Review of Sentinel Hospital Rotavirus Surveillance Systems

Names of assessment team members:

Date of assessment:

Sentinel Site Information

- **Hospital name:** ________________________________
  
  What type of hospital is this? ☐ Public Hospital  ☐ Private Hospital
  
  Is this a: ☐ General Hospital ☐ Paediatric Hospital ☐ Other ____________

- **City:** ________________________________

- **Country:** ________________________________

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<thead>
<tr>
<th>Respondent(s)</th>
<th>Position/Title</th>
<th>Contact Information</th>
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Revision: January 2012
The objectives of rotavirus sentinel surveillance are:

- To determine the burden of rotavirus disease and describe the epidemiology of rotavirus in a country or defined geographic area. Data from a rotavirus surveillance system can be used to facilitate and support the introduction of rotavirus vaccination and to monitor impact after rotavirus vaccine is introduced. Specifically, rotavirus surveillance is used to:
  - Estimate the incidence of rotavirus hospitalizations in a defined population of children <5 years of age
  - Determine the age and seasonal distribution of rotavirus hospitalization among children <5 years of age
  - Estimate the proportion of diarrhoea hospitalizations in children <5 years of age attributable to rotavirus
  - Monitor temporal trends in the incidence of rotavirus hospitalization, age distribution, and seasonality

The objective of this exercise is:

- To review the structure of the sentinel rotavirus surveillance system to ensure that high quality data is collected.

Rotavirus Sentinel Surveillance Overview: A stool specimen is collected from every eligible child admitted with acute gastroenteritis and tested for rotavirus in a participating sentinel hospital. A minimal set of data including demographic information and clinical characteristics is collected during the hospital stay. Bulk stool, ~5 ml, should be obtained from each enrolled child during the acute illness, preferably on the day of presentation to hospital. Attempts should be made to obtain a stool specimen within 48 hours of hospital admission so as to avoid the detection of nosocomial infection. The stool specimen should be placed in a sterile screw-top container and properly labelled with information that includes a unique identification number and the date of collection. The information on the specimen label should match that in the stool specimen logbook. All stool specimens should be stored in a freezer at -20°C until testing is performed, and care should be taken to avoid freeze-thaw cycles where possible. For prolonged storage a temperature of -70°C is preferable.

Key questions for monitoring data quality:

- Is the number of children enrolled in the surveillance system at least 75% of the expected number of children to be enrolled based on historical diarrhoea discharge data from the hospital?
- Is the proportion of eligible children enrolled consistent throughout the year or does increase/decrease during the typical rotavirus season?
- Are stool specimens collected consistently from children of all ages?
- Is the proportion of stool specimens that test positive at least 15%? A low rotavirus detection rate may indicate that an adequate specimen is not collected, that specimens are being handled improperly, or that certain children are being systematically excluded from surveillance.
I. Case Detection

(a) Which of the following clinical presentations in a child would result in the child being further investigated as a possible case of diarrhoea due to rotavirus? (Tick all that apply.)

- Diarrhoea ☐
- Shock ☐
- Vomiting ☐
- Chronic gastroenteritis ☐
- Dehydration ☐
- Malnutrition and diarrhoea ☐
- Gastroenteritis ☐
- Other (Specify) ☐

(b) Please describe the process from when a child seeks care for diarrhoea or gastroenteritis to where the case is registered and entered into the rotavirus surveillance system with a case report form completed.

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

(c) When is specimen collection for rotavirus surveillance at this hospital conducted? (Tick all that apply.)

- Surveillance during daytime hours only ☐
- Conducted 24h (i.e. also after hours) ☐
- Surveillance during weekdays only ☐
- Conducted daily, including weekends/holidays ☐

(d) Are there any SOPs, manuals and/or guidelines available for rotavirus surveillance?

- Yes, observed ☐
- Yes, but not observed ☐
- No ☐

*If Observed*, (i) Does the SOP specify when specimen should be obtained relative to when the child first arrives at the hospital?

- Yes ☐
- No ☐
- Unknown ☐

(ii) Does the SOP specify the maximum duration of diarrhoea at time of arrival to hospital for which a child can still be enrolled into surveillance system?

- Yes ☐
- No ☐
- Unknown ☐

II. Case Registration and Case Reporting

(a) Are there any SOPs, manuals and/or guidelines describing rotavirus case registration or completion of case report forms?

- Yes ☐
- No ☐
- Unknown ☐

*If Yes*, Observe and obtain copy of document: Observed/obtained ☐ Not observed ☐

(b) Using an actual case report form, please indicate which of the following data are collected routinely (tick all that apply):

<table>
<thead>
<tr>
<th>Case reporting form variable</th>
<th>Comment/further information</th>
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</thead>
<tbody>
<tr>
<td>(1) Unique patient ID</td>
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<td>(2) Age</td>
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<td>(3) Sex</td>
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<td>(4) Residence</td>
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<td>(5) Diarrhoea (episodes and duration)</td>
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<tr>
<td>(6) Vomiting (episodes and duration)</td>
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<td>(7) Onset date</td>
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<td>(8) Dehydration level</td>
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<tr>
<td>(9) Type of rehydration given</td>
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<tr>
<td>(10) Stool specimen collection date</td>
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<tr>
<td>(11) Outcome at discharge</td>
<td></td>
</tr>
<tr>
<td>(12) Vaccination history</td>
<td></td>
</tr>
</tbody>
</table>

(c) Where and how are epidemiological and laboratory information for the same patient combined or linked?

______________________________________________________________________________

(d) Are surveillance data from this level reported to the National level (MoH and WHO country office)?

Yes ☐
No ☐
Unknown ☐

If yes, (i) how often? Weekly ☐ Monthly ☐ Annually ☐ Other ☐ _______

(ii) How is surveillance information reported to the next level?

1. As Aggregate data ☐ Case-based data ☐ Unknown ☐
2. By Email ☐ Paper forms ☐ Log book information retrieval ☐ Fax ☐
   Other ☐ (describe): ___________________________________________________

(iii) Please obtain/observe data reports: Observed/obtained ☐ Not observed ☐

III. Specimen Collection

(a) Are there any SOPs, manuals and/or guidelines available for taking stool samples?

Yes ☐
No ☐
Unknown ☐

If No or Not observed, go to (b)

If Yes, (i) Observe/obtain copy of document: Observed/obtained ☐ Not observed ☐

If Observed, are the stool collection instructions in the SOPs/guidelines correctly and appropriately described? (Note: These should include clear, appropriate instructions on how/where/when to collect samples; eligibility; who collects samples; and how they should be transported to the nearest laboratory)

Correct/appropriate ☐ Incorrect/inappropriate ☐

(b) Whose responsibility is it to ensure specimens are collected and transported to the laboratory properly?

(i) Specimen collection

   During normal working hours? Clinical staff ☐ Lab staff ☐ Other ☐ specify:___________
After normal working hours?

- Clinical staff
- Lab staff
- Other specify:

(ii) Specimen transport

During normal working hours?

- Clinical staff
- Lab staff
- Other specify:

After normal working hours?

- Clinical staff
- Lab staff
- Other specify:

(c) Are SOPs available for transport of specimens from ward to the laboratory where they will be tested?

Yes □  No □

If No, go to (d)

If Yes, (i) are SOPs available for transport of specimens from ward to the laboratory

(1) During normal working hours? Yes □  No □  Unknown □
(2) After normal working hours? Yes □  No □  Unknown □

(ii) Do the SOPs include criteria/standards for the maximum time interval between specimen collection and arrival in the laboratory?

(1) During normal working hours? Yes □  No □  Unknown □
(2) After normal working hours? Yes □  No □  Unknown □

If yes for either/both, please describe:

________________________________________________________________________________________
________________________________________________________________________________________

(d) Do the SOPs include criteria/standards for the minimum volume of stool to be obtained?

Yes □  No □  Unknown □

If yes, what is the recommended minimum volume of stool to be collected? __________

(e) Is someone available to transport specimens from the ward to the laboratory?

(i) During normal working hours? Yes □  No □  Unknown □
(ii) After normal working hours? Yes □  No □  Unknown □

(f) Is there a mechanism for controlling the temperature of specimens during transport from ward to laboratory?

(i) During normal working hours? Yes □  No □  Unknown □
(ii) After normal working hours? Yes □  No □  Unknown □

If No, go to (g)

If Yes for either/both, please describe:

__________________________________________________________________________________________
(g) How is the laboratory notified when a patient specimen has been collected?

(i) During normal working hours? ___________________________________________

(ii) After normal working hours? ___________________________________________

(1) What is the procedure if the stool specimen cannot be delivered to the laboratory as soon as possible (or within the recommended time)?

________________________________________________________

Once the specimen has been collected:

(h) What information is included on the specimen label? (Tick all that apply.)

Patient ID number ☐ Patient initials/name ☐

Date specimen collected ☐ Other ☐

(i) What information is included on the laboratory request form? (Tick all that apply.)

Patient ID number ☐

Date specimen collected ☐

Other ☐

(j) If patient ID number is used on the laboratory request form, is this the same as the unique patient ID number on the case reporting form?

Yes ☐ No ☐ Unknown ☐

(k) Do you ever receive any results for samples which do not match case reports by patient ID or name? Yes ☐ No ☐ Unknown ☐

If Yes, what is the process for reconciling the unmatched results? __________________________________________________________

IV. Data Management: Data entry, cleaning, validation, and clean-up

(a) How are surveillance data stored at your hospital?

Electronicaly (on a database or spreadsheet) ☐ On paper ☐ Unknown ☐

If on paper or unknown, please go to (c)

(b) If electronic, (i) which of the following procedures are performed in your hospital?

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Yes</th>
<th>No</th>
<th>If Yes, approximate number of times/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Data entry</td>
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<td>&gt;52</td>
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<tr>
<td>(2) Double data entry</td>
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<td></td>
<td>&gt;52</td>
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<tr>
<td>(3) Data management (cleaning/validation*)</td>
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<td>&gt;52</td>
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<tr>
<td>(4) Database or computer backup</td>
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<td></td>
<td>&gt;52</td>
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<tr>
<td>(5) Data analysis</td>
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<td>&gt;52</td>
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</tbody>
</table>

*Note: Data cleaning or validation is the process by which data are checked for accuracy, missing values, duplicates, etc. The frequency of each procedure is “more than weekly” (>52), “between weekly and fortnightly” (27–52), “between fortnightly and monthly” (13-26), “between monthly and bi-monthly” (5-12), and “up to once a quarter” (0-4).

(ii) Which software is used for the database? __________________________________________

(iii) Which software is used for analysis? ____________________________________________
(iv) How do you back up your data to prevent loss of data from hardware or software failure or theft?

Backup to portable external data storage e.g. floppy disks, CDs/DVDs or USB drive □
Backup to another computer □ Backup to an external hard drive or server □
Other □ (describe): ___________________________________________________________

(v) How are your data backups kept? (Tick all that apply)

In a locked room/storage □ On a different site from the original database □
Other □ (describe): ___________________________________________________________

(vi) Who is responsible for backing up the data?

Rotavirus surveillance coordinator or equivalent □ IT manager or equivalent □
Other □ (describe): ___________________________________________________________

(c) For paper-based systems only: Do you perform any analyses of the data at your hospital?

Yes □ No □ Unknown □

(d) Are there any manuals/guidelines/SOPs outlining the above procedures and their frequency?

Yes □ No □ Unknown □

V. Data Confidentiality

(a) Are procedures in place to define those who can access or modify patient data (e.g. password protection)?

Yes □ No □ Unknown □

VI. Data Feedback

(a) Are supervisory visits (or site assessments) of the hospital rotavirus surveillance teams conducted?

(i) For clinical staff: Yes □ No □
(ii) For laboratory staff: Yes □ No □

(b) If yes, how often to these visits occur? ___________________________________________

(c) Do you receive feedback from the national level on data you have reported, e.g. about data quality, information on duplicated records, etc.? Yes □ No □

VII. Data Analysis

(a) For all rotavirus cases

Please observe the database for information on suspected rotavirus cases <5 years for each of the last 12 months, to complete the table below.

On the following page, please list specific months and year(s) for which data are being observed, with corresponding number of diarrhoea cases enrolled in each month/year for hospitalized children <5 years of age. For all information on numbers entered into the table, calculate percentages (shaded rows) later.
<table>
<thead>
<tr>
<th>Month:</th>
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<td>Year:</td>
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<td>Number of cases enrolled:</td>
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<td>% of eligible:</td>
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<td>Number of cases with stool specimen collected:</td>
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<td>Number of stool specimens tested for rotavirus:</td>
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<td>% of collected:</td>
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<tr>
<td>Number of cases with rotavirus test results recorded:</td>
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<td>% of tested:</td>
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(b) For all cases with a rotavirus result recorded:

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<td>Number with age recorded</td>
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