Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region

September 2017
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Foreword

Today, we share a collective vision to have the South-East Asia Region free of vaccine-preventable diseases, where all countries provide equitable access to high-quality, safe, affordable vaccines and immunization services throughout the life-course.

Overwhelming evidence demonstrates the benefits of immunization as one of the most successful and cost-effective health interventions ever known. Over the past several decades, immunization has achieved many milestones, including the eradication of smallpox, an accomplishment that has been called one of humanity’s greatest triumphs. Vaccines have saved countless lives, lowered the global incidence of polio by 99% and reduced illness, disability and death from diphtheria, tetanus, whooping cough, measles, Haemophilus influenzae type b disease and epidemic meningococcal A meningitis. We have been able to make the Region free of polio for the last 6 years and eliminate maternal and neonatal tetanus.

We have vaccines against more than 25 diseases in the present day world, and this has increased the need for better surveillance against these diseases to control or eliminate them. As the essence of this subject matter, I would like to highlight that high vaccination coverage may not necessarily indicate the case-load or disease burden in a population. We need to look into the surveillance performance as the key indicators to measure progress towards disease control and/or elimination.
A functional vaccine-preventable disease surveillance system is a key part of public health decision-making in all countries. Thus, there is an urgent need to build on the current efforts to strengthen vaccine-preventable disease surveillance with the latest state-of-the-art technologies at subnational and national levels. This will require a substantial and long-term commitment of human and material resources, usually beginning with a systematic assessment of the national vaccine preventable diseases (VPD) surveillance system by working closely in partnership with all related partners and stakeholders.

I hope that this vaccine-preventable diseases surveillance guide will be well translated into respective national programmes and add to the efforts to have a high-quality surveillance system for priority vaccine-preventable diseases and help accelerate progress towards strengthening vaccine-preventable disease surveillance in our Region.

Finally, every individual in our Region deserves our best work. We all agree that every family, no matter where residing, has the right to all immunization and health services that are provided by the respective government, in the spirit of universal health coverage contributing towards Sustainable Development Goals, especially Goal 3 on health.

Dr Poonam Khetrapal Singh

Regional Director, WHO South-East Asia Region
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<th>LIST OF ABBREVIATIONS</th>
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<td>CIF</td>
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<td>CRF</td>
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<tr>
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<td>ELISA</td>
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<td>RT-PCR</td>
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1. Introduction

Globally, rotavirus is the leading cause of severe gastroenteritis in infants and young children. Even in countries with good sanitation and hygiene, and, where other causes of diarrhoea may be infrequent, rotavirus infections occur frequently. In temperate climates, every year during winter months, rotavirus diarrhoeas occur in outbreaks. In tropics and subtropics also outbreaks of rotavirus diarrhoeas occur during the cool dry months, but in general rotaviruses are prevalent throughout the year. Even in high-income countries nearly every child suffers at least once from rotavirus gastroenteritis by age 5. Since in low-income countries children aged less than 5 years get recurrent infections with rotaviruses, and confirming a diagnosis of rotavirus infection requires special laboratory testing of faecal specimens, identification of every case of rotavirus diarrhoea is neither necessary nor practical. Yet, surveillance, with laboratory support for rotavirus diagnosis, is necessary as rotavirus vaccination has been recommended in EPI in all countries. Therefore, it is recommended that surveillance of rotavirus gastroenteritis be conducted through sentinel hospital units. Although this method has certain limitations from the standpoint of population representativeness, essential data on (a) admissions of moderate to severe gastroenteritis, (b) vaccine effectiveness and (c) vaccine safety can be obtained at a low cost. Different rotavirus vaccines are available on the market – such as single type neonatal strain vaccine, monovalent human live attenuated rotavirus derived vaccine and pentavalent human-bovine reassortant rotavirus vaccine. Countries may use any one or more of such vaccines and continuously collected surveillance information will be necessary to monitor the level of control of rotavirus gastroenteritis, vaccine effectiveness and safety of rotavirus vaccines.

The objectives of rotavirus sentinel surveillance are as follows.

a. To determine the burden of rotavirus gastroenteritis and to describe the epidemiology of rotavirus infection and disease in a country or in a defined geographic area to facilitate and support the informed decision-making on the introduction of rotavirus vaccination.

Specifically, rotavirus surveillance is used to:

- estimate the incidence of moderate to severe rotavirus gastroenteritis requiring hospitalization in a defined catchment population of children <5 years of age;
- determine the age and seasonal distribution of hospitalized moderate to severe rotavirus gastroenteritis cases, 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 moderate to severe rotavirus gastroenteritis hospitalizations.

b. To describe the prevalence of circulating genotypes of rotavirus in a country or in a defined geographic area.

After the introduction of the rotavirus vaccine:

- to monitor temporal trends in the (a) incidence of moderate to severe rotavirus gastroenteritis hospitalizations, (b) age distribution and (c) seasonality;
- to describe the prevalence of genotypes of rotavirus circulating in the post-vaccine introduction period;
- to assess the impact of rotavirus vaccine.

2. Selection criteria for sentinel surveillance hospitals

The following technical and operational criteria are recommended:

1. Prioritize hospitals, which have demographically and geographically defined catchment populations.

2. The prioritized hospitals for sentinel surveillance may be in public or private sector, but should be accessible to the general public, geographically and economically.

3. The prioritized hospitals for sentinel surveillance should be widely used by (hence likely to be representative of) the target population for surveillance, that is, of children aged under 5 years.

4. In order to have a sufficient number of hospitalizations for rotavirus gastroenteritis, for each prioritized hospital for sentinel surveillance, the average number of admissions for diarrhoea per year should be preferably ~500, or at least 100, children aged under 5 years. Based on a simple calculation that 30% of severe diarrhoea cases will be attributable to rotavirus, 30–150 cases of rotavirus should be expected each year.

5. The prioritized hospital for sentinel surveillance should have the capacity to collect and store faecal samples.

6. The prioritized hospital for sentinel surveillance should either be able to build capacity to conduct rotavirus screening through methods of rapid antigen detection (such as enzyme immune assay, EIA) or have a reliable system to transport samples to a reference laboratory.

7. The prioritized hospitals for sentinel surveillance should have the human and logistical resources necessary for establishing and sustaining the sentinel surveillance system.

8. The prioritized hospitals for sentinel surveillance should express institutional commitment to conduct rotavirus surveillance.
3. Case selection, registration and reporting

Definition for case selection

Suspected case of hospitalized rotavirus gastroenteritis: Any child aged under 5 admitted for treatment of acute onset of watery gastroenteritis/diarrhoea of <14 days' duration to a sentinel hospital conducting surveillance. Excluded are children with bloody diarrhoea (dysentery) and children transferred from another hospital (probable nosocomial infection) and children with diarrhoea of >14 days duration (chronic diarrhoea).

Case selection and investigation

Sentinel surveillance hospitals should have a nodal person designated for daily survey of wards and maintain a diarrhoea log. This would help in identifying eligible children for surveillance and their enrolment. The surveillance officer should conduct a daily survey of all wards with diarrhoea patients. Daily, the officer will review the ward admission logbook, ward diarrhoea register and talk to physicians and the nursing staff. From the ward admission logbook, the officer will retrieve the total number of ward admissions of children less than 5 years of age and enter in the surveillance logbook. From the ward diarrhoea register and the discussion with the ward staff, all diarrhoea patients admitted overnight will be identified and tracked. The number of all-cause diarrhoea admitted to the ward overnight will be entered in the surveillance logbook. Using review of medical records and discussions with the ward staff to see the compatibility of the diarrhoea admission with the definition for case selection, the surveillance officer will decide the eligibility of all-cause diarrhoea patients for surveillance. The number of eligible diarrhoea patients for surveillance will be entered in the surveillance logbook. Then the surveillance officer will enrol eligible patients for surveillance. For each enrolled patient, a unique case ID will be assigned and a CRF/CIF will be filled. The assigned unique IDs will be entered in the surveillance log-book. The screw top container to collect faecal samples will be labelled and the sample request form will be filled using the unique case ID as the sample ID. Surveillance officer will collect available information on core variables using the medical records and talking to the ward staff and the parent/guardian of the child. Variables that have to be collected later will be recorded in the surveillance logbook against the unique ID of the enrolled case. If, due to any reason, an eligible diarrhoea patient will not be enrolled, this will also be noted in the surveillance logbook. These notes will help the surveillance officer to calculate the (a) proportion of hospitalizations of children aged less than 5 years associated with all-cause diarrhoeas, (b) proportion of eligible cases enrolled for surveillance. The surveillance officer will use the daily survey to collect missing, additional and discharge data of previously enrolled patients for surveillance.
4. Sample collection

A stool sample of around 5 mL to 10 mL, preferably on the day of presentation at the hospital, or within 48 hours after admission (to prevent contamination with nosocomial infections) is collected and placed in a sterile screw-top container and properly labelled (unique identification number and the date of collection).

Sample transportation and storage

Storage at sentinel sites where ELISA enzymatic immunoassay (EIA) is not performed: Faecal samples are stored at 2–8 °C until transfer to the laboratory where EIA testing will be performed.

Storage at sentinel site or national laboratories performing EIA:

- **Temporary storage:** All stool samples, ideally, should be stored in –20 °C until testing is performed. However, if a specimen needs to be stored temporarily before being placed in a freezer, they should be kept at 2–8 °C. Rotavirus infectivity is relatively stable at a temperature of 2–8 °C for long periods. Therefore, if the need arises, stool samples can be stored up to a period of 1 month in 2–8 °C without significant loss of infectivity.

- **Long-term storage:** It is recommended to store stool samples that require storage over 1 month necessarily at a temperature of –20 °C. But, care should be taken to avoid freeze thaw cycles. Adding glycerol to make a final concentration of 1–3% minimizes the effect of freeze-thawing. It will avoid the deleterious effect of freeze thawing on genotyping.

- **Prolonged storage:** The ability to characterize rotavirus declines, when faecal samples are stored at –20 °C for years. Therefore, when there is a need for prolonged storage, they should be kept in –70 °C freezers.

5. Strain characterization (genotyping)

Information on the prevalence of circulating rotavirus strains is important in the assessment of the likely impact of vaccine and in understanding reasons for any failure of a vaccination programme. Sentinel surveillance sites should contribute to generate information on local rotavirus strains. Rotavirus strain characterization may be performed with the help of the national reference laboratory or the regional reference laboratory in the WHO coordinated global rotavirus surveillance network. According to the current WHO recommendations, a sentinel surveillance site should submit 60 faecal samples that were positive for rotavirus in EIA testing and 10% of samples that were negative for rotavirus in EIA testing to a reference laboratory. However, if the resources permit, sentinel surveillance sites may strain characterize all positive samples in EIA testing.
6. Case Classification

**Confirmed case:** A suspected case in whose stool the presence of rotavirus is demonstrated by a laboratory test, mostly an enzyme immunoassay.

7. Public health intervention

Although improvements in hygiene, water supply and safe disposal of waste water are all measures that can help to reduce severe episodes of diarrhoea, comparable incidences of rotavirus disease in developed and developing countries with different sanitation standards indicate that the disease cannot be controlled exclusively with such measures. Routine immunization of infants with the rotavirus vaccine is the most effective public health intervention for population-wide rotavirus infection control. Post-exposure vaccine prophylaxis is not a recommended strategy in response to an outbreak of rotavirus gastroenteritis.

8. Data management

- Assign a unique medical record/patient identification (ID) number to all selected cases for enrolment during registration.
- Use the same unique medical record/patient identification number (ID) to link epidemiological information with the clinical and laboratory information.
- The unique medical record/patient ID should be ideally used on all paperwork (CRF/CIFs, sample labels, sample collection and reporting forms, laboratory logbook and surveillance logbook).
- Fill a CIF/CRF for each case selected for enrolment. Gather all core data variables to complete CRF/CIFs (sentinel site information, patient identification information, clinical information, information on treatment and vaccination, information on laboratory specimens, laboratory results and outcome).
- Work with doctors, nurses and the laboratory staff to collect these core data variables.
- Use different data sources, such as medical records/databases and laboratory test reports (Enzyme Immune Assay), to gather core variables.
- When submitting the CRF/CIF to the unit responsible for surveillance, ensure that all required core variables have been collected for all enrolled cases.
- Cases with missing discharge data should be identified and the officers collecting data should review ward registries, medical records and work with doctors and nurses to gather these data when the patient is discharged.
- Even after submission of CIF/CRFs to the surveillance unit, if any missing/additional information has been collected, the surveillance unit should be informed to update records in the central rotavirus surveillance database.
- Officers collecting data from the sentinel surveillance hospitals should maintain a data logbook. This logbook should have entries on missing data and notes on suspected errors. Missing data should be gathered and suspected errors should be verified and corrected by going back to the source documents.
The data logbook should be regularly updated with follow-up visits to the wards, laboratories and interactions with clinicians, nursing and laboratory staff. The CRF/CIF entries and data logbook should be regularly reviewed to see if there are data fields which consistently have the same problems. These problems generally indicate that some part of the data flow is not functioning properly and there is a need for data quality improvement.

If the sentinel surveillance hospital uses sample ID, or patient's name in clinical specimens instead of a unique ID (case ID), the officer collecting data should enter case ID and the ID used for laboratory specimens in the logbook, follow up with the laboratory using the laboratory ID and update the laboratory information in the CRF/CIF.

The central data team should be involved in data cleaning and data validation. They should work with officers collecting data to identify reasons for the data quality issues and to find ways to improve the data quality. Based on identified issues, officers collecting data may have to work with clinical and laboratory focal persons to improve data quality.

Central unit responsible for surveillance should track all cases with samples sent to the National or Regional Reference Laboratory (RRL) for genotyping, follow up to gather results in a timely manner.

The results received from the RRL should be shared with the sentinel surveillance hospital and also with the central data team to record in the database.

Central data team should maintain a backup of the rotavirus surveillance database.

Core data variables (Annex 02) should be analysed epidemiologically and results are shared with relevant stakeholders, including the clinicians and the staff at the sentinel surveillance hospital.

Data Analysis

It is important to analyse the data periodically in order to understand the characteristics of the disease and monitor the surveillance system. Since age distribution and seasonality is important in the epidemiology of rotavirus gastroenteritis, suspect and confirmed cases should be described according to the epidemiological week of the onset of diarrhoea and consolidated monthly by age of the children and place where the cases occurred. It should also be established whether the case is an isolated occurrence or an outbreak has occurred in a day-care centre, another institution or the community.

In the data analysis, calculation of following epidemiological indicators for months and cumulatively for the year of surveillance will be useful for programme managers and decision-makers.

a. Proportion of hospitalizations of children aged less than 5 years associated with all-cause diarrhoeas.
b. Proportion of acute watery diarrhoea associated hospitalizations of children aged less than 5 years attributable to rotavirus diarrhoea.

c. Proportions of acute watery diarrhoea hospitalizations associated with rotavirus among children less than 5 years by age groups.

d. Proportions of acute watery diarrhoea hospitalizations associated with rotavirus among children less than 5 years by month of the year.

e. Median and range of duration of hospital stay for all acute watery diarrhoea hospitalizations and rotavirus diarrhoea hospitalizations.

f. Proportion of deaths associated with rotavirus diarrhoea hospitalizations.

g. Proportion of individual rotavirus genotypes among all detected rotavirus genotypes and the secular trend of genotype distribution before and after vaccine introduction.

If the sentinel surveillance hospital has a defined catchment area, analysis could be extended to the annual rates of (a) all because diarrhoea hospitalizations, (b) rotavirus associated diarrhoea hospitalizations and (c) deaths associated with rotavirus diarrhoea in the overall surveillance population of children less than 5 years and by specific age groups.

Monitoring data quality

Periodic review of the data collected can help the surveillance unit to identify problems in data collection, patient enrolment or specimen collection and handling.

- Analysis of historical diarrhoea discharge data from the sentinel surveillance hospital will indicate the expected number of all-cause diarrhoea hospitalizations in that hospital during the surveillance period. If the number of children enrolled for surveillance from the sentinel surveillance hospital is less than 75% of the expected number for consecutive 2 months, this may indicate that the procedures for case-finding are inadequate.

- Fewer than 15% of children enrolled for surveillance testing positive may indicate a problem.

The surveillance coordinator must pay attention to following aspects:

- Is the surveillance system missing the youngest age groups?
- Is the quantity of stool collected insufficient in volume and quality to detect rotavirus?
- Are stool specimens handling procedures not optimal?
- Are there problems in using the enzyme immunoassay test kits?
- Have the reagents in the enzyme immunoassay test kits expired?
- Are stools being tested in a timely manner?
- Is storage of samples according to the standard requirement?
- Have the personnel been properly trained to handle samples and testing?
Surveillance Performance Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Target</th>
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<tbody>
<tr>
<td>Proportion of monthly reports of rotavirus diarrhoea surveillance data</td>
<td>At least 90%</td>
</tr>
<tr>
<td>(including zero reports) reported by sentinel surveillance sites according to</td>
<td></td>
</tr>
<tr>
<td>the agreed timelines during the calendar year (12 reports of cased-based data per site per year)</td>
<td></td>
</tr>
<tr>
<td>Proportion of eligible cases for rotavirus diarrhoea surveillance enrolled during the calendar year</td>
<td>80%</td>
</tr>
<tr>
<td>Proportion of enrolled cases for rotavirus diarrhoea surveillance with a stool specimen collected within 2 days of admission during the calendar year</td>
<td>90%</td>
</tr>
<tr>
<td>Proportion of enrolled cases for rotavirus diarrhoea surveillance with a stool specimen collected tested positive for rotavirus</td>
<td>At least 15% in settings without rotavirus vaccine introduction</td>
</tr>
<tr>
<td>Proportion of stool specimens that are ELISA tested with a result recorded during the calendar year</td>
<td>90%</td>
</tr>
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Global rotavirus surveillance network uses following core indicators

1. Consistent reporting of cases throughout the year
   a. Reporting for 12 months including zero reporting if there are no cases (Green zone in terms of performance)
   b. Reporting for at least for 10-11 months including zero reporting if there are no cases (Yellow zone in terms of performance)

2. Minimum number of cases reported annually
   a. ≥100 suspected rotavirus cases enrolled (Green zone in terms of performance)
   b. ≥80-99 suspected rotavirus cases enrolled (Yellow zone in terms of performance)

3. Suspect Cases with Specimen Collected within 2 Days of Admission
   a. ≥90% suspected cases (Green zone in terms of performance)
   b. ≥80% suspect cases (Yellow zone in terms of performance)

4. Specimens tested for rotavirus by enzyme immune assay (EIA)
   a. ≥90% specimens (Green zone in terms of performance)
   b. ≥80% specimens (Yellow zone in terms of performance)
1. **Timeliness:**

\[
\frac{\text{Total number of monthly reports, including ‘zero reports’ received on time}}{\text{Total number of expected monthly reports from sentinel surveillance sites}} \times 100
\]

# Expected number of monthly reports during the reporting period is calculated by multiplying the number of months during the reporting period (quarter-3, annual-12) by the number of surveillance sites in a given country.

2. **Enrolment:**

\[
\frac{\text{Total number of children meeting the case definition that were enrolled with a case report form completed and specimen collected}}{\text{Total number of acute watery diarrhoea hospitalizations in under-5 children eligible for enrolment}} \times 100
\]

3. **Specimen collection:**

\[
\frac{\text{Total number of cases with stool specimens collected within 2 days of admission}}{\text{Total number of children meeting the case definition that were enrolled with a case report form completed and specimen collected}} \times 100
\]

4. **Specimen positivity:**

\[
\frac{\text{Total number of eligible enrolled acute watery diarrhoea cases that tested positive for rotavirus among cases who had stool specimens tested}}{\text{Total number of eligible enrolled (with CRF and specimen collected) acute diarrhoea cases that were tested}} \times 100
\]

5. **ELISA tested:**

\[
\frac{\text{Total number of stool specimens that arrive at the laboratory that were ELISA tested}}{\text{Total number of stool samples of enrolled children that arrive at the laboratory for ELISA testing}} \times 100
\]

### 9. Feedback

A monthly report with the surveillance data should be prepared. This should be sent to the hospital director and the surveillance coordinator. In addition, monthly or quarterly surveillance meetings are strongly recommended to review surveillance performance and fix key issues.
ANNEX 01- Rotavirus disease

Rotaviruses infect nearly every child more than once, often several times, by the age of 3–5 years and are globally the leading cause of severe, dehydrating diarrhoea in children aged <5 years. Such recurrent infections are due to several factors. There are several genotypes and antigenic or sero-types of rotaviruses circulating in human communities and all of them have the potential to cause diarrhoea. Moreover, immunity is not necessarily protective of infection, although immunity reduces the risk of diarrhoea in subsequent infections. Immunity induced by almost any genotype is protective against diarrhoea, especially against severe diarrhoea, due to other genotypes. This is the basis of live attenuated rotavirus vaccines, using non-diarrhoeagenic vaccine rotaviruses.

In low-income countries the median age at the first (primary) rotavirus infection ranges from 6 to 9 months (80% occur among infants <1-year old) whereas in high-income countries, the first episode may occasionally be delayed until the age of 2–5 years, though the majority still occur in infancy (65% occur among infants <1-year old).

Aetiology

Rotaviruses are classified as a genus in the family of Reoviridae. The triple-layered viral particle encompasses a viral genome consisting of 11 segments of double-stranded RNA that encode 6 structural viral proteins (VPs) and 5 or 6 non-structural proteins (NSPs). Reassortment of the 11 gene segments may take place in coinfected host cells during the viral replication cycle. Formation of reassortants is in part the explanation for the wide variety of rotavirus types found in nature. The prevalent types may vary from one season to the next, even within the same geographical area. The type of rotavirus does not usually correlate with the severity of the disease. There are currently no known laboratory markers for rotavirus virulence.

Pathogenesis

Rotavirus infections affect primarily the mature enterocytes on the tips of villi in the small intestine. Destruction of these cells reduces the absorptive capacity of the enterocytes, including fluids, resulting in diarrhoea.
Transmission
During the first episode of rotavirus infection, rotaviruses are shed for several days in very high concentrations ($>10^{12}$ particles/gram) in the stools and vomitus of infected individuals. Transmission is believed to occur primarily by the faecal-oral route – but we cannot exclude virus entry by respiratory tract, as direct person to person transmission seems to occur even in communities practicing good sanitation and hygiene. Transmission indirectly via contaminated fomites is also likely. In short, rotaviruses are very highly infectious, explaining their prevalence in all countries.

Clinical features
The clinical spectrum of rotavirus disease is wide. Some infections are sub-clinical. Clinical illness has a spectrum, ranging from transient loose stools of very short duration, to severe diarrhoea and vomiting causing dehydration, electrolyte disturbances, shock and death. In typical cases, following an incubation period of 1–3 days, the onset of disease is abrupt, with fever (usually mild) and vomiting followed by explosive watery diarrhoea. Without adequate fluid replacement (such as oral rehydration), dehydration may ensue. Detailed clinical scoring systems have been developed to facilitate comparison of disease severity, particularly in vaccine trials. Gastrointestinal symptoms normally disappear within 3–7 days, but may last for up to 2–3 weeks. Although in most cases, recovery is complete, fatalities may occur, mainly in children ≤1 year of age, mostly due to uncorrected dehydration.

Laboratory diagnosis
An etiological diagnosis of rotavirus gastroenteritis requires laboratory confirmation. A range of diagnostic tests are commercially available: enzyme immunoassays for detection of rotavirus antigen directly in stool specimens are widely used, as are also the less sensitive, but rapid and simple-to-use test strips and latex agglutination assays. Reverse transcription polymerase chain reaction (RT-PCR), which is highly sensitive in detecting small concentrations of rotavirus in stool specimens, is also used for strain identification by type and further characterization.
Case management

No specific antiviral therapy is currently available against rotaviruses. As with other childhood diarrhoeas, the cornerstone of treatment is fluid replacement to prevent dehydration, and oral zinc treatment, which decreases the severity and duration of diarrhoea. Solutions of low osmolarity oral rehydration salts (ORS) are more effective in replacing fluids than previous ORS formulations with higher osmolarity. Additional treatment measures during the diarrhoeal episode include continued feeding, including breastfeeding, and if ORS are not available, use of appropriate fluids available in the home – containing salt and sugar.

Rotavirus vaccines

Currently available vaccines are live, oral, attenuated rotavirus strains of human and/or animal origin that replicate in the human intestine. Two oral rotavirus vaccines are available internationally: the monovalent (RV1) and the pentavalent (RV5); a recently licensed Indian vaccine is also monovalent.
### ANNEX 02- Core reporting variables for Rotavirus gastroenteritis

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<thead>
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<th>Variable Name</th>
<th>Description</th>
<th>Field Type</th>
<th>Remark</th>
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<td>COUNTRY</td>
<td>Country of Report</td>
<td>Text (ISO3 code)</td>
<td>Must be reported</td>
</tr>
<tr>
<td>CaseID</td>
<td>Case identification number</td>
<td>Defined by country</td>
<td>Must be reported</td>
</tr>
<tr>
<td>Province</td>
<td>Province</td>
<td>Defined by country</td>
<td>Must be reported</td>
</tr>
<tr>
<td>District</td>
<td>District</td>
<td>Defined by country</td>
<td>Must be reported</td>
</tr>
<tr>
<td>SEX</td>
<td>Sex</td>
<td>Text (option: F; M; U)</td>
<td>Must be reported</td>
</tr>
<tr>
<td>DOB</td>
<td>Date of birth</td>
<td>Date: (format: DD-MM-YYYY)</td>
<td>Must be reported (if Age year/month is not provided)</td>
</tr>
<tr>
<td>AgeYear</td>
<td>Age in Year (completed)</td>
<td>Number (format: ####)</td>
<td>Must be reported (if DOB is not provided) if &lt;12 months of age, put zero) 99=Unknown age</td>
</tr>
<tr>
<td>DNOT</td>
<td>Date of notification to public health system</td>
<td>Date: (format: DD-MM-YYYY)</td>
<td>DNOT&gt;=DONSET DNOT&gt;=DOB</td>
</tr>
<tr>
<td>DOI</td>
<td>Date of investigation</td>
<td>Date: (format: DD-MM-YYYY)</td>
<td>DOI&gt;=DONSET DOI&gt;=DOB DOI&gt;=DNOT</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>Acute onset of watery gastroenteritis/diarrhoea</td>
<td>Text (option: 1-Yes; 2-No; 9-Unknown)</td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>Duration of diarrhoea &lt;14 days</td>
<td>Text (option: 1-Yes; 2-No; 9-Unknown)</td>
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<tr>
<td>DosesVac</td>
<td>Number of vaccine doses received</td>
<td>Number (format: ##)</td>
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<tr>
<td>DateLastVac</td>
<td>Date of last vaccination</td>
<td>Date: (format: DD-MM-YYYY)</td>
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## Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Description</th>
<th>Field Type</th>
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<tbody>
<tr>
<td>DONSET</td>
<td>Date of onset symptoms</td>
<td>Date: (format: DD-MM-YYYY)</td>
<td>Must be reported DONSET &gt;= DOB Cannot be future date</td>
</tr>
<tr>
<td>TypeTest</td>
<td>Type of laboratory method</td>
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<td></td>
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<tr>
<td>LabResult</td>
<td>Laboratory test result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classification</td>
<td>Final classification of case</td>
<td>Text(Option: Lab confirmed; Suspected; Discard)</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Follow-up</td>
<td>Text (Option: Death, Survival)</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Any comments</td>
<td>Text</td>
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</tbody>
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Readings


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