20, R40.4, R40.0, R40.1, R56.00, R56.01
Fever or fever unknown origin or non specified	780.6-780.60	R50, R50.9
Cough	786.2	R05
Gastrointestinal manifestations	009.0; 009.3	A09.0; A09.9
Sepsis, Systemic inflammatory response syndrome, not otherwise specified	995.90-995.94	R65.10, R65.11, R65.20, A41.9
Nausea and vomiting	078.82; 787.0; 787.01-787.03	R11; R11.0; R11.10 - R11.12; R11.2
Loss of smell, loss of taste		R43.8 , R43.8,
Pneumonia due to coronavirus disease 2019		J12.82, U07.1,
Coronavirus infection, unspecified		B34.2, U07.1, J12.81
SARS-associated coronavirus as the cause of diseases classified elsewhere		B97.21
Bacterial infection, unspecified, in conditions classified elsewhere and of unspecified site	041.9	
Transient cerebral ischemia	435	
Acute, but ill-defined, cerebrovascular disease	436	
Chronic bronchitis	491	
Asthma	49	
Chronic airway obstruction, not elsewhere classified	496	
Dizziness / Vertigo, NOS	780.4	
Altered mental status	780.97	
Symptoms concerning nutrition, metabolism and development: Feeding difficulties and mismanagement	783.3	
Symptoms concerning nutrition, metabolism and development : Other	783.9	
Viremia, unspecified	790.8	

Case definitions options added to protocol to capture variations from site to site

1. **Severe acute respiratory infection (SARI)** case definition (https://www.who.int/teams/global-influenza-programme/surveillance-and-monitoring/case-definitions-for-ili-and-sari)

An acute respiratory infection with:

- history of fever or measured fever of ≥ 38C°
- and cough;
- with onset within the last 10 days.
- and requires hospitalization

2. **Extended SARI case definition**

An acute respiratory infection with cough and onset within 10 days that requires hospitalization (no fever required)

3. **ECDC modified case definition for influenza like-illness (ILI) in last 7 days**

Combination of:

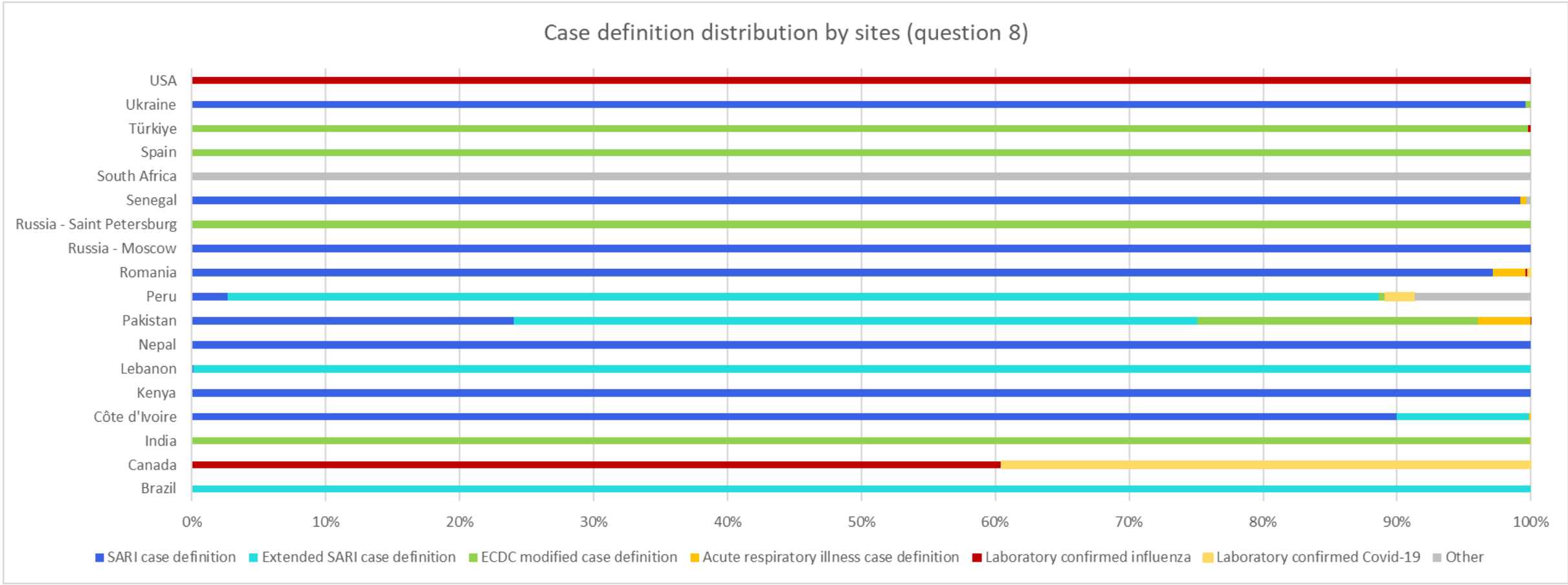
- at least one of the following four systemic symptoms: fever or feverishness, headache, myalgia, or malaise;
- at least one of the following three respiratory symptoms: cough, sore throat or shortness of breath

4. **Acute respiratory illness case definition**: Acute onset of at least one of the following four respiratory symptoms: cough or sore throat or shortness of breath or coryza and a clinician's judgment that illness is due to infection

5. **Laboratory confirmed influenza** – a hospitalized person who has a positive laboratory test for influenza within 48 hours of hospital admission

6. **Laboratory confirmed COVID-19** – Laboratory confirmed Covid-19 – a hospitalized person who has a positive laboratory test for Covid-19 before or during hospital admission. If test result before admission, the current admission should be associated with this episode of COVID-19 6

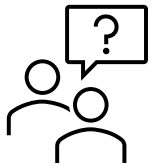
USED CASE DEFINITION DISTRIBUTION BY SITES - Q#8 OF THE QUESTIONNAIRE (BASED ON DATA COLLECTED FOR SEASON 2022-23)



**Other for South Africa: Any child with diagnosis of suspected sepsis or physician diagnosed LRTI irrespective of signs and symptoms*

***Other for Peru: Convulsion, dehydration, diarrhea, fever, febrile seizure, threw up, herpes*

WHAT CAN WE DO TO HARMONIZE CASE ASCERTAINMENT AND DEFINITION?



Sites' feedback on case ascertainment and case definition

COMPLETENESS (%) OF SIGNS AND SYMPTOMS CAPTURED AT ADMISSION

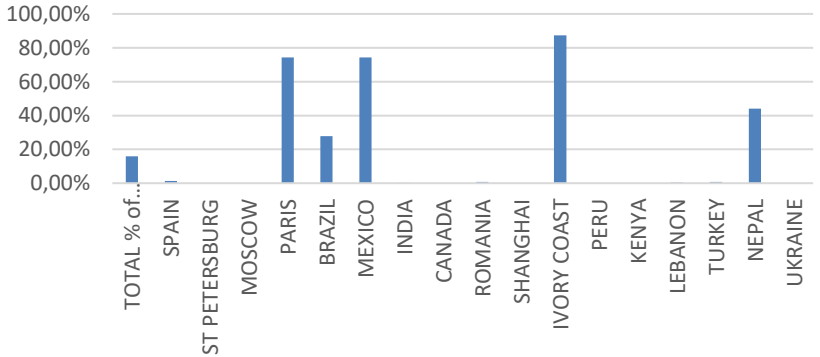
	fever	malasia	headache	myalgia	coughg	sorethroat	short of breathless	wheezing	nasal congestion	nausea	lost of smell	diarrhea	chestpain
Brazil	100	100	1	100	100	100	100	100	100	100	100	100	100
Canada	100	100	100	100	100	100	100	100	100	100	100	100	100
India	100	100	100	100	100	100	100	100	100	100	100	100	100
Côte d'Ivoire	99	97	98	98	100	96	97	95	97	99	99	99	99
Kenya	100	100	100	100	100	100	100	100	100	100	100	100	100
Lebanon	1	99	61	61	100	65	99	99	99	100	64	100	64
Nepal	100	100	100	100	100	100	100	100	100	100	100	100	100
Pakistan	0	100	100	100	100	100	100	99	100	100	100	88	100
Peru	0	100	100	100	100	100	100	100	100	100	100	100	100
Romania	0	100	100	100	100	100	100	100	100	100	100	100	100
Russia - Moscow	100	0	0	0	100	100	100	0	0	90	90	90	90
Russia - Saint Petersbu	0	100	100	100	100	100	100	0	100	100	100	100	100
Senegal	72	38	28	16	94	22	86	38	15	21	21	46	21
South Africa	0	100	100	100	100	100	100	100	100	100	100	100	100
Spain	0	100	100	100	100	100	100	0	0	100	100	100	100
Türkiye	1	100	99	98	99	98	99	99	98	99	97	99	97
Ukraine	2	100	98	98	100	98	100	100	100	100	100	100	100
USA	0	100	100	100	100	100	100	100	100	100	100	100	100

Note: These were added to questionnaire to facilitate re-grouping of case presentation as needed for sub-analyses

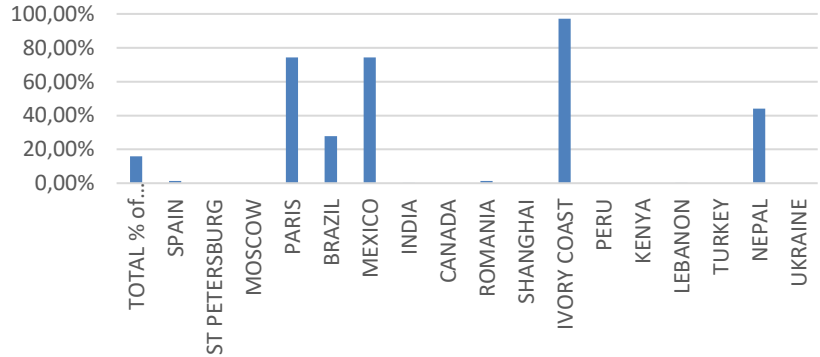
% OF MISSING DATA 2020-21 VERSUS 2022-23

2020-21

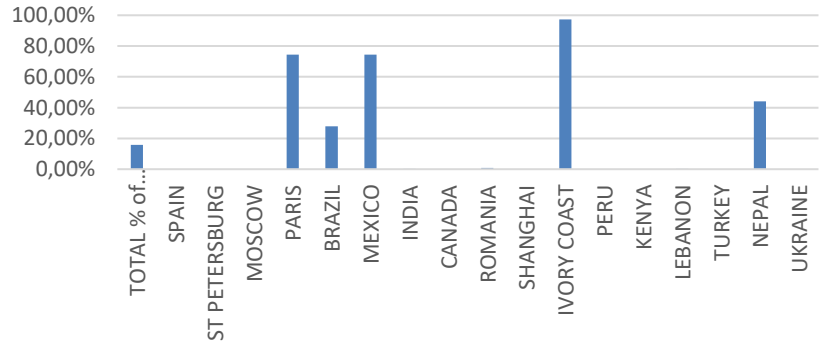
Has the patient had one of these symptoms in the last 7 days prior to admission? **Nausea or vomiting**



Has the patient had one of these symptoms in the last 7 days prior to admission? **Diarrhea**

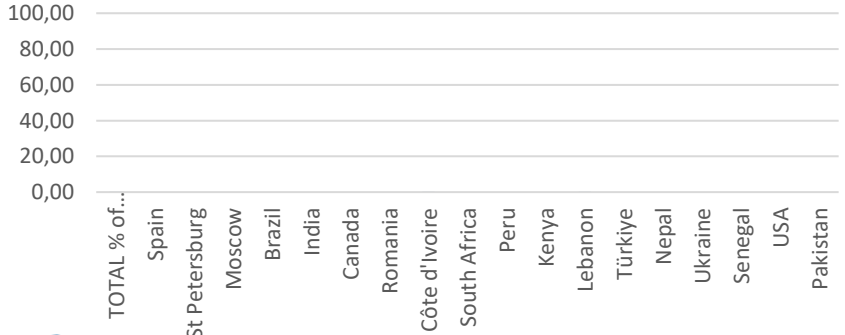


Has the patient had one of these symptoms in the last 7 days prior to admission? **Loss or change to sense of smell or taste**

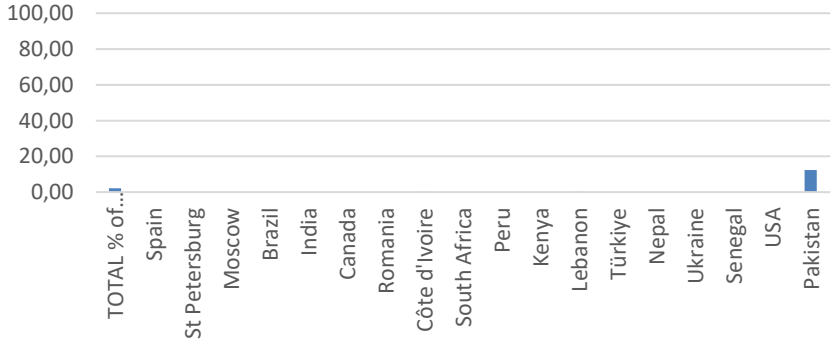


2022-23

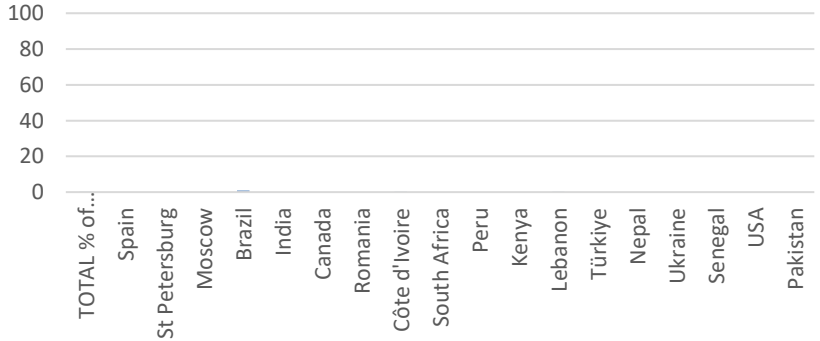
Has the patient had one of these symptoms in the last 7 days prior to admission? **Nausea or vomiting**



Has the patient had one of these symptoms in the last 7 days prior to admission? **Diarrhea**



Has the patient had one of these symptoms in the last 7 days prior to admission? **Loss or change to sense of smell or taste**



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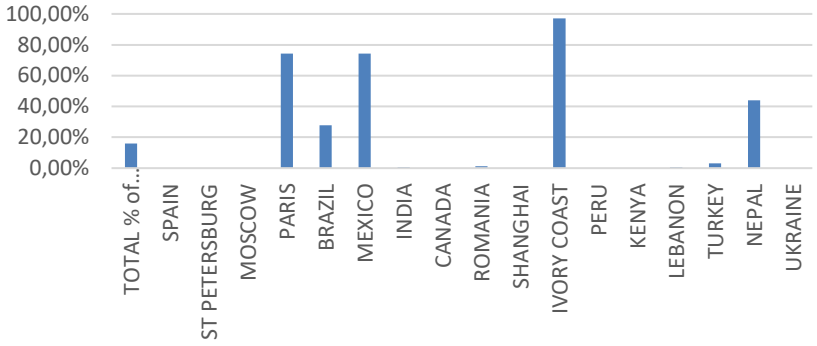
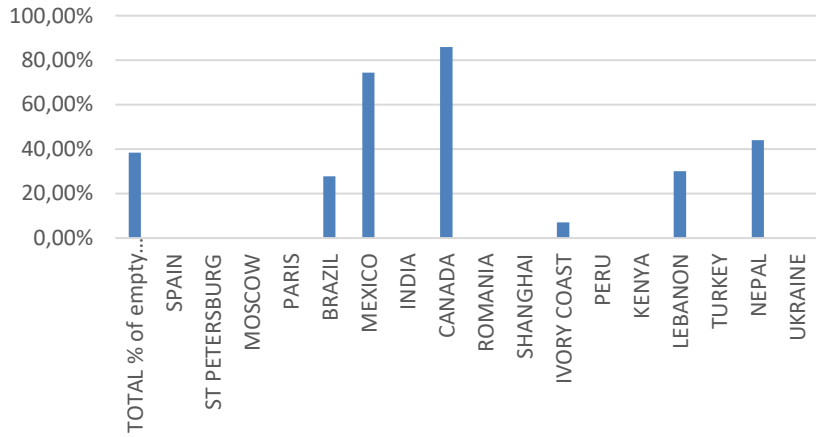
% OF MISSING DATA 2020-21 VERSUS 2022-23

2020-21

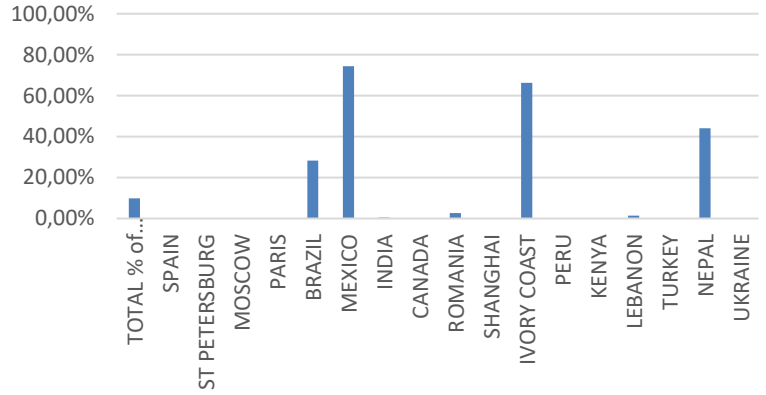
Has the patient had one of these symptoms in the last 7 days prior to admission? **Chest pain**



Date of swabbing

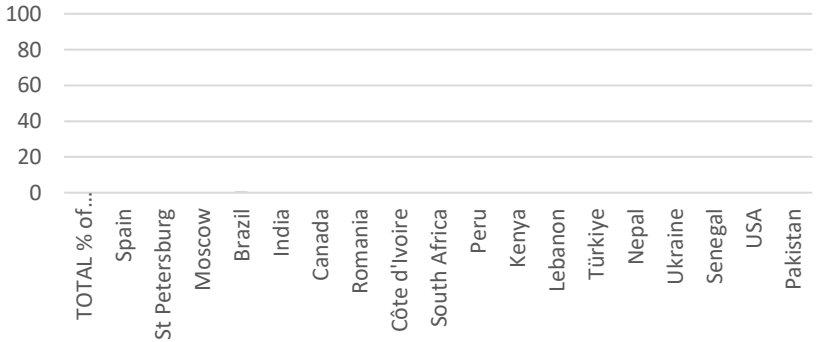


ICU admission



2022-23

Has the patient had one of these symptoms in the last 7 days prior to admission? **Chest pain**



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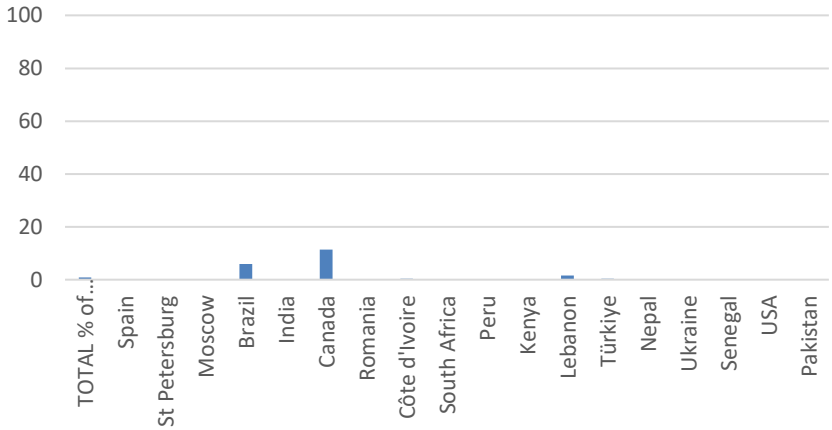
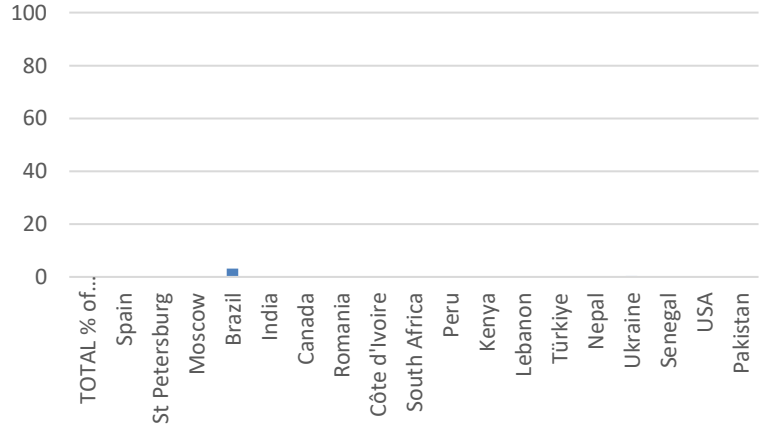


ICU admission



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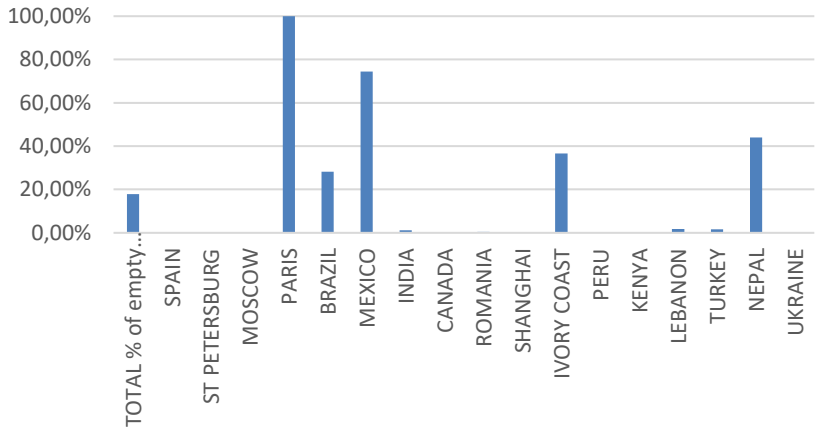
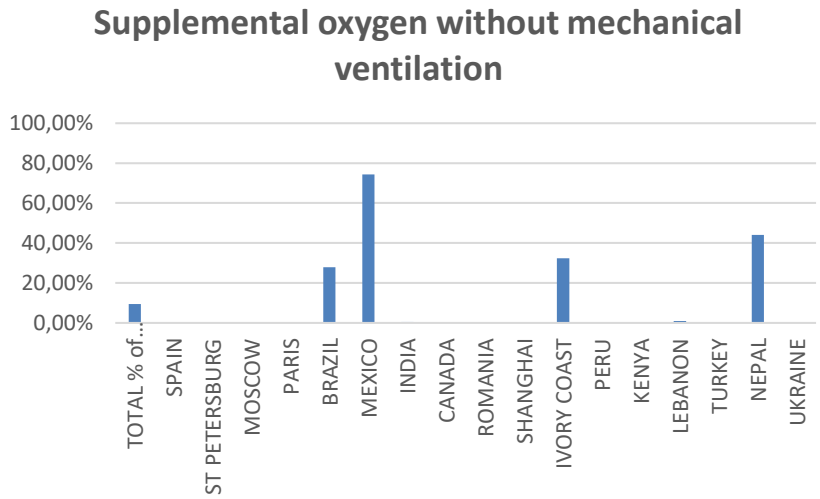
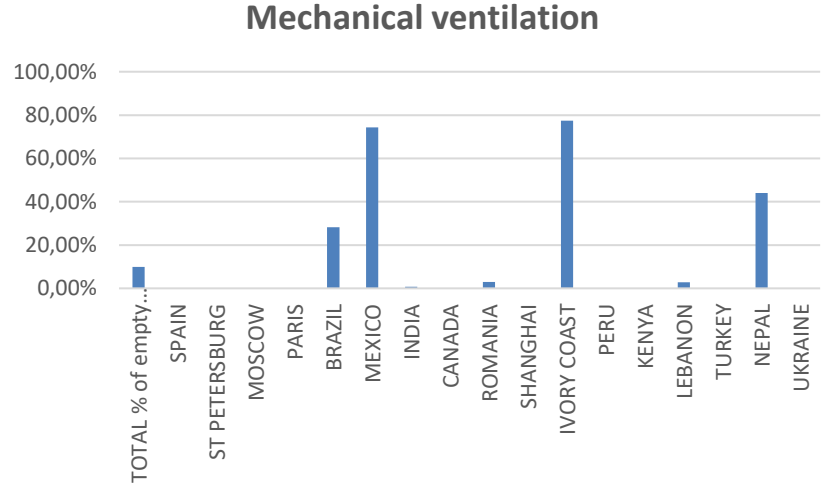
% OF MISSING DATA 2020-21 VERSUS 2022-23

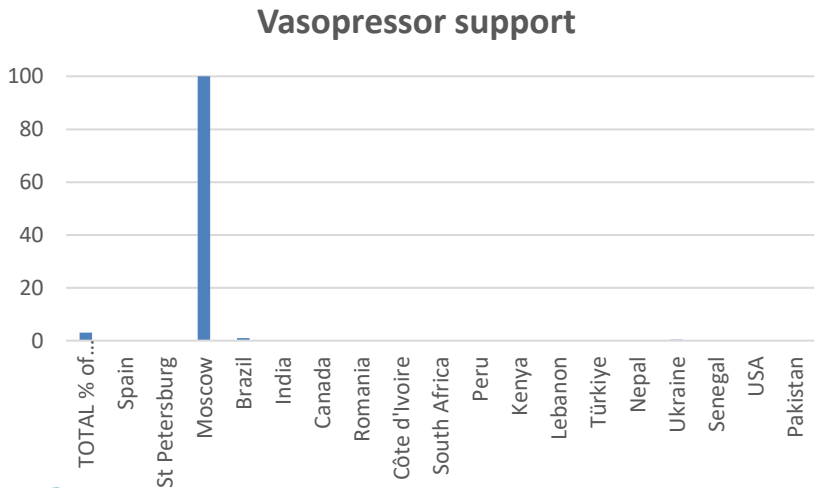
2020-21

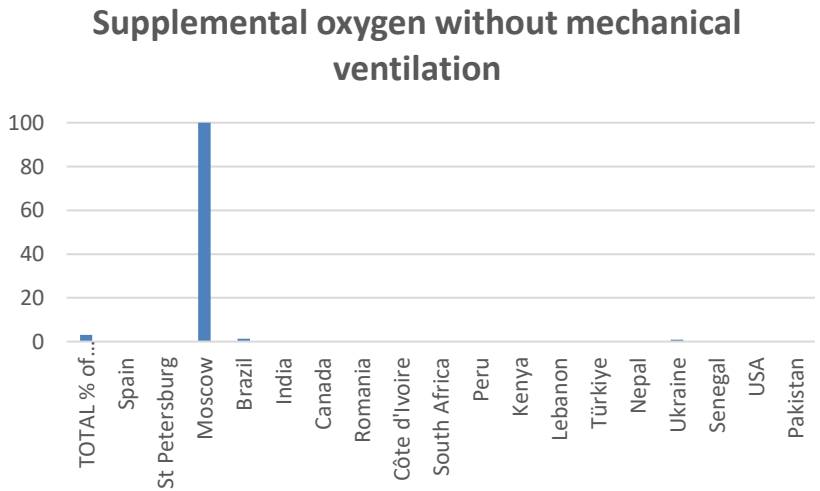


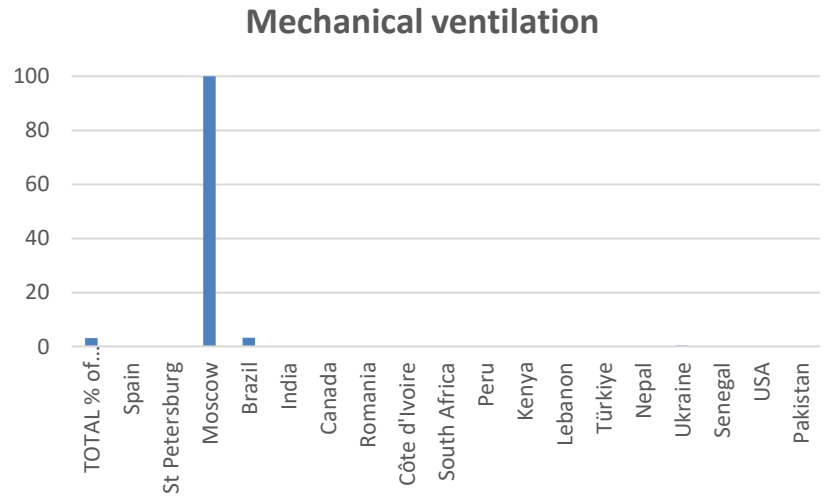




2022-23







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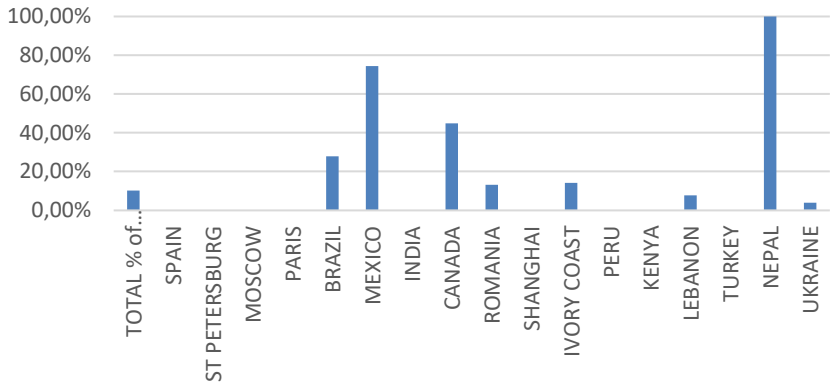
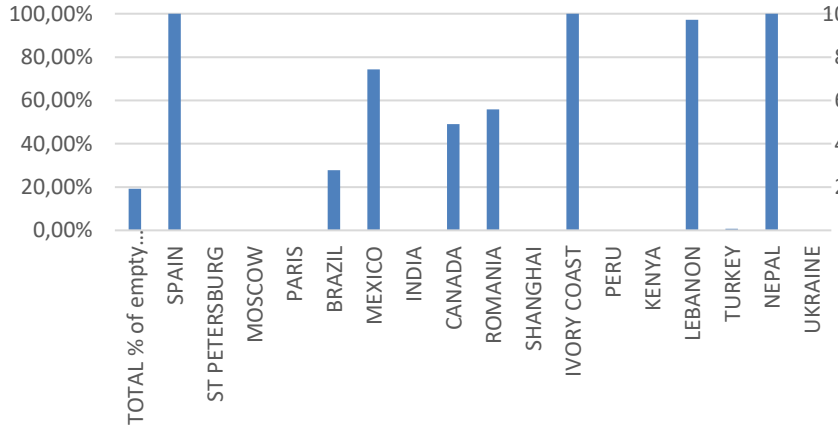
% OF MISSING DATA 2020-21 VERSUS 2022-23

2020-21

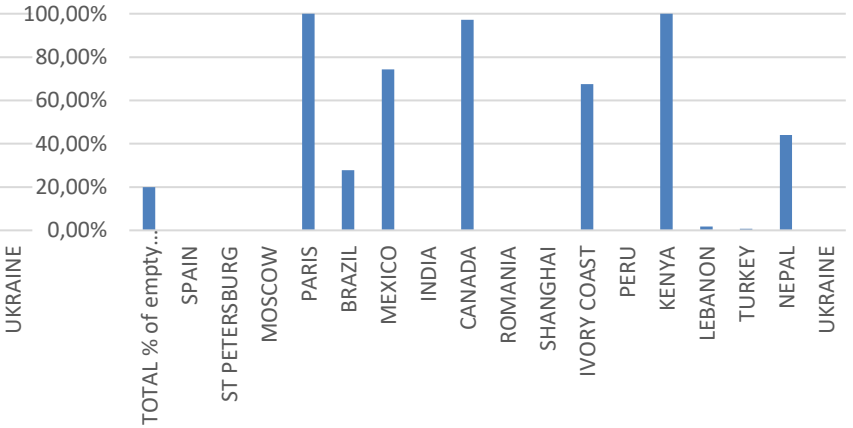
Respiratory rate at admission (breaths per minute)



Oxygen saturation value on ambient air (%)

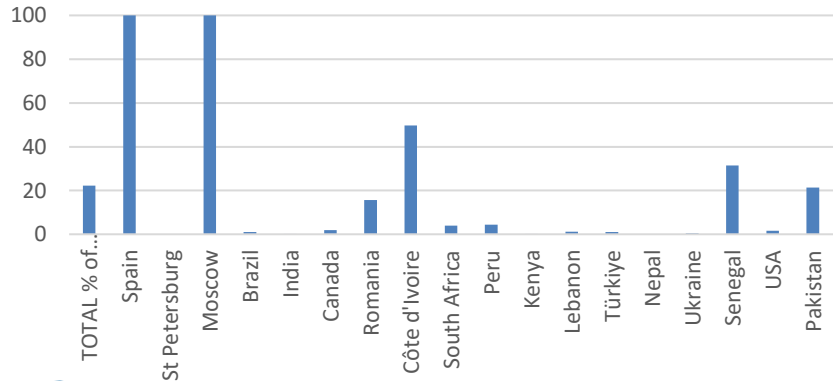


Main diagnose at discharge/death

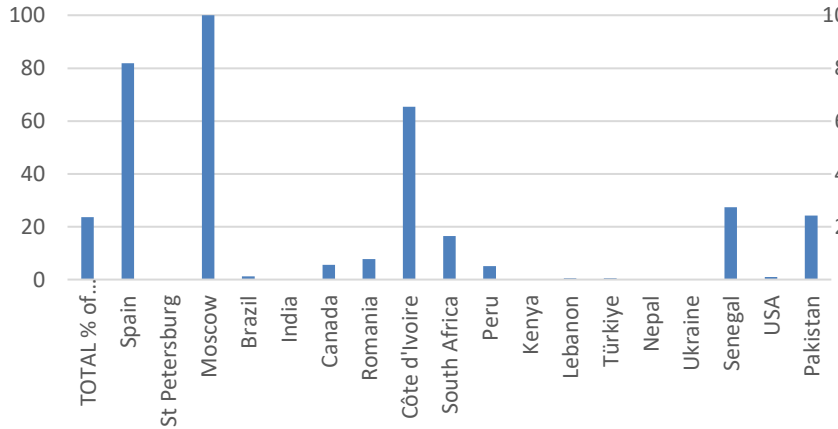


2022-23

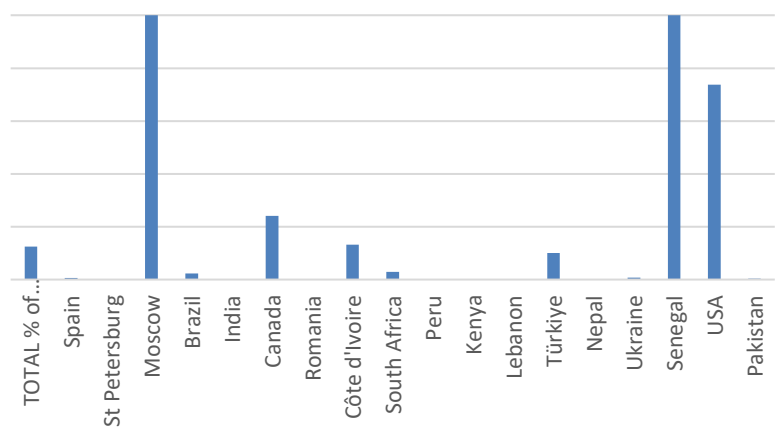
Respiratory rate at admission (breaths per minute)



Oxygen saturation value on ambient air (%)



Main diagnose at discharge/death

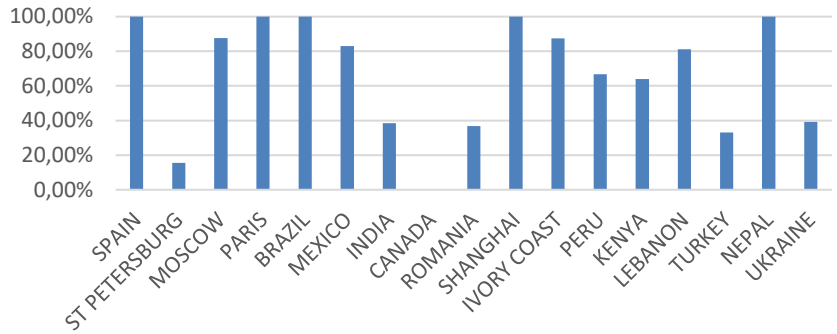


Global Influenza Hospital Surveillance Network

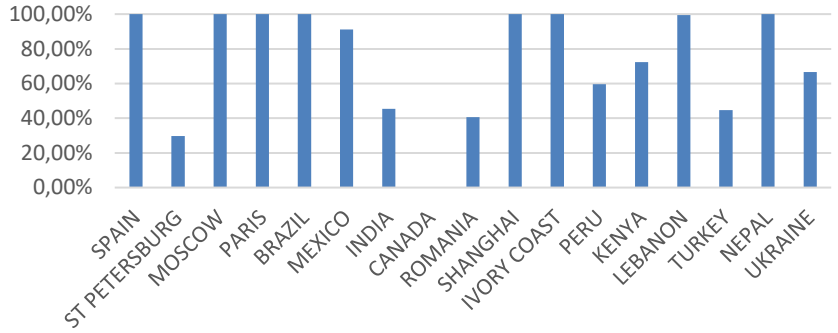
% OF MISSING DATA 2020-21 VERSUS 2022-23

2020-21

What is the baseline **frailty score** of the patient (for all patients 50 years and older), prior to onset of the current illness?

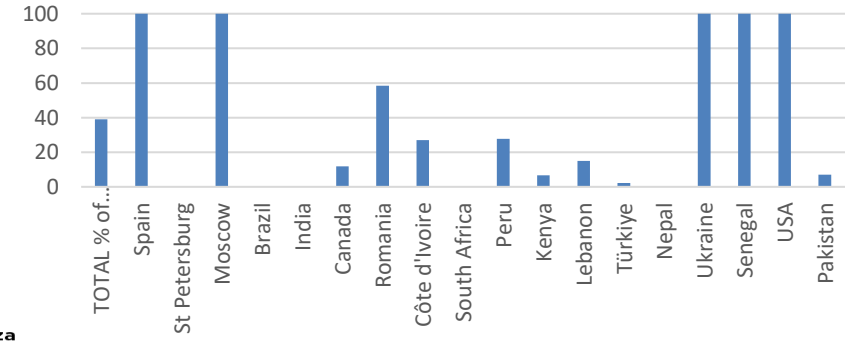


What is the **frailty score** of the patient at **discharge** (for all patients 50 years and older) ?

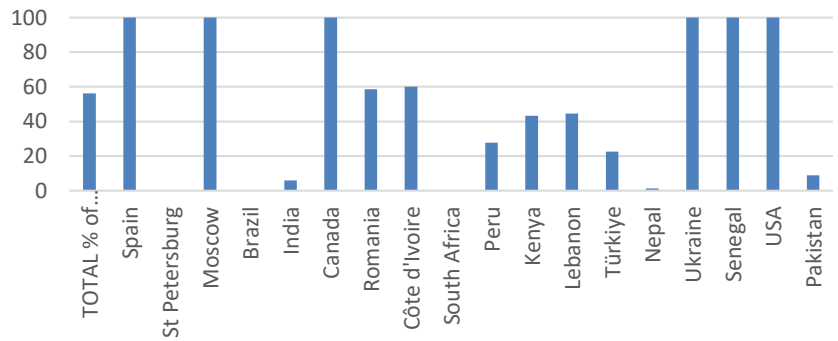


2022-23

What is the baseline **frailty score** of the patient (for all patients 50 years and older), prior to onset of the current illness?

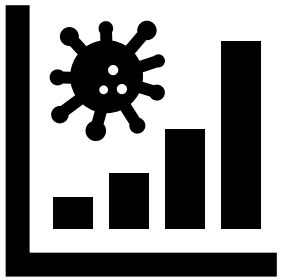


What is the **frailty score** of the patient at **discharge** (for all patients 50 years and older) ?



Global Influenza Hospital Surveillance Network

LET'S LOOK AT THE COMPLETENESS OF OUR QUESTIONNAIRE AND DISCUSS THE VALUE OF SOME OF THE QUESTIONS



Explore what we should continue to monitor based on available data

SHOULD WE CONTINUE COLLECTING INFO ON VARIABLES WITH MISSING OR UNKNOWN DATA?

	influenza Avs prior to admission	influenza Avs during admission	ATBs prior admission	ATBs during admission	Flu vacc during season
	Completeness %				
Brazil	100	100	100	99	99
Canada	100	100	100	7	68
India	100	100	100	100	100
Côte d'Ivoire	98	99	98	98	99
Kenya	100	100	100	100	100
Lebanon	100	100	100	100	99
Nepal	100	100	100	100	100
Pakistan	77	100	83	100	100
Peru	100	100	100	100	99
Romania	99	99	99	99	99
Russia - Moscow	100	0	0	0	100
Russia - Saint Petersburg	100	100	100	100	100
Senegal	100	100	10	84	60
South Africa	100	100	99	100	100
Spain	100	100	0	0	100
Türkiye	99	99	99	98	99
Ukraine	100	100	100	100	100
USA	100	100	100	100	100

Vaccinated more than 14 days before onset of acute respiratory symptoms			Vaccination history for current season validated through registry or medical records?			Type of influenza vaccine?		
% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown
96	0	4	100	0	0	89	0	11
0	100	0	0	100	0	0	100	0
100	0	0	100	0	0	3	0	97
100	0	0	67	0	33	67	0	33
100	0	0	100	0	0	100	0	0
99	0	1	76	0	24	47	0	53
NA	NA	NA	NA	NA	NA	NA	NA	NA
98	0	2	100	0	0	13	0	88
100	0	0	100	0	0	0	0	100
87	0	13	27	0	73	17	0	83
100	0	0	100	0	0	100	0	0
NA	NA	NA	NA	NA	NA	NA	NA	NA
0	0	100	0	0	100	100	0	0
NA	NA	NA	NA	NA	NA	NA	NA	NA
100	0	0	100	0	0	0	0	100
96	0	4	68	0	32	0	0	100
100	0	0	100	0	0	0	0	100
100	0	0	100	0	0	100	0	0

LEVEL OF SEVERITY AT ADMISSION

	Confusion/lethargy			Supplemental oxygen (No mechanical ventilation)			Vasopressor support			Apnea (only for children <5)			**Blood pressure**			Respiration rate			**Oxygen saturation value on ambient air**		
	% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown
Brazil	99	1	0	99	1	0	99	1	0	93	7	0	99	1	0	99	1	0	99	1	0
Canada	100	0	0	99	0	1	100	0	0	NA			99	0	1	99	0	1	96	0	4
India	99	0	1	100	0	0	100	0	0	100	0	0	97	0	3	100	0	0	100	0	0
Côte d'Ivoire	97	0	3	96	0	4	96	0	4	91	0	9	21	2	77	48	2	50	34	2	64
Kenya	100	0	0	100	0	0	100	0	0	100	0	0	9	0	91	100	0	0	100	0	0
Lebanon	98	0	2	100	0	0	100	0	0	72	0	28	87	0	13	99	0	1	100	0	0
Nepal	100	0	0	100	0	0	100	0	0	99	0	1	70	30	0	100	0	0	100	0	0
Pakistan	100	0	0	67	0	33	89	0	11	93	0	7	40	0	60	78	0	22	75	0	25
Peru	100	0	0	100	0	0	100	0	0	100	0	0	15	0	85	96	0	4	96	0	5
Romania	99	0	1	100	0	0	100	0	0	100	0	0	67	0	33	86	0	14	93	0	7
Russia - Moscow	0	100	0	0	100	0	0	100	0	0	100	0	0	0	100	0	0	100	0	0	100
Russia - Saint Petersburg	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0
Senegal	0	0	100	61	0	39	26	0	74	40	0	60	12	0	88	69	0	31	73	0	27
South Africa	100	0	0	99	0	1	100	0	0	100	0	0	94	0	6	96	0	4	83	0	17
Spain	0	0	100	0	0	100	0	0	100	100	0	0	0	0	100	0	0	100	17	0	83
Türkiye	99	0	1	99	0	1	97	0	3	58	0	42	99	0	1	99	0	1	99	0	1
Ukraine	100	0	0	100	0	0	100	0	0	100	0	0	99	0	1	100	0	0	100	0	0
USA	0	100	0	100	0	0	100	0	0	0	0	100	95	0	5	97	0	3	97	0	3

Important when analyzing severity as outcome because there are variations in the way patients may present (e.g., if care seeking delayed, then more likely severe at admission and worse clinical outcome at discharge)

SEVERITY AND CLINICAL OUTCOMES DURING HOSPITAL STAY

	ICU admission (at any time during hospitalization)			High dependence unit (at any time during hospitalization)			Mechanical ventilation (at any time during hospitalization)			Death while hospitalized			Transfer to another hospital/Left against medical orders		
	% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown
Brazil	96	4	0	99	1	0	95	5	0	95	5	0	95	5	0
Canada	100	0	0	0	100	0	100	0	0	100	0	0	100	0	0
India	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0
Côte d'Ivoire	100	0	0	99	0	1	99	0	1	100	0	0	95	1	4
Kenya	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0
Lebanon	100	0	0	100	0	0	100	0	0	100	0	0	99	0	0
Nepal	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0
Pakistan	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0
Peru	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0
Romania	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0
Russia - Moscow	100	0	0	0	100	0	0	100	0	100	0	0	0	100	0
Russia - Saint Petersburg	100	0	0	0	0	100	100	0	0	100	0	0	100	0	0
Senegal	15	0	85	6	0	94	18	0	82	100	0	0	40	0	60
South Africa	77	0	23	0	0	100	100	0	0	100	0	0	100	0	0
Spain	99	0	1	0	0	100	99	0	1	99	0	1	100	0	0
Türkiye	98	0	2	89	0	11	97	0	3	100	0	0	99	0	1
Ukraine	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0
USA	100	0	0	100	0	0	100	0	0	100	0	0	3	0	97

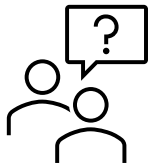
HOW DIFFICULT IT IS TO COLLECT FRAILTY DATA?

Site	What is the baseline frailty score of the patient (only for all patients 50 years and older), prior to onset of the current illness?			What is the frailty score of the patient at discharge (only for all patients 50 years and older)?		
	% completed	% missing	% unknown	% completed	% missing	% unknown
Brazil - Curitiba	NA	0	NA	NA	NA	NA
Canada	100	0	0	0	0	100
India	100	0	0	94	0	6
Ivory Coast	74	0	25	40	1	59
Kenya	94	0	6	59	0	41
Lebanon	86	1	13	56	1	42
Nepal	100	0	0	99	0	1
Pakistan	93	0	7	91	0	9
Peru	72	0	28	75	6	19
Romania	40	0	60	40	0	60
Russian Federation - Moscow	0	0	100	0	100	0
Russian Federation - Saint Petersburg	100	0	0	100	0	0
Senegal - Dakar	0	0	100	0	0	100
South Africa	100	0	0	100	0	0
Spain - Valencia	0	0	100	0	0	100
Turkey	98	0	2	78	3	20
Ukraine	0	0	100	0	0	100
USA - NYC	0	0	100	0	0	100

DIAGNOSIS AT DISCHARGE

	Main diagnose at discharge/death			Secondary 1 diagnose at discharge/death			Secondary 2 diagnose at discharge/death		
	% completed	% missing	% unknown	% completed	% missing	% unknown	% completed	% missing	% unknown
Brazil	95	5	0	0	7	92	0	7	92
Canada	77	0	23	50	0	50	0	0	100
India	100	0	0	100	0	0	100	0	0
Côte d'Ivoire	85	2	14	57	2	41	16	2	82
Kenya	100	0	0	41	0	60	4	0	96
Lebanon	99	0	0	42	0	58	18	1	82
Nepal	100	0	0	0	0	100	0	0	100
Pakistan	100	0	0	1	0	99	0	0	100
Peru	100	0	0	13	0	87	3	0	97
Romania	97	3	0	65	3	32	49	4	47
Russia - Moscow	100	0	0	0	0	100	0	100	0
Russia - Saint Petersburg	100	0	0	15	0	85	4	0	96
Senegal	100	0	0	0	0	100	0	0	100
South Africa	100	0	0	23	0	77	3	0	97
Spain	100	0	0	39	0	61	16	0	84
Türkiye	91	9	0	14	9	77	3	9	88
Ukraine	100	0	0	21	0	79	1	0	99
USA	100	0	0	15	0	85	15	0	85

WHAT CAN BE DONE TO IMPROVE COMPLETENESS OF DATA?



Sites' feedback on questionnaire

- Completeness – what to do to improve it?
- Shall we revisit required variables?
- What are key information we would like to gather?
- Could we add other requests based on discreet projects?

THANK YOU!

GIHSN 11TH ANNUAL MEETING, 16-17 NOVEMBER 2023

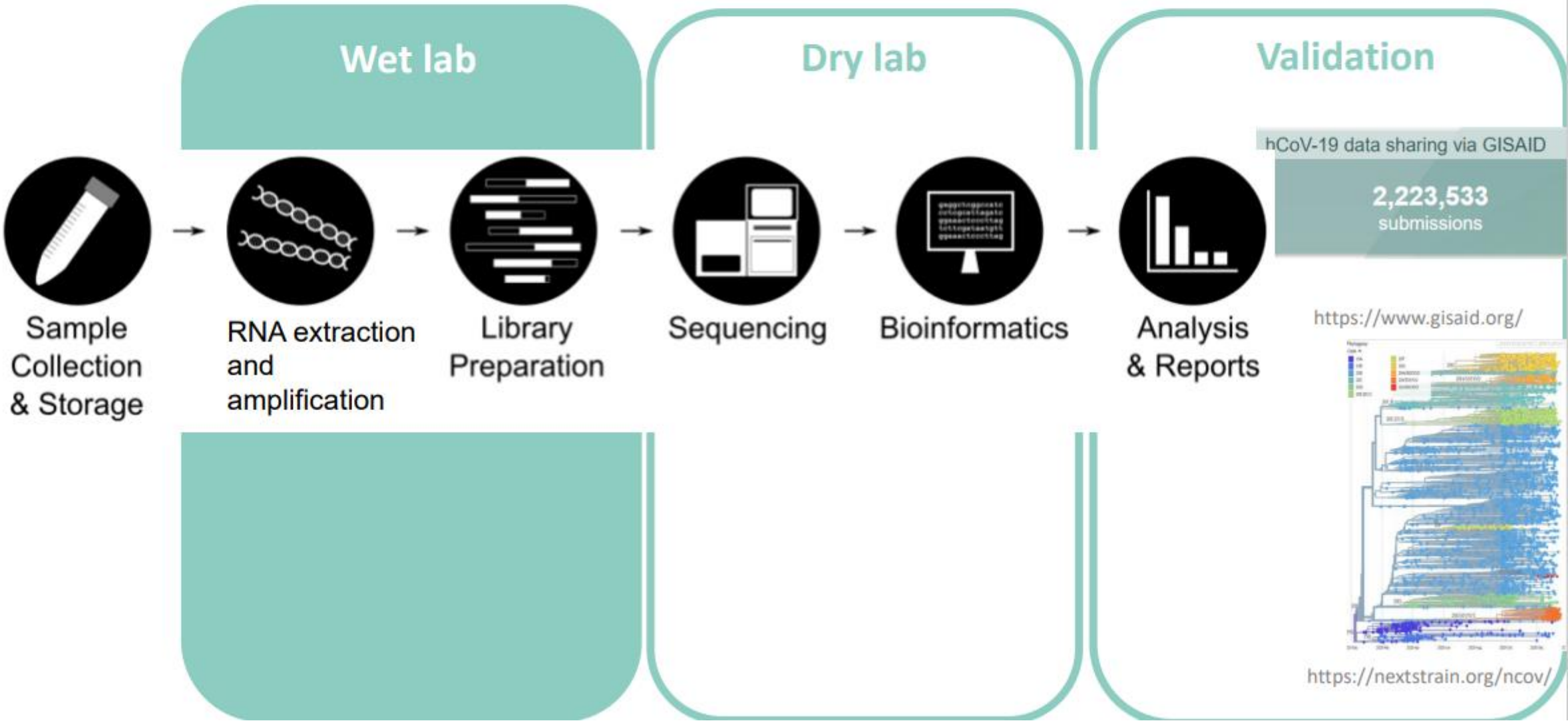
LABORATORY PROTOCOL

Bruno LINA, CIRI, Lyon

Foundation for
Influenza
Epidemiology

Sequencing steps

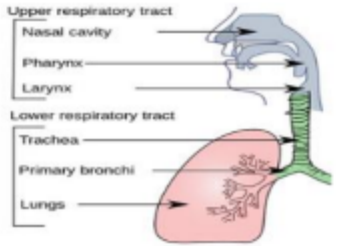
3 STEPS



METAGENOMICS-NGS

Detection of **known** and **unknown viruses**

Universal method for viral detection and whole genome sequencing



Influenza A &B, AdV, CMV, HHV-6, EBV, HBoV, HRV, RSV, PIV, MPV, CoV, Enterovirus, Measles, SARS-CoV-2

Bal et al., BMC Inf Dis, 2018

Extraction → **DNase** → **cDNA Amplification (WTA)** → **Lib prep (Nextera XT / DNA prep)** → Illumina Sequencing

February 2020

Molecular characterization of SARS-CoV-2 in the first COVID-19 cluster in France reveals an amino acid deletion in nsp2 (Asp268del)

A. Bal [1,2,3,4,*], G. Destras [1,2,3,*], A. Gaymard [1,2,3], M. Bouscambert-Duchamp [1,2], M. Valette [1,2], V. Escuret [1,2,3], E. Frobert [1,2,3], G. Billaud [1,2], S. Trouillet-Assant [3,4], V. Cheynet [4], K. Brengel-Pesce [4], F. Morfin [1,2,3], B. Lina [1,2,3], L. Josset [1,2,3,*]

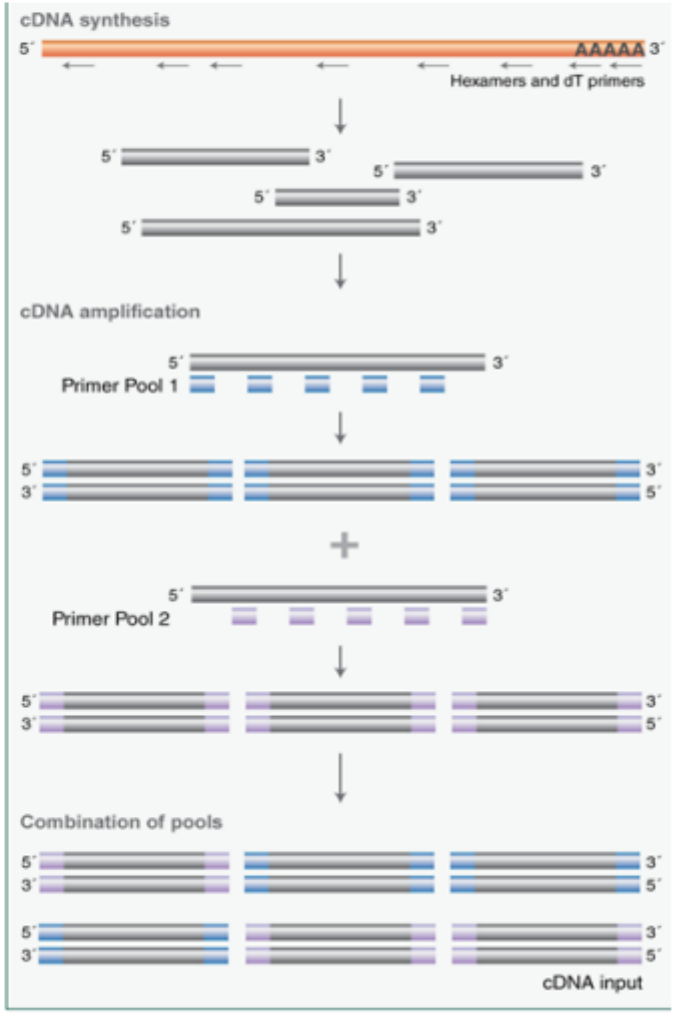
HCL HOSPICES CIVILS DE LYON

AMPLICON-BASED APPROACHE

ARTIC V3, 98 AMPLICONS ~400 BP

1) RNA extraction 96-Well plate

2) cDNA synthesis and amplification



3) Lib preparation

- Illumina : DNA Prep/ Nextera XT , Tagmentation of reads
- ONT: sequencing of 400nt amplicons

4) Illumina / ONT Sequencing

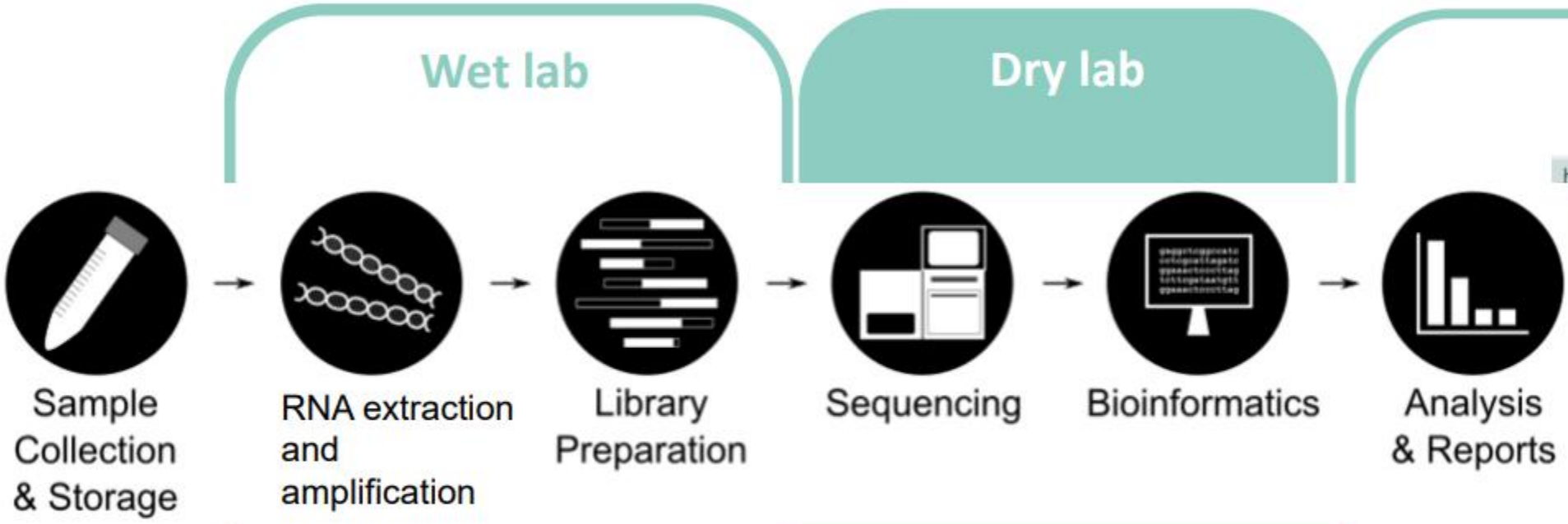
STORAGE / SHIPMENT TO OUR LAB

- RNA stored at -80°C until shipment
- Ct<28, 50 µl min
- Metadata excel file for GISAID Submission and recording : mandatory

Column information		
Submitter	mandatory	enter your GISAID-Username
FASTA filename	mandatory	the filename that contains the sequence without path (e.g. all_sequences.fasta not c:\users\meier\docs\all_sequences.fasta)
Virus name	mandatory	e.g. hCoV-19/Netherlands/Gelderland-01/2020 (Must be FASTA-Header from the FASTA file all_sequences.fasta)
Type	mandatory	default must remain "betacoronavirus"
Passage details/history	mandatory	e.g. Original, Vero
Collection date	mandatory	Date in the format YYYY or YYYY-MM or YYYY-MM-DD
Location	mandatory	e.g. Europe / Germany / Bavaria / Munich
Additional location information		e.g. Cruise Ship, Convention, Live animal market
Host	mandatory	e.g. Human, Environment, Canine, Manis javanica, Rhinolophus affinis, etc
Additional host information		e.g. Patient infected while traveling in ....
Sampling Strategy		e.g. Sentinel surveillance (ILI), Sentinel surveillance (ARI), Sentinel surveillance (SARI), Non-sentinel-surveillance (hospital), Non-sentinel-surveillance (GP network), Longitudinal sampling on same patient(s), S gene dropout
Gender	mandatory	Male, Female, or *unknown*
Patient age	mandatory	e.g. 65 or 7 months, or *unknown*
Patient status	mandatory	e.g. Hospitalized, Released, Live, Deceased, or *unknown*
Specimen source		e.g. Sputum, Alveolar lavage fluid, Oro-pharyngeal swab, Blood, Tracheal swab, Urine, Stool, Cloakal swab, Organ, Feces, Other
Outbreak		Date, Location e.g. type of gathering, Family cluster, etc.
Last vaccinated		provide details if applicable
Treatment		Include drug name, dosage
Sequencing technology	mandatory	e.g. Illumina Miseq, Sanger, Nanopore MinION, Ion Torrent, etc.
Assembly method		e.g. CLC Genomics Workbench 12, Geneious 10.2.4, SPAdes/MEGAHIT v1.2.9, UGENE v. 33, etc.
Coverage		e.g. 70x, 1,000x, 10,000x (average)
Originating lab	mandatory	Where the clinical specimen or virus isolate was first obtained
Address	mandatory	
Sample ID given by the originating laboratory		
Submitting lab	mandatory	Where sequence data have been generated and submitted to GISAID
Address	mandatory	
Sample ID given by the submitting laboratory		
Authors	mandatory	a comma separated list of Authors with complete First followed by Last Name
Comment	leave empty	do not use this column

Sequencing steps

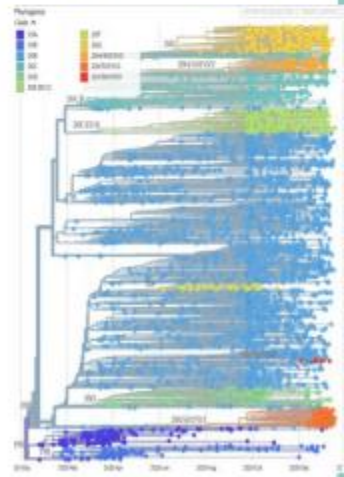
3 STEPS



hCoV-19 data sharing via GISAID

2,223,533
submissions

https://www.gisaid.org/



https://nextstrain.org/ncov/

BIOINFORMATICS

FROM RAW DATA TO THE CONSENSUS SEQUENCE: ILLUMINA SEQUENCING

BIOINFORMATICS

OPEN SOURCE AND COMMERCIAL SOLUTIONS

For Illumina users…

« SEQMET », our « in house » pipeline freely available here:
https://github.com/jossetlab/seqmet

But see also the the Illumina's cloud solution « DRAGEN »

Illumina can provide online data analysis without bioinformatic skills
https://basespace.illumina.com/

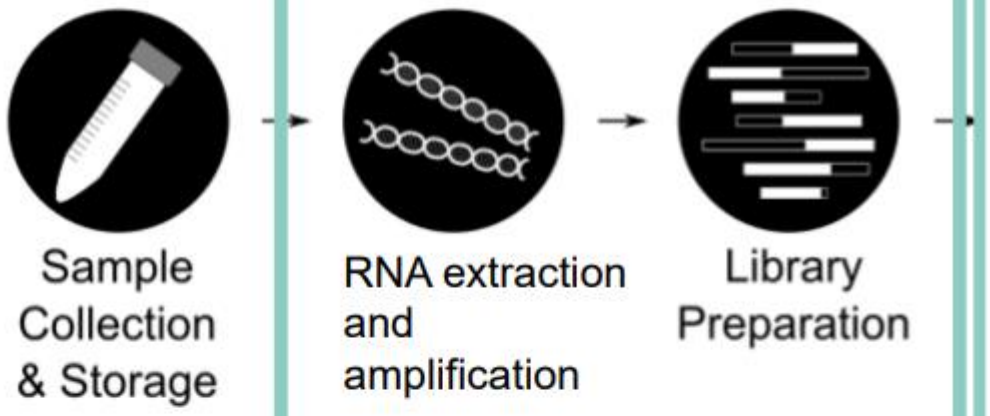
… and ONT adepts

We haven't pipeline dedicated to ONT data analysis
Several analysis workflows are proposed by ONT

https://labs.epi2me.io/ provide a large analysis panel
(and tutorials) to process online your data

Sequencing steps

3 STEPS



Sample Collection & Storage

RNA extraction and amplification

Library Preparation

Wet lab

Sequencing

Bioinformatics

Dry lab

Analysis & Reports

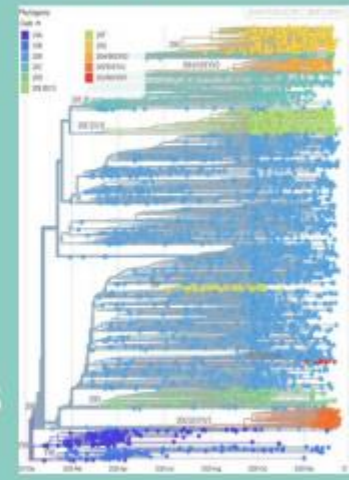
Validation

hCoV-19 data sharing via GISAID

2,223,533 submissions

https://www.gisaid.org/

1. Criteria
2. Tools
3. GISAID
4. Indications



https://nextstrain.org/ncov/

VALIDATION CRITERIA

COVERAGE

- Minimal depth of coverage / base for consensus sequence generation: 10X for Illumina sequencing
- Otherwise **: N**

The sequence is validated if the genome coverage is > 90 % with a mean depth of coverage > 200X

VALIDATION CRITERIA

NUMBER AND TYPE OF MUTATIONS

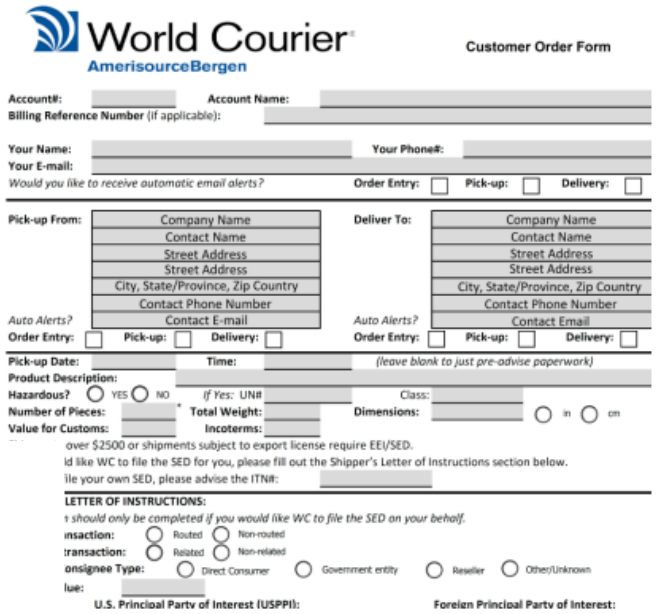
- Divergence (number of mutations): QC nextclade
- Frameshift mutation: CoV-GLUE / QC nextclade
- New mutations: CoV-GLUE
- Atypical set of mutation
- Molecular epidemiology (Clade not circulating in a given area)

Repeat extraction +/- mNGS

Key issues – preanalytic & postanalytic phases

STORAGE / SHIPMENT

- Shipment organized by world courrier
  - File need to be completed and send to World courrier
  - They will take in charge the shipment :
    - Provide the boxes
    - Provide the dry ice



World Courier
AmerisourceBergen

Customer Order Form

Account#: Account Name:
Billing Reference Number (if applicable):

Your Name: Your Phone#:
Your E-mail:
Would you like to receive automatic email alerts? Order Entry: Pick-up: Delivery:

Pick-up From:	Deliver To:
Company Name	Company Name
Contact Name	Contact Name
Street Address	Street Address
Street Address	Street Address
City, State/Province, Zip Country	City, State/Province, Zip Country
Contact Phone Number	Contact Phone Number
Contact E-mail	Contact Email
Auto Alerts? Order Entry: Pick-up: Delivery:	*Auto Alerts?* Order Entry: Pick-up: Delivery:

Pick-up Date: Time: *(leave blank to just pre-advise paperwork)*
Product Description:
Hazardous? YES NO *If Yes:* UN# Class:
Number of Pieces: Total Weight: Dimensions: in cm
Value for Customs: Incoterms:

over $2500 or shipments subject to export license require EEI/SED.
Id like WC to file the SED for you, please fill out the Shipper's Letter of Instructions section below.
ile your own SED, please advise the ITN#:

LETTER OF INSTRUCTIONS:
should only be completed if you would like WC to file the SED on your behalf.
nsaction: Routed Non-routed
ransaction: Related Non-related
onsignee Type: Direct Consumer Government entity Reseller Other/Unknown
lue:
U.S. Principal Party of Interest (USPPI): Foreign Principal Party of Interest:

SARS-COV-2 SEQUENCING

WEBINAR GIHSN

Antonin Bal, Gregory Destras, Hadrien Regue, Quentin Semanas, Gwendolyne Burfin, Bruno Simon, Bruno Lina, Laurence Josset

28/01/2021 NGS TEAM- CNR VIRUS RESPIRATOIRES FRANCE SUD

HCL
HOSPICES CIVILS DE LYON

www.chu-lyon.fr

ANNUAL MEETING, 16 NOVEMBER 2023

SEQUENCING SUPPORT FOR SITES

Laurence Torcel-Pagnon, Foundation for Influenza Epidemiology

Foundation for Influenza Epidemiology

Sous l'égide de Fondation de France

21 SITES FOR SEASON 2023-24

6 GIHSN sites are NIC or have close collaboration with NIC:

Senegal, Côte d'ivoire, Pakistan, Russia-St Peterburg, Russia-Moscow and New Zealand

9 GIHSN sites have strains sequencing done by WHO CC or NIC (incl. Lyon)

+ Kenya + Nigeria + Ukraine ; Turkey TBD

13 GIHSN sites have whole genome sequencing done by WHO CC or NIC (incl. Lyon)

+ Brazil + Peru + Poland + Lebanon

GIHSN ANNUAL MEETING, 17 NOVEMBER 2023

GIHSN DASHBOARD - PILOT

Laurence Torcel-Pagnon, Foundation for Influenza Epidemiology

Selina Kim & Idil Cazimoglu, Airfinity

Foundation for Influenza Epidemiology

Sous l'égide de Fondation de France

DASHBOARD RATIONAL

The Foundation for Influenza Epidemiology contributes to the worldwide efforts in monitoring respiratory viruses by supporting the GIHSN.

Likewise other surveillance networks (WHO, CDC, ECDC), the GIHSN would value having an interactive dashboard to expose the GIHSN aggregate fully anonymized data and support GIHSN in increasing key indicators accessibility for the public and private scientific community at large.

The FIE has partner with Airfinity to develop a pilot dashboard for the GIHSN.

Airfinity is company providing predictive intelligence for life sciences with a major focus on Infectious Disease understanding.

Today objective is to share the pilot proposal and get feedback before moving forward

REMINDER OF THE GUIDING PRINCIPLES
GIHSN DATA FRAMEWORK

To comply with regulations of data access and privacy, the FIE has set up a data warehouse and a data access framework. Impact Health Care is the Data Controller for the GIHSN (jointly with *Fondation de France*), handling the data collection process and supervising the GIHSN data warehouse. The GIHSN database is hosted in a secured environment (certified secured hosting for health personal data). Data are processed in full accordance with the European General Data Protection Regulation (GDPR) and French data protection regulations. The data are anonymized promptly upon receipt by Impact Healthcare and only these anonymized data are accessible by third parties.

Sites remain the owner of the raw data they collect following the GIHSN common protocol. They all sign a data sharing agreement with Impact Health Care, mandated by FIE to generate the descriptive analysis of the GIHSN yearly surveillance data.

Any research project and secondary analysis of the GIHSN raw data should be approved by the GIHSN Independent Scientific Committee. Sites are informed upfront of any analysis and have the possibility to opt-out. No commercial use of the raw data is authorized by any party.

DASHBOARD FRAMEWORK - PROPOSAL

Airfinity is proposing “in kind contribution” to the foundation to develop the GIHSN dashboard.

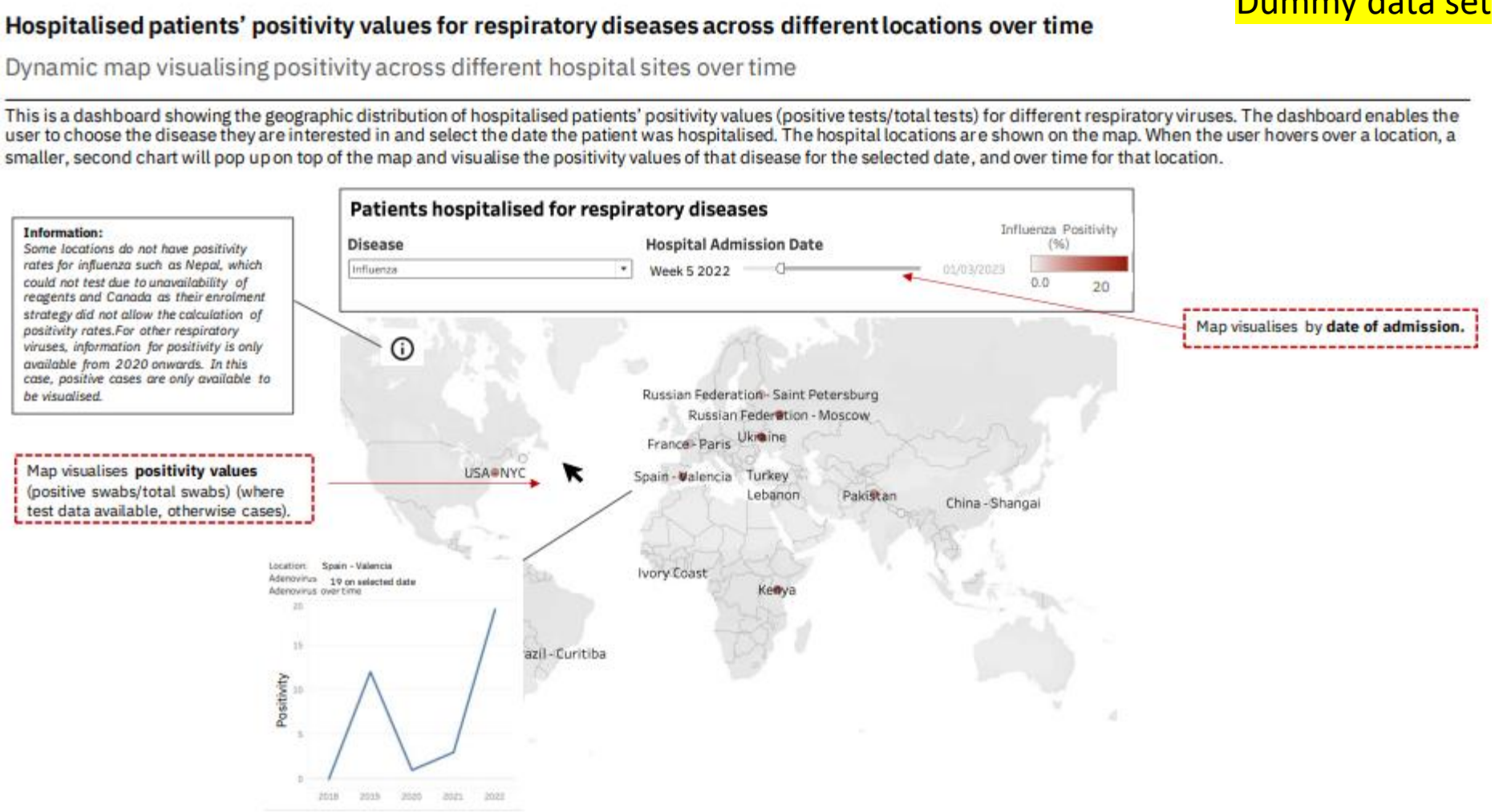
- The dashboard will be hosted on the GIHSN website, and Airfinity’s contribution acknowledged.
- Impact Health Care as the Data Controller will manage the data flow for the dashboard.
- Only aggregated fully anonymized data will be exposed in the dashboard, informed by the indicators presented in the GIHSN annual report
- GIHSN will continues to own the IP of the aggregated data itself
- This dashboard will allow any user/third party to download the aggregated data used to generate the views after having register to the GIHSN (free registration)
- Frequency of data update will rely on the sites ability but the FIE promotes progressive move toward a monthly update

For the pilot, the dashboard is focusing on 5 key data views

Global Influenza Hospital Surveillance Network

PILOT DASHBOARD PROPOSAL BY AIRFINITY (1)

Dummy data set



Global Influenza Hospital Surveillance Network

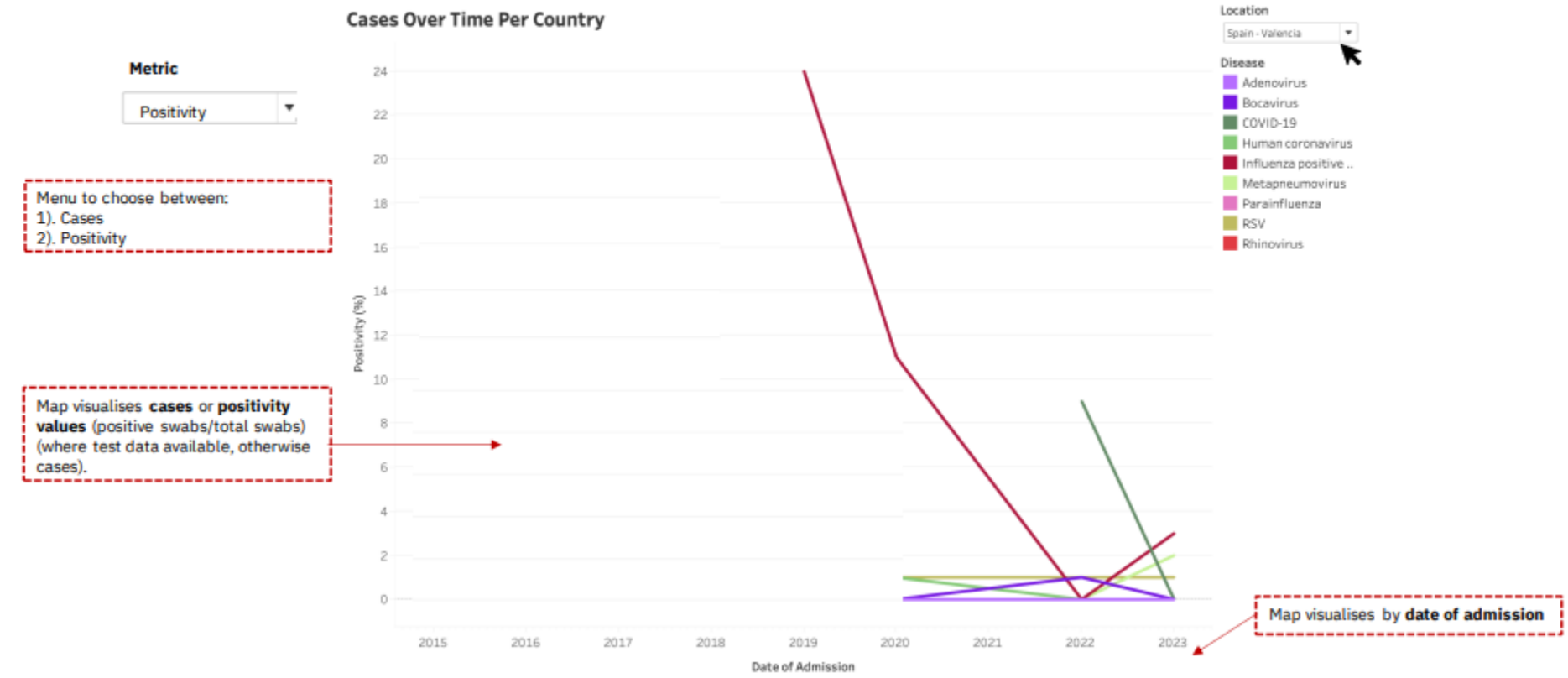
PILOT DASHBOARD PROPOSAL BY AIRFINITY (2)

Dummy data set

Positivity values for each respiratory disease over time per location

Time series graph showing % positivity per disease over time for each location

This is a dashboard showing the incidence of different respiratory diseases over time in each location. The dashboard enables the user to select between visualising the number of cases (positive samples) or % positivity values. The user can also choose the location they are interested in and see the cases/relative positivity of the different diseases over time.



Global Influenza Hospital Surveillance Network

PILOT DASHBOARD PROPOSAL BY AIRFINITY (3)

Dummy data set

Hospitalised patients by age and sex

Aggregating patients hospitalised (for influenza) across different sites and splitting by age

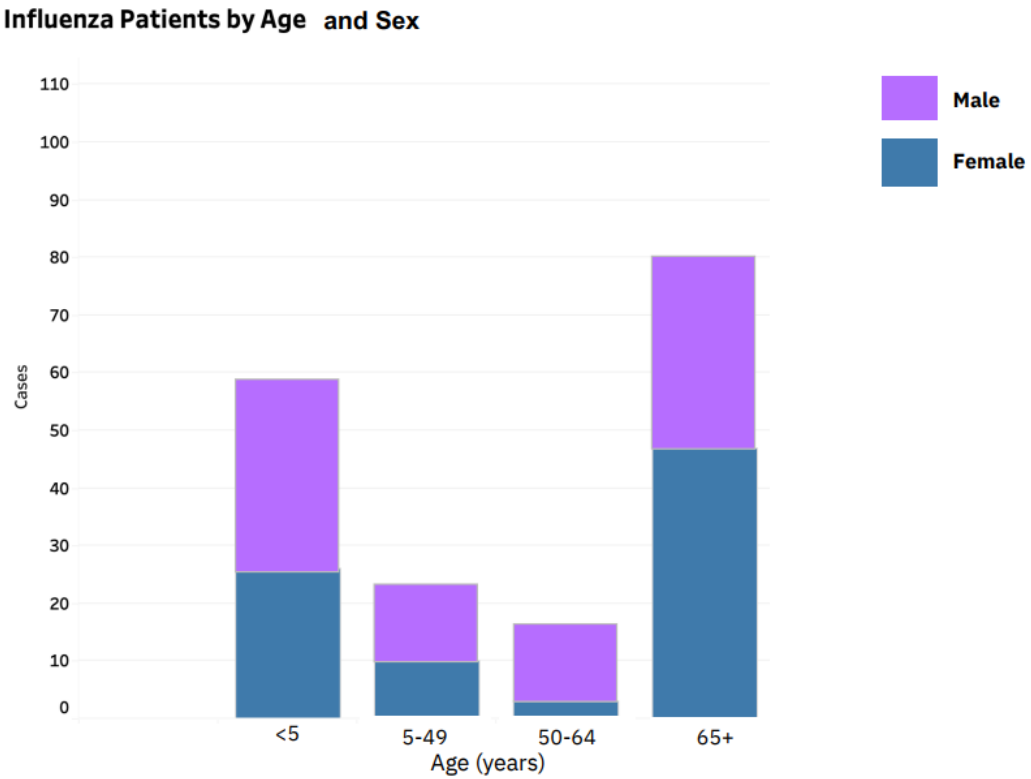
This is a dashboard showing all influenza patients across sites and over time, split by age. The user can choose between the different sites and seasons, which will dynamically change the graph. This visualisation may be replicated for the other diseases.

Site

Spain - Valencia

Season

2022/2023



Global Influenza Hospital Surveillance Network

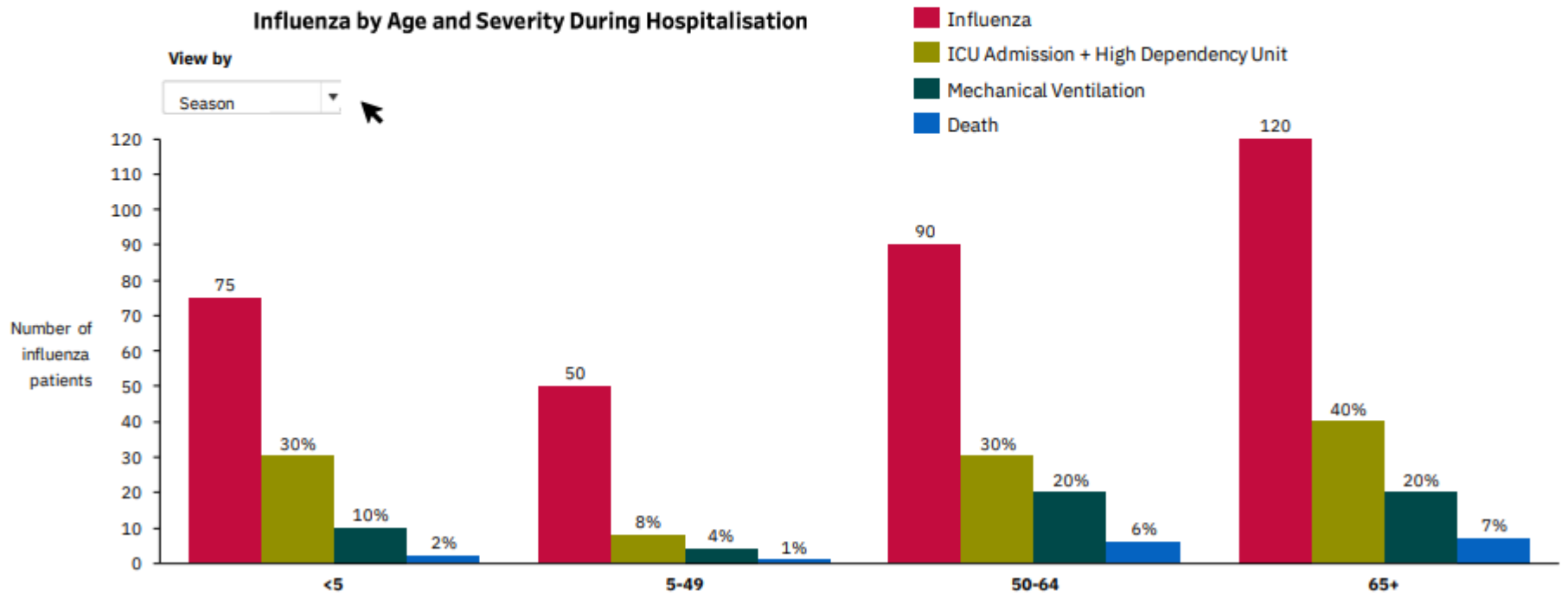
PILOT DASHBOARD PROPOSAL BY AIRFINITY (4)

Dummy data set

Hospitalised patients by age and severity

Aggregating patients hospitalised (for influenza) splitting by age and severe outcomes

This is a dashboard showing all influenza patients, split by age and severity during hospitalisation. The user can choose between different seasons, which will dynamically change the graph. This visualisation may be replicated for the other diseases.



Global Influenza Hospital Surveillance Network

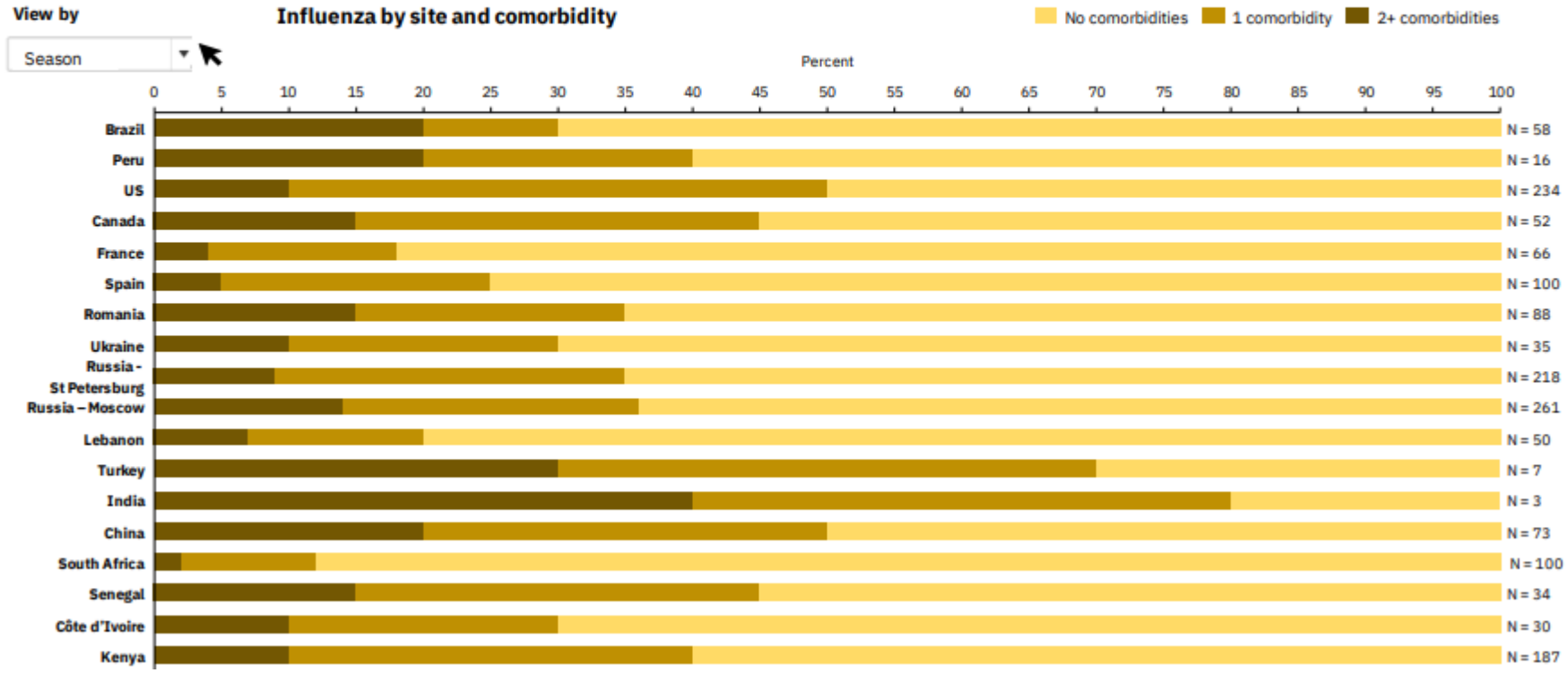
PILOT DASHBOARD PROPOSAL BY AIRFINITY (5)

Dummy data set

Hospitalised patients by site and comorbidity

Aggregating patients hospitalised (for influenza) splitting by site and comorbidity

This is a dashboard showing all influenza patients over time, split by site and comorbidity during hospitalisation. The user can choose between the different seasons, which will dynamically change the graph. This visualisation may be replicated for the other diseases.



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QUESTIONS ?

Foundation for Influenza Epidemiology

airfinity

NEXT STEPS

- Integrate feedback from sites/ISC/others provided at the annual meeting

In 2024 move to the production mode:

- Develop the dashboard
- Integrate the dashboard on the GIHSN website and organise data flow
- Launch the dashboard and monitor access

Global Influenza Hospital Surveillance Network

GIHSN 11TH ANNUAL MEETING, 16-17 NOVEMBER 2023

CLOSING OF THE MEETING

Dr Wenqing ZHANG, WHO & Cedric MAHE, Foundation for Influenza Epidemiology

Foundation for
Influenza
Epidemiology

THANK YOU!

Global Influenza Hospital Surveillance Network