



WEEKLY EPIDEMIOLOGICAL REPORT

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Ministry of Health, Nutrition & Indigenous Medicine

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Dengue Epidemic 2017: Evidence and Lessons Learnt — Part 3

This article, discussed here as the third of 5 parts, continues to describe the outbreak and the preventive and mitigation activities carried out during the 2017 outbreak.

(Continued from Previous WER)

In June 2017, a sharp increase in the total cases was seen from all districts, recording more than double the caseload in most of them. Districts like Kandy, Matale, Batticaloa, Ampara, Kurunegala, Puttalam, Anuradhapura, and Kalmunai recorded about 4 times the previously reported average caseload. Moneragala was showing a 10 fold increase, although no specific areas were identified as potential outbreak areas.

July 2017 saw the highest case reporting (averaging 10,000 cases per week) during the peak of the outbreak and totaling more than 41,000 cases for the whole month. This was more than 300% increase than the expected for the month. Almost all the districts recorded more than 2-3 times the number of cases than expected with Gampaha, Matara and Kegalle and many districts in the dry zone, reporting nearly 5 times the cases. The severe drought which prevailed during this period where people tend to store water in various containers inside their houses resulted in Puttalam, Kalmunai, and Moneragala, Badulla increasingly reporting dengue patients at more than 7 times the average for the last 5 years. Inevitably, the highest number of deaths for a month was also recorded during July which was more than the total

deaths in 2016.

August 2017, saw a decline in the number of cases in most of the districts, to nearly a half of the numbers in July. Nevertheless, most of dry zonal districts like Hambantota, Anuradhapura, Vavuniya, Batticaloa, Trincomalee, Badulla, and Moneragala still continued to report high number of cases, an increase of 4-5 times, while Puttalam and Kalmunai had more than 6 times the patients during this month.

The downward trend continued in September where there was less than 10,000 cases and only 5 deaths were reported for the whole month. Most of the districts had their case reporting declining but places like Hambantota, Batticaloa, Trincomalee, Moneragala, and Kegalle continued to have 3-4 times the cases than expected with only Moneragala district reporting more than a 5-fold increase in sporadic cases, even though not in any notable outbreak setting.

The post-outbreak case reporting decline reached the lowest for the year in October 2017. Many districts reported this decrease, but Kandy and Kegalle along with few other areas in the dry zone like Hambantota, Jaffna, Batticaloa, Trincomalee, Kalmunai, and Moneragala continued to have high case numbers being reported.

The onset of sporadic rains in November and December 2017, due to the North-Eastern Monsoonal rains, showed a gradual increase in cases from areas like Hambantota, Vavuniya, Batticaloa, Puttalam, Anuradhapura, and Moneragala districts.

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By the end of the year, the cases in 2017 had almost reached the last 5-years baseline values, signifying the end the unprecedented outbreak.

As mentioned previously, Sri Lanka experiences annual cyclical changes in dengue incidence due to the monsoonal rain patterns experienced in different parts of the island. It is noted that there appears to be an endemic level in the country which is changing every few years apart. The annual incidence of dengue cases up to 1999 appeared to be less than 10 cases per 100,000 population for each year. The annual incidence increased to an average of 33 cases per 100,000 from the year 2000 to 2003 with the endemic level being reset at a higher level. Next five years from 2004 to 2008 showed an average annual incidence of 48 cases per 100,000 cases. From 2009 to 2013 the endemicity was reset at a higher level at around 170 cases per 100,000 cases per year. This average incidence was again reset from 2014 to 2016 to a higher level, 211 cases per 100,000 population. As depicted in the above figures, it is apparent that in 2017, a new very high incidence (867 cases per 100,000 population) was reached.

By hindsight, this may not be a resetting of the endemic level, if 2017 was, in fact, a significant epidemic. Nevertheless, in keeping with the virology trends and disease patterns in the other Dengue endemic countries in the region like Thailand and Malaysia, this pattern may continue for a few more years. But, there are few postulations for the sudden increase in the caseload leading to the unprecedented outbreak in 2017.

- Surge in fever patients due to the change in the circulating dengue virus type from less virulent DENV1 strain to DENV2 serotype which is relatively more virulent.
- More asymptomatic but viraemic persons leading to a relatively more virus load in the community
- Increased migration of susceptible population (i.e. Dengue naïve) from low endemic areas to high endemic areas with more primary exposure to the virus.
- More indoor mosquito breeding sites due to the abundance of open water containers with the prevailing severe drought conditions in most dry-zone parts in the country.
- Increased exposure to mosquito bites due to the weather changes and a possible change in mosquito biting habits and shifting breeding places from households to open places like schools, construction sites.
- The response pattern towards the outbreak situation is more of a reactive nature than the more effective proactive nature.

As mentioned above, despite the routine and special preventive activities carried out from the beginning, health officials had to resort to extraordinary measures to bring the situation under control. The following description of these control measures taken by different units of the Health Ministry, are detailed into four broad categories;

1. Enhancing Clinical Management,
2. Vector Control Activities,
3. Inter-Sectoral Collaborations
4. Communication to Community Empowerment

Clinical management aspects will be discussed initially and the public health activities will be elaborated in detail afterwards;

Enhancing Clinical Management of Dengue

It has always been shown that prompt and early diagnosis with meticulous monitoring and management of the critical phase was very important in bringing down mortality and to keep morbidity at lower levels.

- Improving the clinical management with updating knowledge and skills of clinicians and para-medical staff by continuous training sessions carried out in almost all provinces of the country.
- The high caseload which led to increased hospital admissions was a severe burden felt on the hospital care system already laden with logistical and manpower issues. This was very much in evidence in places like Kinniya and Kalmunai where coping with a large number of admissions was difficult due to lack of space and staff. Temporary establishment of a dedicated unit (HDU with trained staff from DGH Negombo and other hospitals) was the turning point in controlling the Kinniya outbreak. Extra staff and staff were also made available at DGH Trincomalee to curb the situation.
- Need for additional bed strength in major hospitals was an urgent issue to be tackled. Incorporating (relatively) non-essential wards to be used for dengue patients as a temporary measure was one of the successful options carried out in many hospitals.
- Where there was a need for an early solution, the Sri Lanka Army was helpful in setting up semi-permanent field hospital buildings within a very short time duration as done at NIID (National Institute for Infectious Diseases formerly known as IDH), Csth Kalubowila and CNTH Ragama etc.

(to be continued...)

Compiled by Dr. M. B. Azhar Ghouse,
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Table 1: Selected notifiable diseases reported by Medical Officers of Health 20th - 26th Jan 2018 (04th Week)

| RDHS Division | Dengue Fever | | Dysentery | | Encephalitis | | Enteric Fever | | Food Poisoning | | Leptospirosis | | Typhus Fever | | Viral Hepatitis | | Human Rabies | | Chickenpox | | Meningitis | | Leishmaniasis | | WRCD | | |
|-----------------|--------------|-------------|-----------|------------|--------------|-----------|---------------|-----------|----------------|-----------|---------------|------------|--------------|------------|-----------------|-----------|--------------|----------|------------|------------|------------|-----------|---------------|------------|-----------|-----------|-----|
| | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | T* | C** | |
| Colombo | 278 | 1159 | 1 | 3 | 0 | 1 | 2 | 6 | 0 | 1 | 3 | 17 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 14 | 47 | 0 | 6 | 0 | 1 | 54 | 95 |
| Gampaha | 147 | 711 | 0 | 6 | 0 | 1 | 1 | 4 | 0 | 5 | 3 | 13 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 35 | 69 | 0 | 1 | 0 | 0 | 75 | 100 |
| Kalutara | 102 | 431 | 2 | 7 | 1 | 1 | 0 | 0 | 8 | 8 | 6 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 44 | 6 | 11 | 0 | 0 | 57 | 100 |
| Kandy | 113 | 481 | 3 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 7 | 1 | 9 | 1 | 1 | 0 | 0 | 6 | 21 | 1 | 2 | 1 | 2 | 2 | 63 | 100 |
| Matale | 33 | 139 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 4 | 1 | 2 | 1 | 2 | 2 | 69 | 100 |
| NuwaraEliya | 5 | 23 | 2 | 2 | 0 | 0 | 1 | 2 | 1 | 2 | 0 | 2 | 5 | 10 | 1 | 1 | 0 | 0 | 8 | 28 | 1 | 2 | 0 | 0 | 0 | 19 | 100 |
| Galle | 20 | 76 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 21 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 34 | 44 |
| Hambantota | 26 | 126 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 4 | 7 | 0 | 0 | 0 | 0 | 6 | 21 | 0 | 1 | 9 | 84 | 65 | 100 | |
| Mataru | 36 | 136 | 1 | 3 | 0 | 0 | 0 | 1 | 0 | 12 | 2 | 19 | 1 | 1 | 0 | 0 | 0 | 0 | 9 | 23 | 0 | 0 | 6 | 30 | 59 | 100 | |
| Jaffna | 120 | 637 | 3 | 15 | 0 | 0 | 1 | 7 | 1 | 6 | 1 | 2 | 22 | 98 | 0 | 0 | 0 | 0 | 13 | 27 | 3 | 3 | 0 | 0 | 38 | 93 | |
| Kilinochchi | 13 | 38 | 2 | 5 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 31 | 100 | |
| Mannar | 1 | 12 | 1 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 1 | 0 | 0 | 0 | 30 | 100 |
| Vavuniya | 8 | 71 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 5 | 3 | 6 | 2 | 4 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 1 | 0 | 0 | 0 | 69 | 100 |
| Mullaitivu | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 65 |
| Batticaloa | 145 | 598 | 3 | 20 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 4 | 2 | 4 | 0 | 0 | 0 | 61 | 100 |
| Ampara | 10 | 24 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 1 | 2 | 0 | 0 | 4 | 13 | 0 | 0 | 0 | 0 | 0 | 46 | 100 |
| Trincomalee | 20 | 93 | 2 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 7 | 2 | 5 | 0 | 0 | 0 | 0 | 10 | 26 | 0 | 0 | 0 | 1 | 35 | 98 | |
| Kurunegala | 91 | 505 | 3 | 13 | 0 | 2 | 0 | 2 | 0 | 1 | 5 | 19 | 0 | 3 | 0 | 1 | 0 | 0 | 15 | 41 | 1 | 9 | 4 | 14 | 68 | 100 | |
| Puttalam | 143 | 537 | 1 | 4 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 6 | 1 | 2 | 0 | 0 | 0 | 0 | 4 | 10 | 0 | 3 | 0 | 0 | 71 | 100 | |
| Anuradhapura | 26 | 107 | 0 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 21 | 1 | 6 | 0 | 0 | 0 | 0 | 8 | 25 | 0 | 0 | 6 | 17 | 41 | 100 | |
| Polonnaruwa | 11 | 45 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 6 | 3 | 27 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 12 | 0 | 2 | 5 | 21 | 68 | 100 | |
| Badulla | 10 | 76 | 3 | 15 | 0 | 0 | 0 | 2 | 1 | 1 | 6 | 16 | 2 | 5 | 0 | 2 | 0 | 0 | 3 | 24 | 1 | 8 | 1 | 1 | 47 | 100 | |
| Monaragala | 34 | 185 | 7 | 16 | 1 | 1 | 0 | 1 | 1 | 2 | 16 | 56 | 3 | 10 | 0 | 1 | 0 | 0 | 2 | 13 | 1 | 1 | 1 | 4 | 50 | 100 | |
| Ratnapura | 31 | 178 | 5 | 23 | 2 | 7 | 0 | 4 | 1 | 1 | 5 | 32 | 1 | 3 | 0 | 1 | 0 | 1 | 5 | 23 | 3 | 15 | 11 | 57 | 42 | 100 | |
| Kegalle | 43 | 188 | 0 | 4 | 2 | 2 | 0 | 0 | 2 | 15 | 4 | 13 | 3 | 5 | 1 | 4 | 0 | 0 | 7 | 25 | 1 | 2 | 0 | 0 | 66 | 100 | |
| Kalmune | 114 | 573 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 6 | 14 | 0 | 1 | 0 | 0 | 42 | 100 | |
| SRILANKA | 1581 | 7159 | 43 | 175 | 9 | 19 | 8 | 42 | 19 | 71 | 70 | 338 | 50 | 176 | 5 | 19 | 0 | 2 | 181 | 530 | 21 | 75 | 45 | 235 | 54 | 95 | |

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 26th January, 2018 Total number of reporting units 349 Number of reporting units data provided for the current week: 328 C**=Completeness
A = Cases reported during the current week. B = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP

20th – 26th Jan 2018 (04th Week)

| Disease | No. of Cases by Province | | | | | | | | | Number of cases during current week in 2018 | Number of cases during same week in 2017 | Total number of cases to date in 2018 | Total number of cases to date in 2017 | Difference between the number of cases to date in 2018 & 2017 |
|-----------------------|--------------------------|----|----|----|----|----|----|----|-----|---|--|---------------------------------------|---------------------------------------|---|
| | W | C | S | N | E | NW | NC | U | Sab | | | | | |
| AFP* | 01 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 | 01 | 04 | 06 | - 33.3 % |
| Diphtheria | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 0 % |
| Mumps | 02 | 00 | 00 | 01 | 01 | 00 | 01 | 00 | 01 | 06 | 04 | 29 | 22 | 31.8 % |
| Measles | 02 | 01 | 01 | 00 | 01 | 00 | 01 | 00 | 00 | 06 | 04 | 29 | 31 | - 6.4% |
| Rubella | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 0 % |
| CRS** | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 0 % |
| Tetanus | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 0 % |
| Neonatal Tetanus | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 0 % |
| Japanese Encephalitis | 00 | 00 | 01 | 00 | 00 | 00 | 01 | 00 | 00 | 02 | 00 | 06 | 04 | 50 % |
| Whooping Cough | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 | 01 | 0 % |
| Tuberculosis | 85 | 05 | 11 | 11 | 05 | 00 | 11 | 18 | 23 | 169 | 193 | 631 | 653 | -3.3 % |

Key to Table 1 & 2

Provinces: W: Western, C: Central, S: Southern, N: North, E: East, NC: North Central, NW: North Western, U: Uva, Sab: Sabaragamuwa.
RDHS Divisions: CB: Colombo, GM: Gampaha, KL: Kalutara, KD: Kandy, ML: Matale, NE: Nuwara Eliya, GL: Galle, HB: Hambantota, MT: Matara, JF: Jaffna, KN: Killinochchi, MN: Mannar, VA: Vavuniya, MU: Mullaitivu, BT: Batticaloa, AM: Ampara, TR: Trincomalee, KM: Kalmunai, KR: Kurunegala, PU: Puttalam, AP: Anuradhapura, PO: Polonnaruwa, BD: Badulla, MO: Moneragala, RP: Ratnapura, KG: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS** =Congenital Rubella Syndrome

NA = Not Available

Number of Malaria Cases Up to End of January 2018,

01

All are Imported!!!

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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@slt.net.lk. **Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

ON STATE SERVICE

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