RSV Surveillance
Clinical characteristics

Nigel Crawford
WHO meeting
Washington DC December 2017
Outline

• Review some of the clinical features
  • Variations by age
  • Special risk factors
  • RSV cohort c/w overall dataset

• Next steps
RCH Parkville Melbourne
Bronchiolitis
Nasogastric hydration versus intravenous hydration for infants with bronchiolitis: a randomised trial

Ed Oakley, Meredith Borland, Jocelyn Neutze, Jason Acworth, David Krieser, Stuart Dalziel, Andrew Davidson, Susan Donath, Kim Jachno, Mike South, Theane Theophilos, Franz E Babl, for the Paediatric Research in Emergency Departments International Collaborative (PREDICT)

Lancet 2012
## WHO RSV Pilot study CRF

<table>
<thead>
<tr>
<th>WHO Form</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study ID:</strong> [ ]</td>
</tr>
<tr>
<td>Country Code:</td>
</tr>
<tr>
<td>Site Code (geographic location):</td>
</tr>
<tr>
<td>Patient’s unique identification no.:</td>
</tr>
<tr>
<td>Type of surveillance (e.g., hospital, medical centre):</td>
</tr>
<tr>
<td>Name of healthcare worker:</td>
</tr>
<tr>
<td>Date of sample collection and completion of form: [ ]/ [ ]/ [ ] (mm/dd/yyyy)</td>
</tr>
</tbody>
</table>

### Patient Identification

| Family Name: | | |
| Given Name: | | |
| Gender: | Male | Female |
| Date of birth: [ ]/ [ ]/ [ ] (mm/dd/yyyy) | |
| Age: | [ ] Years | [ ] Months |

### Clinical Information

| Date of symptom onset: [ ]/ [ ]/ [ ] (mm/dd/yyyy) | |
| Date of ED presentation: [ ]/ [ ]/ [ ] (mm/dd/yyyy) | |

### Signs & Symptoms

<table>
<thead>
<tr>
<th>Requires hospitalisation:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptom onset within last 10 days (acute):</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Cough:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Shortness of breath:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Measured fever &gt;38°C:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>History of fever:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Wheezing:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Sore throat:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Coryza:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Choked indrawing:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Infant (0-6 months) presents with: Agness</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Infant (0-6 months) presents with: Sepsis</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Respiratory rate:</td>
<td>[ ] breaths per minute</td>
<td></td>
</tr>
</tbody>
</table>

### Diagnosis

| Hospital admission diagnosis: | Yes | No |
| SARI: | | |
Clinical features: WHO RSV Pilot study

Case numbers: RSV by country

[Total: 8778; RSV positive 1429 (16.3%)]

RSV negative | RSV positive
Age cohorts

By Country

Argentina
Australia
Brazil
Chile
Cote d'Ivoire
Egypt
India
Mongolia
Mozambique
Russia
S.Africa
Thailand

0-6-month
6-months <5 years
5 years-<65 years
65+
Age group and chronic disease

Chronic disease (%)

0-<6-month
6-months <5 years
65+ (cardiac)
Pre-existing special risk conditions (adult)
Pre-existing special risk conditions (child)

426 preterm; 343 respiratory; 15 cases malnutrition; 34 immunodeficiency
Diagnosis

• Will vary by country:
  – Age
  – Chronic illness
  – Type infection(s)
  – Seasonality
  – Other factors...

• ICD-10 data coding
  – CRF (currently free text)
Diagnosis: Melbourne Australia

- Bronchiolitis
- Fever of Unknown Origin/PUO
- LRTI/URTI/RTI
- Viral Illness/Infection
- Asthma/Wheeze
- Pneumonia/Empyema/Pleural Effusion
- Sepsis
- Seizure/Convulsion/Status
- Dehydration
- Acute Febrile Illness
- Apnoea
- Croup
- Rash
- Neuro (meningitis, altered level of consciousness, lethargy, blocked shunt)
- Cough
- Vomiting
- Tachypnoea/Stridor/SOB/Periodic Breathing
- Influenza/Flu
- Tonsillitis/Acute obstruction/Tracheitis
- Feeding difficulties/prematurity/health condition in neonate
- Pertussis
Cough (%)

- WHO overall
- RSV
Apnoea infants < 6/12 (%)

N= 170: <6/12 (145); 6/12 5 years (24); 6-65 (1)
Sepsis infants < 6/12

N= 278: <6/12 (268); 6/12 - <5 yrs (9); 5-65 yrs (1)
Next steps

• Country specific evaluation of clinical features
• Investigate by **age** and **condition(s) of interest**
  – e.g. Bronchiolitis
    • Special risk factors
  – Intensive Care utilization
  – Co-infection (Influenza + others)
  – RSV sub-type and WGS
### Australia: Intensive care - RSV positive

<table>
<thead>
<tr>
<th></th>
<th>+ve n (%)</th>
<th>-ve</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Ward</td>
<td>64 (15)</td>
<td>366</td>
<td>430</td>
</tr>
<tr>
<td>PICU/NICU</td>
<td>24 (23)</td>
<td>82</td>
<td>106</td>
</tr>
</tbody>
</table>

**High flow oxygen**

- Yes
- No
# Co-infection

<table>
<thead>
<tr>
<th></th>
<th>RSV negative</th>
<th>RSV positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flu negative</td>
<td>5682</td>
<td>1313</td>
</tr>
<tr>
<td>Flu positive</td>
<td>1331</td>
<td><strong>104</strong></td>
</tr>
</tbody>
</table>

(N= 8613; 1.2%)
RCH- Australia data
RSV-B G phylogenetic tree

RCH 2017
VIDRL 2015
Hospital cases 2017
Reference
Acknowledgements

• Global sites for providing data
• WHO pooling the data and coordinating the meeting