Objectives of Rotavirus Surveillance

- Contribute data to estimate the burden of rotavirus diarrhea in children < 5 children
- Document circulating rotavirus strains in the AFR region
- Support awareness and regional advocacy efforts for the introduction of rotavirus vaccines
- Raise awareness of diarrhea disease
- Use network to monitor any adverse events associated with rotavirus vaccination (intussusception)
- Evaluate impact and effectiveness of the new rotavirus vaccines

1st WHO/AFRO Consultative Meeting, Accra, Ghana 18th – 19th May 2005
### WHO/AFRO co-ordinated Rotavirus Surveillance: Reporting countries & Sites

<table>
<thead>
<tr>
<th>Year</th>
<th><strong>Mid 2006</strong></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td># Countries</td>
<td>4</td>
<td>5</td>
<td>12</td>
<td>15</td>
<td>15</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td># Sites Reporting</td>
<td>4</td>
<td>5</td>
<td>16</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>24</td>
</tr>
</tbody>
</table>

- Most countries conducting (Tier 1) sentinel hospital based rotavirus surveillance – reporting to WHO
- Kenya conducting (Tier 2) surveillance & reporting to WHO
- Various research projects in a number of countries
Rotavirus sentinel surveillance sites and Regional Reference Labs (RRLs)

- Built on framework and experience of surveillance for other Vaccine Preventable Diseases (VPDs)
- Some components of Rota surv are integrated with surveillance for other VPDs e.g. IBD

<table>
<thead>
<tr>
<th>PBM only</th>
<th>Rotavirus Only</th>
<th>Integrated Rota &amp; PBM</th>
<th>No sentinel surveillance</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMRO countries</td>
<td>Regional Reference Labs (RRL)</td>
<td>NRL SURVAC</td>
<td></td>
</tr>
</tbody>
</table>

10th International Rotavirus symposium, Bangkok, Thailand, 19-21 Sept 2012
Regional guidelines, SOPs and manuals for rotavirus surveillance based on global guidelines

- Guidelines & Laboratory procedures
  - Generic guidelines for rotavirus surveillance, 1999

- Laboratory Manuals

African Rotavirus Surveillance Network Standard Operating Procedures (SOPs)
WHO emphasis - Harmonization

-SOPs and guidelines
-Techniques
- Performance monitoring
-Data reporting etc
- Performance monitoring

Data sharing with national Governments, WHO & partners

Country accountability by producing high quality data

Data Management in a sentinel site

MOH support
Current Rotavirus VP7 and VP4 Genotyping
(Gel based and Sequencing)

STOOL → PBS → 10% Suspension

RNA → RT-PCR → DNA Extraction

DNA → 1% AGAROSE GEL ELECTROPHORESIS

CLEAN UP

ELISA (Prospect kit) → 2nd PCR GENOTYPING

AGAROSE GEL ELECTROPHORESIS

SEQUENCING

VP7

VP4
New Vaccines Surveillance data management module

Data Collection

Data Cleaning

Data Analysis

Data Sharing

Cameroon
CENTRE MERE ET ENFANT

Surveillance des nouveaux vaccins
Meningite pédiatrique - Hib et S. pneumoniae
Diarrhée pédiatrique - Rotavirus

World Health Organization
Data Reporting, analysis and monitoring

MOH sites

Database

Data Quality merging, check, harmonisation, cleaning

IST

Database

WCO

Data Quality merging, check, harmonisation, cleaning

WCO: WHO Country Office

AFRO: WHO Regional Office

Data Quality merging, check, harmonisation, cleaning

WHO/AFRO
Proposed minimum criteria

- Countries conducting rotavirus surveillance must meet the targets for performance indicators and enrol at least 100 diarrheal cases/yr/country.

- Countries and RRL should report using recommended format and time lines.

- Support countries likely to establish and/or maintain robust rotavirus surveillance to evaluate impact and effectiveness of rotavirus vaccine in national EPI.
Progress & Summary of Results
Rotavirus is a Major Cause of Child Mortality Worldwide -- 453,000 Annual Deaths

Tate et al, Lancet ID, 2011
### 9 of 10 countries with Highest Rotavirus Mortality Rates are in Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Rotavirus mortality rate (per 100,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sierra Leone</td>
<td>439</td>
</tr>
<tr>
<td>Niger</td>
<td>392</td>
</tr>
<tr>
<td>Angola</td>
<td>389</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>338</td>
</tr>
<tr>
<td>Liberia</td>
<td>331</td>
</tr>
<tr>
<td>Somalia</td>
<td>315</td>
</tr>
<tr>
<td>Mali</td>
<td>307</td>
</tr>
<tr>
<td>Guinea-Bissau</td>
<td>283</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>281</td>
</tr>
</tbody>
</table>

*Source: Tate et al, Lancet ID, 2011*
Progress towards attainment of MDG4 on reducing child mortality
Progress of rotavirus vaccine introduction in the African region

- 5 countries have introduced vaccine into EPI
  - South Africa [2009]
  - Zambia [January 2012]
  - Ghana [April 2012]
  - Rwanda [May 2012]
  - Botswana [Aug 2012]

- Vaccine impact evaluations (SA, Rwanda, Ghana…)

Source:
24 January 2012 - 1st dose of rotavirus vaccine in Zambia by Dr Joseph Katema, Minister of Community Development, Mother and Child Health
## Future Rotavirus Vaccines Introduction in the African Region

<table>
<thead>
<tr>
<th>Year of introduction</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-2013?</td>
<td>Malawi (Oct 2012), Tanzania (Jan 2013), Ethiopia (Q3 2013), Equatorial Guinea (?), Angola (?), Burundi (?), Cameroon (?), Congo Rep, Madagascar, Niger, Swaziland, Mauritius (?)</td>
</tr>
<tr>
<td>TBD?</td>
<td></td>
</tr>
</tbody>
</table>

### Map

- **EMRO countries**: Gray
- **Introduced = 5**: Green
- **Planned intro 2012 = 3**: Yellow
- **Planned intro 2013 = 7**: Blue
Way forward for sentinel surveillance in Africa (1)

- Continue advocacy – value of sentinel surveillance data for decision making & increase investment in rota vaccine introd
  - Encourage Government funding
  - Strengthen new vaccines surveillance by strongly linking with surv for VPDs at country level

- Expand external partnerships and funding sources

- Intensify efforts to improve & maintain quality of surveillance data
Way forward for sentinel surveillance in Africa (2)

- Ensure sustainability of regional rotavirus surveillance in support of rotavirus vaccine introduction
- Support rotavirus vaccine impact studies and program evaluations
- Support intussusception studies