Surveillance of Respiratory Syncytial Viruses

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WHO Consultation on RSV Vaccine Development
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RSV surveillance

- Currently no systematic surveillance globally
  - Surveillance strategy and operational plan
  - Continuous
  - Standardized laboratory methodologies, quality control, protocols
    - Case definition targeted to RSV infections
  - Standardized reporting, timely analysis and result distribution

- Detection existing
  - PAHO region
  - EURO region and some individual institutions

- Studies, many publications
  - Time limit
  - Specific objectives e.g. burden of RSV in various context
Needs for surveillance

<table>
<thead>
<tr>
<th>Viruses</th>
<th>Influenza</th>
<th>RSV</th>
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<tbody>
<tr>
<td>Virus constantly evolving</td>
<td>Relatively stable</td>
<td></td>
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<tr>
<td>Pandemic threat</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Preventable measures: vaccines available</td>
<td>Unavailable</td>
<td></td>
</tr>
<tr>
<td>Vaccine viruses need to be updated frequently in order to be effectiveness</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Antivirals</td>
<td>Antiviral medicines available</td>
<td>Unavailable ?</td>
</tr>
<tr>
<td>Resistance to antivirals may develop along the virus evolution</td>
<td>NA</td>
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- **Influenza**: highly functioning global surveillance system (GISRS) coordinated by WHO since 1952
- **RSV**: vaccine in the horizon, other medicines under development. The time to review the needs.
- **GISRS → + RSV**
Influenza surveillance system

GISRS

- **Role**
  - Monitor the evolution of influenza viruses
  - Provide risk assessment and recommendations including diagnostics, vaccines, and antivirals
  - Serve as a global alert mechanism for the emergence of influenza viruses with pandemic potential

- **Structure**
  - National Influenza Centres (141) - the backbone
  - WHO Collaborating Centres: 6
    - Internationally-recognized centres of excellence for influenza
    - Performing highly technical services, at no cost to WHO
  - WHO Essential Regulatory Laboratories: 3
  - WHO H5 Reference Laboratories: 13

- Real-time monitoring, highly functioning – public health needs driven
- Voluntarily. Official process to join the network under WHO TORs. Government commitment and endorsement. National investment as part of core capacity.
Influenza surveillance system

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  - Global/regional approaches
    - Country & population coverage (51%; 91%)
Influenza surveillance system

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    - Regional capacity building
  - Individual country approaches – country specific

- PIP Framework – virus sharing and benefit sharing framework
  - Strengthening GISRS pandemic preparedness and response
Influenza surveillance system

- **Epidemiologic and disease surveillance**
  - ILI and SARI surveillance in countries --> specimen collection for NICs of GISRS
  - WHO influenza surveillance standards being implemented
  - National surveillance system building and linking to policy making

- **Burden of disease: to bridge the gap of understanding – PIP PC**
  - Disease burden
  - Economic burden including vaccine cost effectiveness
  - Mortality estimates

- **Collaboration with partners**
  - Veterinary sector: FAO and OIE
  - Vaccine manufacturers
  - Regulatory agencies
  - Research academia
  - National authorities
Using influenza system for RSV

- Regional experience - PAHO
  - Using its SARI surveillance network since 2010
  - Using influenza SARI case definition
  - Standardized reagents
  - Standardized platform

- Country experience in Europe
  - Ad-hoc, including RSV in lab testing of influenza specimens
  - Reporting platform available
Considerations of using influenza surveillance system for RSV surveillance

- Case definitions
  - Need to be adjusted for inclusion of RSV detections

- Sentinel sites of SARI and ILI
  - Functioning network in countries
  - Type of respiratory specimens need review for RSV

- Quality laboratory network
  - Same PCR platform for RSV
  - Same specimens to be used for RSV and influenza
  - Reagents for RSV can be combined in multiplex RT-PCR formats
  - When using multiplex RT-PCR for inclusion of RSV:
    - Higher cost for hardware (one-time investment)
    - Extra costs for primers and probes (negligible)
    - No extra cost for labour
  - WHO collaborating Centres and reference laboratories need to be re-defined

- Reporting
  - FluNet and FluID – easily to be adapted for additional pathogens
Objectives: to review and discuss

- Needs, strategies and implementation plan
- Standardization of laboratory methodologies
- Standardization of surveillance protocols, including data reporting, analysis and distribution;
- Operational issues including laboratory reagents, EQA, to function as a component of GISRS; and
- Establishment of a global mechanism
WHO Informal Consultation on RSV Surveillance
25-27 March 2015

Agenda outlines
- Understanding of RSV
- National and global objectives for RSV surveillance
- Current RSV surveillance activities and their connection with the GISRS platform
- Operational components of RSV surveillance
- RSV surveillance operational components
- Way forward
Connection of surveillance and vaccines

- Needs from vaccine perspectives
  - Vaccination policies
    - Risk groups
    - Seasonality (current and stability)
    - Immunization plans (one dose vs. multi-doses, intervals)
    - Vaccine targets: A or B or both groups of RSV

- Strategies of disease control and case management

- Laboratory assays
  - Virus detection and serology, standardization

- Vaccine efficacy and effectiveness
  - Surveillance platform would be a natural venue
Summary

- Time to review the needs for RSV surveillance
  - With encouraging development recently

- GISRS – highly functioning influenza surveillance system
  - Natural and most practical venue for inclusion of RSV, as demonstrated by some regions
  - Pending consultation with experts
    - A subset of GISRS labs to start
      - National SARI/ILI systems, geographical distribution, population coverage
    - WHO to coordinate:
      - Standardized and free reagents, as for influenza
      - Standardization of laboratory and surveillance protocols
      - A global mechanism with reference and research functions
      - Reporting, analysis and distribution of results for policies

- Challenges
  - Complexities of adjustment of SARI/ILI case definition and subsequent implementations
  - Sustainability – need to be driven by public health needs
    - A key factor is the availability of vaccines and antivirals
Acknowledgement

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