Global perspective on maintaining influenza surveillance systems & incorporating COVID-19 surveillance

Ann Moen

Joint SARInet/REVELAC-i Regional Meeting

16 September 2020
Persistent threat of influenza

- HPAI H5N1 Re-emergence (2002)
- H1N1 Pandemic (2009)
- MERS-CoV (2012)
- H7N9 Emergence (2013)
- Ebola (2014)

H?N?
Influenza – a rapidly changing virus

Pandemic influenza kills:
>52 000 000 people
in the past 4 pandemics

Seasonal influenza:
290 000 – 650 000 (resp deaths)
3 -5 million severe cases
1 billion infected
every year

Virus evolution  -vs-  Countermeasure development

Surveillance – timeliness, sharing
Science and innovation
Global coordination

Essence of influenza surveillance
• Timeliness (year-round), sharing – SPEED!
• Global coordination
• Vaccine Composition Meetings twice a year

Global Goods of WHO - GISRS – longevity (>65 years)
• MS support (>125 countries)
• Mechanisms, expertise, experience
• Associated national/subnational surveillance systems

Resource for the world beyond influenza
• 2002 – SARS-CoV identification
• 2015 ---> Global RSV surveillance
• 2020 - EpiCoV™ – a clone of EpiFlu™ in GISAID
Leveraging influenza capacities for the COVID-19 response and beyond
Leveraging GISRS – Virus detection capacity with quality assurance

- PCR diagnostic capacity for influenza assessed since 2007
- Flu EQAP leveraged for COVID-19 PCR EQAP
  - Deployed April 2020
  - 233 labs in 164 countries reported results
  - Final results ~94% score 100!

Over 140 Flu national labs are testing for COVID-19
Leveraging GISRS – Monitor co-circulation of influenza & COVID-19

- Influenza activity reporting
- Percent positivity by influenza transmission zone
- Subtyping capacity at national level

Week 9-26: Influenza and COVID-19 positivity from sentinel surveillance (tested ≥ 40 per week)

- Reporting COVID-19 through FluNet since week 9
- Global percent positivity for Flu and COVID-19
Leveraging GISRS – Monitor evolution of COVID-19 virus

- Monitoring virus evolution
- Genetic and phenotypic analysis relies on sharing viruses and GSD
- A global network of scientists and national laboratories

- Same network and resources leveraged for COVID-19
  - >100,000 SARS-CoV-2 sequences in public sequence databases (like GISAID, GenBank, etc.)

(search on 14 Sept 2020, 19:14 CET)

Source: CDC, USA, Vaccine meeting Data package
Sentinel surveillance for influenza

**Objectives:**
- Monitor influenza illness activity, virus circulation, characterize burden, severity of disease, determine risk factors for severe disease, detect unusual activity

- Combined epidemiological and virologic surveillance
- Standard case definitions or ICD codes
- Sentinel systems/not capturing every case

**SOURCE OF VIRUSES**

- Deaths
- Secondary care
- Primary care
- Asymptomatic infections
- Symptomatic infections (non-medically attended)

- Pneumonia & influenza mortality, excess all-cause mortality
- SARI/pneumonia/ICU surveillance
- ARI/ILI
- Participatory surveillance
- Serology, special studies

- GISRS (virologic surveillance)
**GISRS COVID-19 Sentinel Surveillance - monitoring community transmission**

**Week 9-26: Influenza and COVID-19 positivity from sentinel surveillance (tested ≥ 40 per week)**

**AFRO (two countries)**

**PAHO (eleven countries)**

**EURO (ten countries)**

**EMRO (one country)**

**SEARO (one country)**

**WPRO (five countries/area)**
SARI surveillance in the context of COVID-19 – Understanding community transmission dynamics

- Indicators from existing sentinel syndromic surveillance systems capture trends in community transmission of COVID-19
- Which is the better correlate—SARI or ILI or both? Is it possible to do correlation analysis now?

**Chile**

**Costa Rica**
Sentinel surveillance – Impact of public health and social measures

• Public health measures decreased flu transmission and morbidity (stay at home orders)

• However, external factors could threaten the utility of syndromic respiratory disease surveillance for flu and COVID-19:

  1. Changes in healthcare delivery and healthcare seeking behavior:
     • healthcare avoidance/worried well visits
     • change to teleconsultations/call first/recommend not to visit GP policies/hotlines/self-assessment tools

  2. Changes to surveillance sites and systems:
     • Case definition changes
     • Repurposing of staff and sites
     • Material resource constraints
     • Dedicated COVID testing labs

  3. Reporting disruptions
     • No access to data
     • Delays and errors
     • Human resource constraints
     • IT issues (ADS)

  4. Transport restrictions
Countries, areas, or territories reporting PISA indicators by week, 2019-2020

PISA indicator reporting

- Transmissibility
- Seriousness of disease
- Impact
ILI/SARI sentinel surveillance – Assessing severity

- Severity assessment methods involve determining country-specific thresholds using historical data, which could potentially be adapted for COVID-19 severity assessment.
- SARI rates (proportion of SARI cases among all inpatients) for 2 countries below show unusual timing of increase and relative intensities of increase compared to previous influenza seasons, in the absence of influenza virus detections.
- Do the assessments reflect the impact of COVID-19 on hospitals?
Historic drop in global influenza virus detection

Global circulation of influenza viruses

Influenza Laboratory Surveillance Information
by the Global Influenza Surveillance and Response System (GISRS)

Data source: FluNet (www.who.int/flu/en_) GISRS
© World Health Organization 2009

Data from: All sites

© World Health Organization 2020
Number of shipments through the GISRS Shipping Fund Project, by month all regions cumulated

Number of shipments through the GISRS SFP (WHO data) by date of shipment pick-up

[Graph showing the number of shipments over the years 2017 to 2020 by month.]
Number of shipments through the GISRS Shipping Fund Project by Regions

Number of shipments through the GISRS SFP (WHO data) by shipment pick-up date

Year: 2016, 2017, 2018, 2019, 2020

AFR: 12, 37, 53, 30, 39
AMR: 28, 41, 54, 31, 40
EMR: 16, 15, 10, 13, 14
EUR: 13, 53, 95, 96, 40
SEAR: 13, 15, 91, 67, 34
WPR: 15, 54, 10, 8, 34

World Health Organization
Reporting to FluNet by week, 2017-2020 (up to week 36)
Reporting to FluID by week, 2017-2020 (up to week 36)
Number of influenza samples processed, 2017-20202 (up to week 36)
Key Takeaways

• Your surveillance data is critical and important to understanding global circulation and characteristics of influenza and COVID.

• We need to work to make sure the data can be analyzed:
  o Need to differentiate numbers of specimens tested for influenza and number tested for COVID.
  o Denominators for each are critical (#positive, total number tested by virus).
  o Need to differentiate sentinel testing versus case finding or outbreak testing.
  o Data quality and completeness is really important.

• Upcoming consultation Oct 6 to 8 to better understand how to leverage GISRS sentinel surveillance for COVID.
Including other respiratory infections – Example of PAHO countries
Interim Recommendations: Influenza Vaccination during COVID-19

- Endorsed by SAGE on 3 September
- Risk groups reprioritized for the following reasons:
  - To ensure optimal control of influenza among risk groups also at high risk of severe COVID-19 disease
  - To decrease burden on health care systems
  - To reduce absenteeism among health workers
  - To ensure optimal management and use of potentially limited supply of influenza vaccines

- Recommendations:
  - Highest priority:
    - Health workers
    - Older adults
  - Other priority groups (no particular order):
    - Pregnant women
    - Individuals with underlying health conditions
    - Children

*Awaiting final WHO approvals*
Other exciting updates! AND Thanks!!

Available at:
https://www.who.int/influenza/vaccines/flu_vaccine_toolbox/en/

Landscape of influenza vaccines, treatments, and diagnostics