As mentioned in the previous article, number of mea-
sles cases has shown an increase. Following article
describes different methods available for diagnosis of
measles and advantages and disadvantages of each
method.

Measles virus belongs to the
• Family – Paramyxoviridae
• Sub family - Paramyxovirinae
• Genus – Morbilivirus

Measles is a Monotypic Virus (i.e. has only a single
serotype) and it has 8 classes (A to H) & 20 genotypes
(e.g. A, B1-3, C1-2, D1-8, E, F, G1-2, H1-2). Some of
these types are localised in specific regions (Endemic)
and some are inactive.

Diagnosis
• Clinical diagnosis
• Laboratory diagnosis
• Virus Isolation
• Molecular assays

Samples for virus isolation
Samples for virus isolation should be collected within
5 days of the onset of rash. Though virus isolation is
useful for genetic information, it is not useful for diag-
nosis of measles. Samples should be collected at the
same time as the IgM sample (Virus isolation is posi-
tive in 40% of the samples which are  positive for mea-
sles IgM) and its virus isolation can be done using

• Naso-Pharyngeal Aspirate (NPA) or nasal /
throat swab in VTM
• Urine:10-50 ml centrifuged & pellet reconsti-
tuted in VTM

• Peripheral Blood Lympho-
cytes

Naso-pharyngeal aspirates
• good specimen for rubella & measles
• Need trained medical per-
sonnel
• Need Special equipment

Urine Sediments
• Easy to obtain except from
very young children
• contamination can be a
problem
• Need centrifugation pro-
cessing
• Not a good specimen for
rubella virus

(A clinical case of measles, without laboratory evi-
dence for another disease classified as clinical measles
case)
Throat Swabs / nasal swabs
- Good specimens for both measles and rubella
- Very important to collect within 0-5 days after the onset of rash / first contact with the case
- Should be collected and transported properly

Blood Lymphocytes
Difficult to isolate Peripheral Blood Mononuclear Cells (PBMCs) from blood
Not a good specimen for rubella

Virus Isolation is done using
Cell lines-
- PMK cells
- B95a cells
- Vero/hSLAM cells

CPE- giant cells with multiple nuclei, syncitia formation, Positive in 3-5 days

Confirmation
- Immuno fluorescence
- RT PCR & Sequencing

Samples for serology
Venous Blood - 3 ml of blood should be collected by venepuncture
- Skin should be cleaned with 70% alcohol
- Sample should be collected into a clean, dry, screw capped bottle without anticoagulant
- Label and leave at room temperature for 30 minutes
- Store & transport at 4°C
- Serum should be separated if transport takes several days

Note-Haemolysed (wet containers cause haemolysis of blood) or contaminated blood is not suitable

Serological diagnosis of measles dependent on the time of specimen collection
- first 72 hours - 77% of 1st samples IgM positive
- 4 - 11 days - 100% 1st samples IgM positive
- 28 days - 90% of all 2nd samples IgM positive

For unvaccinated persons - 94%

Transport of specimens
Specimens should always be sent with a request form and the form should contain
- Patient details
- Relevant history

Labelling of specimens
- Proper labelling is important and the label should contain
  - Identification details (Name, age, sex, BHT, ward, hospital etc)
  - Test required

Transport in a safe container

When transporting specimen to distant laboratories
- Specimen container should be packed in a box with absorbent cotton wool (enough to absorb contents)
- Pack in a 2nd container
- Transport in vaccine carrier or box with ice packs around it.
- Special details (e.g. sample from a HIV or HBsAg positive patient) should be indicated in request form and on the outside container

Oral fluid
- Easy to collect
- Good patient (and guardian) acceptance
- Non Invasive

Stability of oral fluid
- Stable for IgM - 7 days 37°C and 42°C (IgM capture assay, HPA)
- Stable for PCR - 7 days 37°C and 42°C
- Oral Fluid Samples have been successfully used for surveillance of measles (and Rubella and Mumps) in the UK for > 12 years

Oral Fluid sampling: Challenges
- Easy to use but training for collection and testing needed
- Supplies of Oral fluid collection devices usually need to be supplied to health centres
- No easy mechanism for determining adequacy of samples collected
- Must use Microlimmune assay
- Quality Assurance programme is yet to be fully established
  Can use confirmatory testing as for serum PT yet to be developed

Filter paper samples
- Vortex serum for 10s
- Spot 30ul of serum in the middle of each circle (Add 4x 30ul of serum from the same patient on one card)
- Label the filtercard with serum ID
- Dry samples for at least 1 h in a Filter card holder
- After minimum 1h: Put the filter cards in a zip-lock bag preferably with Silica gel desiccant
- Once the samples are dry, the samples can be stored at 4°C
- Put all filter cards (in zip-lock bags) in an envelope and send to RRL by conventional mail service (Samples can be shipped at room temperature)

The assay recommended by WHO for serum is ELISA for IgM (Sri Lanka is currently using this method for diagnosing measles)
- One serum sample collected between 3-28 days - collected at first contact
- Highly sensitive & specific
- High positive predictive value
- Easy to perform
- Quick accurate results
- Good commercial kits are available

Compiled by Dr. Geethani Galagoda (Consultant Virologist ) of the Medical Research Institute
### Table 4: Selected notifiable diseases reported by Medical Officers of Health

| Disease | Colombo | Gampaha | Kandy | Kegalle | Ratnapura | Kalutara | Matale | Nuwara Eliya | Dickoya | Matara | Jaffna | Trincomalee | Puttalam | Batticaloa | Kurunegala | Vavuniya | Mullaitivu | Monaragala | Anuradhapura | Polonnaruwa | Kalmunai | Kegalle | Mullaitivu | Batticaloa | Kurunegala | Vavuniya |
|---------|---------|---------|-------|---------|-----------|---------|-------|------------|---------|---------|--------|-------------|----------|------------|-----------|---------|----------|-----------|-------------|-----------|----------|---------|------------|-----------|----------|
| Dengue Fever* | 231 | 7 | 3 | 7 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Leptospirosis | 446 | 13 | 4 | 12 | 4 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Dysentery | 28 | 2 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IV Hepatitis | 886 | 82 | 14 | 14 | 13 | 7 | 13 | 5 | 12 | 2 | 12 | 2 | 12 | 2 | 12 | 2 | 12 | 2 | 12 | 2 | 12 | 2 | 12 | 2 | 12 | 2 | 12 | 2 | 12 |
| V Hepatitis | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H Rabies | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Chickenpox | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Enteric Fever* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Typhus Fever* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Food Poisoning* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| WHO % | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |

**Source:** Weekly Returns of Communicable Diseases (WRCD).

- *De-bya-va*: number of cases reported during the current week.
- T= Timeliness refers to returns received on or before 28th June, 2013.
- C** = Completeness refers to returns received on or before 28th June, 2013.
- Total number of reporting units 339. Number of reporting units data provided for the current week 251.

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**Page 3**
Table 1: Vaccine-Preventable Diseases & AFP

<table>
<thead>
<tr>
<th>Disease</th>
<th>No. of Cases by Province</th>
<th>Number of cases during current week in 2013</th>
<th>Number of cases during same week in 2012</th>
<th>Total number of cases to date in 2013</th>
<th>Total number of cases to date in 2012</th>
<th>Difference between the number of cases to date in 2013 &amp; 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFP*</td>
<td>00 00 00 00 01 00 00 00 00 01 02 43 44 - 02.3 %</td>
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<tr>
<td>Diphtheria</td>
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<tr>
<td>Mumps</td>
<td>02 02 01 00 01 03 01 01 01 12 14 815 2148 - 62.1 %</td>
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<tr>
<td>Measles</td>
<td>57 07 14 00 04 07 01 04 10 104 00 925 23 + 3921.7 %</td>
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<tr>
<td>Rubella</td>
<td>01 00 00 00 00 00 00 00 00 01 - 14 - -</td>
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<tr>
<td>CRS**</td>
<td>00 00 00 00 00 00 00 00 00 00 00 00 00 - 06 - -</td>
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<tr>
<td>Tetanus</td>
<td>00 00 00 00 00 00 00 00 00 00 01 00 01 00 11 12 - 08.3 %</td>
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<tr>
<td>Neonatal Tetanus</td>
<td>00 00 00 00 00 00 00 00 00 00 00 00 - 00 - -</td>
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<td></td>
</tr>
<tr>
<td>Whooping Cough</td>
<td>00 00 00 01 00 00 01 00 03 04 00 45 19 + 152.6 %</td>
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</tr>
<tr>
<td>Tuberculosis</td>
<td>37 24 13 26 33 01 14 51 02 201 130 4110 4353 - 05.6 %</td>
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<tr>
<td>Japanese Encephalitis</td>
<td>- - - - - - - - - - - - - -</td>
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</tr>
</tbody>
</table>

Key to Table 1 & 2


Data Sources:

AFP and all clinically confirmed Vaccine Preventable Diseases except Tuberculosis and Mumps should be investigated by the MOH.

Dengue Prevention and Control Health Messages

To prevent dengue, remove mosquito breeding places in and around your home, workplace or school once a week.

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Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to chepid@sltnet.lk. Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication.

ON STATE SERVICE

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