Update on the Dengue situation in the Western Pacific Region

This report describes the epidemiology of dengue in the World Health Organization Western Pacific Region. Data are compiled from open sources (national indicator-based surveillance systems) with the exception of Cambodia, Lao People’s Democratic Republic, Viet Nam, and the Philippines, where data are provided from WHO Country Offices, and for Pacific Island Countries, where syndromic surveillance data are provided by the Division of Pacific Technical Support. Information is reported based on countries’ standard dengue case definitions and a summary of these definitions and countries’ dengue surveillance systems is included as an annex to this report. Due to differences in surveillance methods and reporting practices, a comparison of trends between countries and areas is not possible however national trends can be observed over time.

Northern Hemisphere

Cambodia

As of epidemiological week 26 of 2023, a total of 6,683 cases, with 14 deaths (Case Fatality Rate (CFR) 0.21%) were reported to the National Dengue Surveillance System in Cambodia since 1 January 2023 (Figure 1); an increase compared to 3,331 cases and nine deaths (Case Fatality Rate (CFR) 0.27%) reported in 2022 over the same period.

Figure 1: Dengue cases reported weekly in 2023 vs Mean and Mean+2SD during 2015-2020 *excluding 2019 in Cambodia;
Source: National Dengue Surveillance System (NDCP/CNM/MOH)
China
There are no further updates from the previous report. In April 2023, nine dengue cases were reported in China. There have been a total of 28 dengue cases and no deaths in the country from January 2023 to April 2023 (Figure 2).

Lao People’s Democratic Republic
In epidemiological week 27 of 2023, 1,584 dengue cases and two deaths were reported (Figure 3). This is higher than the 1,281 cases and two deaths reported in epidemiological week 26. The cumulative number of cases reported in 2023 (as of epidemiological week 27) is 8,175. This is a 28% increase compared to the 6,393 cases reported during the same period in 2022. There have now been five deaths reported in 2023.
Malaysia
During epidemiological week 25 of 2023, there were 2,582 dengue cases, compared to 2,808 cases in the previous week (Figure 4). No dengue-related deaths were reported in week 25. The cumulative number of dengue cases reported to date is 56,721 cases, a 144.7% increase compared to 23,183 cases for the same period in 2022. As of epidemiological week 25, a total of 39 deaths due to dengue have been reported, compared to 16 deaths for the same period in 2022.

![Figure 4: Dengue cases reported weekly from 2022, 2023, and median 2018-2022 in Malaysia](Source: Department of Health, Malaysia)

Philippines
There have been no updates since the previous report. During epidemiological week 23 of 2023, there were 1,794 new dengue cases reported (Figure 5). As of 10 June 2023, a total of 68,068 dengue cases have been reported. The number of cases is 21% higher compared to the same period in 2022 (n=58,438). From 1 January to 10 June 2023, there have been 234 deaths (CFR 0.4%), which is lower than the 268 deaths (CFR 0.3%) reported in the same period in 2022.

![Figure 5: Dengue cases reported weekly from 2022 and 2023 in the Philippines](Source: Department of Health, the Philippines)
(Note: there is a 3-4 week systematic delay in reporting and numbers should be interpreted with caution)
Singapore
As of epidemiological week 27 of 2023, 235 dengue cases were newly reported in Singapore, leading to a total of 4,580 cases (Figure 6); This is lower than the same period (epidemiological weeks 1–27) in 2022, when a total of 19,325 cases were reported. Preliminary results of all positive dengue samples serotyped in June 2023 showed DEN-1, DEN-2, DEN-3, and DEN-4 at 60.2%, 16.1%, 16.7%, and 7.1% respectively.

Viet Nam
As of 16 July (epidemiological week 28) 2023, cumulatively 46,658 dengue cases including 11 deaths were reported in Viet Nam, which is a decrease by 60.4% compared to the same period in 2022 (117,835 cases including 69 deaths).
During epidemiological week 28 (from 10 July – 16 July), 2,098 cases including one death were newly reported, a 19.5% decrease in cases compared to the previous week (2,606 cases). Of the cases, 1,618 were hospitalized, a 21.8% decrease compared to the previous week (2,070 hospitalizations) (Figure 7).
Southern Hemisphere

Australia

There were 24 dengue cases reported in Australia during the reported fortnight (12 June to 25 June 2023). The cumulative number of cases was higher at 421 for the current year to 25 June 2023, compared with the trend for same period in the years 2020-2021 (Figure 8). This may be attributed to COVID-19-related travel restrictions in 2020-2021. Before COVID-19, Australia had seen notifications of overseas-acquired cases from travelers returning from dengue-endemic areas.

![Figure 8: Laboratory-confirmed dengue cases reported monthly from 2015-2023 in Australia](Source: Department of Health, Australia)

Pacific Islands Countries

New Caledonia

From 1 January to 30 June 2023, four confirmed dengue cases were reported in New Caledonia (Figure 9). This is higher compared to the same period in 2022 when a total of one dengue case was reported. Of the four confirmed dengue cases in 2023, two were imported cases. The serotype of the two imported cases were DENV-1 and DENV-2.

![Figure 9: Dengue cases reported by week from 2021 to 2023 in New Caledonia](Source: Network of sentinel physicians, New Caledonia)
Pacific Island Countries and Areas (PICs) – Dengue-like illness (DLI) Surveillance

There have been no updates for PICs since the previous report. During epidemiological week 25 of 2023, many Pacific Island Countries and Areas with available surveillance data (16/18 PICs) reported no or low numbers of DLI cases. Fiji, Palau and Solomon Islands reported a higher weekly number of cases in week 25 compared to the corresponding epidemiological week of 2022. The number of cases reported in French Polynesia, Palau and Solomon Islands in week 25 is higher than the number reported in week 24.
Figure 10. Reported cases of dengue-like illness in Pacific Islands Countries and Areas

Note: Caution should be taken in interpreting these data as there may be changes in the number of sentinel sites reporting to the Pacific Syndromic Surveillance System (PSSS). Furthermore, the syndromic case definition of DLI may capture cases with non-dengue acute febrile illnesses (AFI) with similar clinical manifestations to dengue. This includes AFI such as chikungunya, influenza, hantavirus, leptospirosis, malaria, measles, paratyphoid and typhoid fevers, scrub typhus, yellow fever, zika, other diseases. The PSSS may also capture dengue cases under ‘prolonged fever’ surveillance. Alert threshold for DLI is twice the average number of cases seen in the previous 3 weeks.

FSM: Federated States of Micronesia
### Annex 1. Summary of dengue case definitions, laboratory sampling and testing methods used for surveillance in Member States as of 2023

<table>
<thead>
<tr>
<th>Country</th>
<th>Case definition</th>
<th>Surveillance system</th>
<th>Laboratory sampling and testing method</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Fever, headache, arthralgia, myalgia, rash, nausea and vomiting</td>
<td>Both confirmed and probable cases are nationally notifiable. A confirmed case requires both laboratory definitive evidence and clinical evidence. A probable case requires either laboratory suggestive evidence and clinical evidence and epidemiological evidence, or clinical evidence and household epidemiological evidence.</td>
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**Laboratory definitive evidence:**
- Isolation of dengue virus, or
- Detection of dengue virus by nucleic acid testing, or
- Detection of NS1 antigen in the blood by EIA, or
- IgG seroconversion or significant increase in antibody level or fourfold or greater rise in titre to dengue virus (proof by neutralization or another specific test)

**Laboratory suggestive evidence:**
- Detection of NS1 antigen in blood by rapid antigen test, or
- Detection of dengue virus-specific IgM in blood

**Epidemiological evidence:**
- Exposure between 3 – 14 days prior to onset either in a country with known dengue activity or in a dengue-receptive area in Australia where a locally-acquired or imported case has been documented with onset within a month.

**Household epidemiological evidence:**
- Living in the same house as a locally-acquired case in a dengue-receptive area of Australia within a month of onset in the case and at least one case in the chain of epidemiologically linked cases is laboratory confirmed.
<table>
<thead>
<tr>
<th>Country</th>
<th>Dengue Situation</th>
<th>WHO Dengue Case Classification (2009)</th>
<th>National Dengue Control Program (NDCP) enhanced sentinel surveillance system</th>
<th>National Dengue Surveillance System, indicator-based surveillance system</th>
<th>Data Collected for Cambodia Laboratory Information System (CamLIS), comprised of 32 participating hospital laboratories where NS1 detection is conducted.</th>
<th>Laboratory Testing: Antibody HI&gt;= 1/1280 or IgM/IgG positive by ELISA test in convalescence serum</th>
<th>Laboratory confirmation is done by real-time RT-PCR, NS1 in acute-phase serum, or virus isolation from an acutely infected patient's serum.</th>
<th>WHO Internal Communication</th>
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<td>Cambodia</td>
<td>Suspected dengue: very high fever at 39-40 degrees celsius for 2-7 days (usually 3-4 days), with 2 or more of the following signs: flushed face, headache, retro-orbital pain, myalgia/arthralgia, cutaneous rash, haemorrhagic signs (petechiae, positive tourniquet test), and leucopenia. Probable dengue: signs of suspected dengue plus laboratory test results (see right column) or that the case occurred in an area where the dengue case has been confirmed.</td>
<td>Yes</td>
<td>National Dengue Control Program (NDCP) enhanced sentinel surveillance system</td>
<td>Communicable Disease Control (CDC) syndromic surveillance system (CamEWARN). Health Management Information System (HMIS) collects data on confirmed cases and deaths.</td>
<td>Data collected for Cambodia Laboratory Information System (CamLIS), comprised of 32 participating hospital laboratories where NS1 detection is conducted.</td>
<td>Laboratory testing: Antibody HI&gt;= 1/1280 or IgM/IgG positive by ELISA test in convalescence serum</td>
<td>Laboratory confirmation is done by real-time RT-PCR, NS1 in acute-phase serum, or virus isolation from an acutely infected patient’s serum.</td>
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<td>China</td>
<td>(i) more than two symptoms of acute onset fever, severe headache, orbital pain, myalgia, arthralgia, fatigue with a history of travel in a dengue endemic area within 15 days before symptom onset or cohabitation with an individual with confirmed dengue; or no travel history, but with a rash or positive tourniquet test AND leucopenia or thrombocytopenia or serum IgM positivity.</td>
<td>No</td>
<td>Reported to the Chinese Centre for Disease Control and Prevention (China CDC) through the Chinese National Notifiable Infectious Disease Reporting Information System (CNNDIS).</td>
<td>All suspected cases are to be tested by the following laboratory tests: Rapid Combo Test (RCT) (NS1, IgM, IgG), Dengue Antigen and Serology tests by ELISA, Dengue Viral RNA Detection (Real time RT-PCR), Vical Isolation</td>
<td>WHO Dengue Case Classification (2009) †</td>
<td>National Surveillance System for Notifiable Selected Diseases, indicator-based surveillance system that consists of passive weekly reports of clinically suspected cases, on admission, from all health-care facilities across the country.</td>
<td>Laboratory confirmation is done by real-time RT-PCR, NS1 in acute-phase serum, or virus isolation from an acutely infected patient’s serum.</td>
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<td>Lao People’s Democratic Republic</td>
<td>WHO Dengue Case Classification (2009) †</td>
<td>No</td>
<td>National Surveillance System for Notifiable Selected Diseases, indicator-based surveillance system that consists of passive weekly reports of clinically suspected cases, on admission, from all health-care facilities across the country.</td>
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<td>Malaysia</td>
<td>WHO Dengue Case Classification (2009) †</td>
<td>Yes</td>
<td>National Dengue Surveillance System, indicator-based surveillance system</td>
<td>All suspected cases are to be tested by the following laboratory tests: Rapid Combo Test (RCT) (NS1, IgM, IgG), Dengue Antigen and Serology tests by ELISA, Dengue Viral RNA Detection (Real time RT-PCR), Vical Isolation</td>
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<td>Philippines</td>
<td>WHO Dengue Case Classification (2009) †</td>
<td>Yes</td>
<td>Philippine Integrated Disease Surveillance and Response (PIDSR), indicator-based surveillance system. Reporting delays of 2-3 weeks, making comparison of current weekly and cumulative figures with previous years difficult.</td>
<td>Confirmed dengue is a suspect case with positive (+) viral culture isolation and/or PCR. NS1 (+), IgM is used to identify probable dengue.</td>
<td>WHO Dengue Case Classification (2009) †</td>
<td>Philippine Integrated Disease Surveillance and Response (PIDSR), indicator-based surveillance system. Reporting delays of 2-3 weeks, making comparison of current weekly and cumulative figures with previous years difficult.</td>
<td>Confirmed dengue is a suspect case with positive (+) viral culture isolation and/or PCR. NS1 (+), IgM is used to identify probable dengue.</td>
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<td>Singapore (endemic)</td>
<td>Fever, headache, backache, myalgia, rash, abdominal discomfort and thrombocytopenia and laboratory testing (see right column)</td>
<td>No</td>
<td>Dengue is a legally notifiable disease in Singapore and notifying the Ministry of Health should not be later than 24 hours from the time of diagnosis.</td>
<td>Laboratory confirmation is done using standard diagnostic tests for the detection of dengue NS1 antigen, IgM and IgG, or RT-PCR.</td>
<td>WHO Dengue Case Classification (2009) †</td>
<td>Dengue is a legally notifiable disease in Singapore and notifying the Ministry of Health should not be later than 24 hours from the time of diagnosis.</td>
<td>Confirmed dengue is a suspect case with positive (+) viral culture isolation and/or PCR. NS1 (+), IgM is used to identify probable dengue.</td>
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### Viet Nam (endemic)

| Acute onset of fever continuously lasting from 2-7 days AND at least 2 of the following: haemorrhagic manifestation/presentation; headache, loss of appetite, nausea, vomiting; rash; muscle pain, joint pain, orbital pain; lethargy; abdominal pain. |
| No |
| As per the MOH dengue surveillance guideline, in routine surveillance MAC-ELISA is conducted for at least 7% and virus isolation is conducted for at least 3% of clinical cases. In an outbreak, at least 5 to 10 suspected cases are tested. |

### Pacific Island Countries

| WHO dengue case classification (2009) † |
| No |
| Pacific Syndromic Surveillance System |
| Confirmed case: Isolation of dengue virus or detection of dengue-specific antigen or antibodies in tissue, blood, CSF or other body fluid by an advanced laboratory test |

Only the minimum criteria required for fulfilling a clinical dengue case definition are included here; additional signs and symptoms required for more severe forms are not listed.

† A probable dengue case is defined as any case living in or travel to dengue endemic area with fever and two or more of the following: nausea, vomiting, rash, aches and pains, positive tourniquet test, leucopenia and any warning sign. A case with warning signs is defined as a clinically diagnosed case with any of the following: abdominal pain or tenderness, persistent vomiting, clinical fluid accumulation, mucosal bleed, lethargy, restlessness, liver enlargement > 2 cm and increase in haematocrit concurrent with rapid decrease in leucopenia and any warning sign. A case with warning signs is defined as any case living in or travel to dengue endemic area. Severe dengue is defined as severe plasma leakage leading to any of the following: shock, fluid accumulation with respiratory distress OR severe bleeding as evaluated by clinician OR severe organ involvement of liver (aspartate amino transferase or alanine amino transferase ≥ 1000), central nervous system (impaired consciousness) or heart and other organs.  

### References:


