GIHSN-site’s experience &
Results of 2016 season

Curitiba / Fortaleza
Brazil

Oswaldo Cruz Foundation
Study management summary - coordination

• Coordinating:
  Foundation Merieux-Lyon
  Oswaldo Cruz Foundation (FIOCRUZ) – Rio de Janeiro
• 2 participating hospitals:
  – Albert Sabin – Fortaleza/Ceará
    Dr. Fernanda Edna Moura
  – Hospital de Clínicas – Curitiba/Paraná
    Dr. Sonia Raboni
Influenza associated SARI cases and fatal cases by region. Brazil, 2016 (EW 1-32). Source: SINAN WEB INFLUENZA database/ Health Surveillance Secretariat / MoH.
Study management summary - methods

• Methods
  – Screening, recruitment and inclusion according to Core Protocol

• Differences for Fortaleza
  – Inclusion of patients from all Ceará state (184 municipalities)
  – Inclusion of patients admitted up to 72 hours previously
  – Year-round recruitment and sample collection

• Fortaleza Samples sent to FIOCRUZ for testing
  – Flu and other respiratory viruses detection by real time PCR (CDC protocols)
Fortaleza – Ceará State

• Region demographics
  – Population: 8,448,055
  – Area: 146.348km², 184 municipalities
  – Human Development Index: 0,682

• Hospital features
  – 306-bed public hospital, 2 ICU (41 beds)
  – 830 monthly hospitalizations, 17,000 outpatients (4,500 in ER)
  – Catchment population (0-18 years) = 253,136

• Hospitalizations due to acute respiratory infections
  – 2014: 2,218
  – 2015: 1,582 (SAME/HIAS)
Study management summary

- Universidade Federal do Ceará
- Hospital Infantil Albert Sabin
- Pediatric population
- Ceará State, Northeast Brazil
- Differences with the core protocol?
- Pediatric patients.
- All Ceará State
- Collection of samples/patient recruitment: From January to December
- Exclusion criteria: neonate, cirurgical and institucionalized patients, no-communicant, patients no-resident in the Ceará state, hospitalized patients in the last 30 days, patients with > 7 days of symptoms,
- sampling methods: swabs (nasopharyngeal/pharyngeal/nasal)
- Study period: from January/02/2016 To March/03/2016
Season 2016 results summary

- Burden of disease
- Strain characteristics
- Risk factors (if significant)
- VE (when available)

*From January to early March were collected 80 samples. Influenza was not detected in this period. In 2015 influenza was detected from January to Maio. Peak of influenza season (March and April) when 71% of influenza were detected*
Season 2014 and 2015 results summary – Fortaleza

Patient recruitment and sample collection

<table>
<thead>
<tr>
<th>Month</th>
<th>Nb patients included</th>
<th>Nb patients eligible for sampling</th>
<th>Nb patients not eligible for sampling</th>
<th>Unable to communicate</th>
<th>Not given consent</th>
<th>Not resident</th>
<th>Institutionalized</th>
<th>Hospitalized within last 30 days before recruitment</th>
<th>Not fitting ILI criteria</th>
<th>Onset symptoms more than 7 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>50</td>
<td>28</td>
<td>22</td>
<td>0</td>
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<td>6</td>
<td>7</td>
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<tr>
<td>Feb</td>
<td>75</td>
<td>31</td>
<td>44</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>21</td>
<td>12</td>
<td>11</td>
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<tr>
<td>Mar</td>
<td>107</td>
<td>52</td>
<td>55</td>
<td>0</td>
<td>1</td>
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<td>3</td>
<td>26</td>
<td>12</td>
<td>13</td>
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<td>Apr</td>
<td>200</td>
<td>80</td>
<td>120</td>
<td>0</td>
<td>0</td>
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<td>4</td>
<td>79</td>
<td>13</td>
<td>24</td>
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<tr>
<td>May</td>
<td>232</td>
<td>62</td>
<td>170</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>111</td>
<td>15</td>
<td>24</td>
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<td>Jun</td>
<td>147</td>
<td>21</td>
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<td>73</td>
<td>26</td>
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<td>Jul</td>
<td>117</td>
<td>22</td>
<td>95</td>
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<td>2</td>
<td>54</td>
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<td>26</td>
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<td>Total</td>
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<td>366</td>
<td>751</td>
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<td>14</td>
<td>446</td>
<td>118</td>
<td>173</td>
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Season 2014 and 2015 results summary

Fortaleza

Monthly distribution respiratory viruses detected from May 2014 to May 2015, Fortaleza

<table>
<thead>
<tr>
<th>Month</th>
<th>Influenza</th>
<th>RSV</th>
<th>Rhino</th>
<th>Adeno</th>
<th>PIV</th>
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Challenges

• Room for improvement?
• Perspectives: Restart the recruitment of patients on October 2016
• Strengths: --------
• Weaknesses: Interruption of work due troubles with Ethical Committee
Hospital de Clínicas – Curitiba

Curitiba/PR
Hospital de Clínicas
Latitude -25°C
Curitiba municipality

• Region Demographics:
  – Population: 1,751,907
  – Area: 435,036Km$^2$
  – Human Development Index: 0,823

• Hospital features:
  – 406-bed public hospital
  – 5 ICU
  – 1,300 monthly hospitalizations, 30,000 outpatients
Season 2016 results summary

- Recruitment
  - 6 months study
  - Screened: 2,710 patients
  - Enrolled: 204 patients

- Samples
  - Tested by real-time RT-PCR
    - CDC protocol (FluA and FluB)
    - 204 samples
  - Tested by multiplex RT-PCR
    - 15 respiratory viruses detection (Seeplex® RV15 – Seegene)
    - 177 samples
Season 2016 results summary

Respiratory Virus: collected and positive samples per month

Influenza and other respiratory viruses detected per month

Site experience and results of season 2015-2016 – [Curitba], [Brazil]
Season 2016 results summary

Respiratory viruses detected by month

GIHSN project – CDC protocol
204 tested Flu A and Flu B
14 Flu A(H1N1) (7%) + 3 Flu B (Vic-like) (1.5%)

HC/UFPR surveillance - Seoplex ® RV15 ACE
177 samples tested
108 positive (61%)
Season 2016 results summary

Site experience and results of season 2015-2016 – [Curitba], [Brazil]
Season 2016 results summary

INFLUENZA VIRUS

- FLU A NOT TYPED: 6%
- FLUB: 18%
- FLU A/ H1N1PDM: 76%

OTHER RESPIRATORY VIRUSES

- MONOINFECTION: 70%
- COINFECTION: 30%

N = 144

Site experience and results of season 2015-2016 – [Curitba], [Brazil]
Season 2016 results summary

• Strain characteristics
• Total Influenza positive samples
  – N = 17
  – 14 FLUA
    • All H1N1pdm
  – 03 FLUB
    • All Victoria-like Lineage
• Risk factors (if significant)
• VE (when available)
Surveillance data from Curitiba city, Brazil
Seasons 2015 and 2016

Proporção de atendimentos por doenças respiratórias por semana epidemiológica, Curitiba 2016.

Óbitos por Doença Respiratória - Causa Básica (capítulo X do CID-10), por Semana Epidemiológica, Curitiba, 2015-2016.

Classificação final | Nº de casos | Óbitos
--- | --- | ---
Influenza | 165 | 27*
Outros Virus | 366 | 17
Outros Agentes | 5 | 3
Não especificada | 453 | 62
Em andamento | 38 | 1
Total | 1027 | 110

Fonte: CE/ SINAN on-line dados em 19/09/2016 (pacientes residentes em Curitiba)

*24 óbitos por Influenza A H1N1
3 óbitos por Influenza A (não subtipado)
Surveillance data from Curitiba city, Brazil
Seasons 2016

Source: Curitiba city Health Department
Site experience and results of season 2015-2016 – [Curitiba, Brazil]
Key aspects from the season

• What were the local team expectations for this year? Specific objectives for the season? (examples: hoping to get data on that... improve patient enrollement? Improve data management?) and according to those expectations what were the main achievements?
  — Protocol optimization
    • It was corrected data collection of the last season (2015)
    • All Screened and eligible patients had a questionnaire opened

• Were there specific issues in the study implementation? For instance logistics troubles?
  — Yes, the need to open a questionnaire for all screened patients, ask for written consent even the patient did not met with IILI case definition, followed by the need to scan these documents, led to a greater demand for the professionals involved in research, without necessarily increasing the number of cases investigated.

• Epidemiological characteristics of the influenza season (unusual circulation in the country? Unusual timeline?)
  — An unusual seasonality of influenza was observed, with greater number of cases and higher mortality rate. (See previous slides)
Influenza A/H1N1pdm09 vaccine prototype for South Hemisphere 2017
(A/Michigan/45/2017) + Brazilian strains by month
HA gene
Challenges / Improvements

• Lack of data from North region
  – Proposal of inclusion of one SARI site

• Lack of data from Northeast region
  – Positive contribution of a long-term GIHSN study

• EC problems in March-solved in Oct
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