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SUMMARY OF EVALUATION OF DENGUE STRATEGIC PLAN FOR THE ASIA PACIFIC REGION 2008–2015

Background

In 2008, the fifty-ninth session of the Regional Committee for the Western Pacific endorsed the *Dengue Strategic Plan for the Asia Pacific Region 2008–2015*. This served as a road map for dengue prevention and control in the Region. The strategic plan aimed to reduce the disease burden to an extent that dengue would no longer be a major public health problem. The strategic plan contained a logical framework approach (LFA) with one regional objective and six components encompassing six specific objectives. The six components comprising the LFA were surveillance, integrated vector management, case management, social mobilization and communications, outbreak response and research. The strategic plan was implemented through integrated vector management and the implementation of the *Asia Pacific Strategy for Emerging Diseases* (APSED), including partnerships with institutions and organizations, the network of WHO collaborating centres and the Association of Southeast Asian Nations (ASEAN).

Methodology

Available data and reports provided by Member States to WHO were evaluated, and published literature searched for further information. Consultations were also held with Member States and experts. The data review included an analysis of progress achieved using the six logical framework components. The consultations included determining the number of countries affected by dengue transmission, disease burden reported from these countries and the challenges faced. Also considered were dengue outbreaks reported by countries and burden estimations undertaken in several Member States from 2008 to 2015.

Findings

Between 2008 and 2015, there have been approximately 2.8 million cases of dengue with more than 7000 deaths reported in the Region. The Region's annual number of dengue cases reported has more than doubled from approximately 200 000 in 2008 to more than 450 000 cases in 2015. This increase is part of a longer-term trend of a growing dengue burden. At the same time, the case fatality rate for dengue has been reduced in the Region from 0.32% to 0.16%, although some variability in rates has been observed between Member States. Both the reduction achieved and the variability indicate that further reductions in case fatality are achievable, through continued focus on improving case management and risk communications.

Several factors may have contributed to the increasing number of dengue cases reported, including changes to and strengthening of surveillance systems and modes of reporting, clinician awareness and improved diagnostic capacities. The 2009 revision of the WHO dengue case classification, incorporated by some Member States in the Region, may also have contributed to the increase. Timely information-sharing of dengue situations in Member States has also improved, with updates received from 10 countries and areas in 2015 (compared to six in 2010). As a result of improved surveillance reporting, regional dengue reports are now published biweekly on the WHO website.

There is also evidence to suggest that a true increase in disease transmission in the Region has occurred over the past eight years, including the re-emergence of locally transmitted dengue virus in Japan after more than 70 years, and a re-emergence of dengue serotypes (DEN2 and DEN3) in Pacific island countries and areas. There was also an unprecedented outbreak in the Lao People's Democratic Republic.

Responding to dengue outbreaks has been challenging for countries, regardless of their level of development. Epidemics can be explosive, placing significant strains on health systems in countries, with implications for the effective management of dengue cases and the ability to meet broader health needs. When national efforts have focused on containment of outbreaks, these impacts have been exacerbated by the limited range of tools available and the limited evidence for their effective application in a containment setting.

More specifically in responding to an outbreak, vector control can reduce mosquito numbers, but there is very limited evidence that it reduces dengue case numbers. This is likely due to two reasons: because of the behaviour of *Aedes* mosquitoes, and the fact that to be effective in a response setting, vector control must begin promptly and be implemented fully.

As a result — despite the focus on strengthening vector control capacities under the integrated vector management component of the logical framework, and on strengthened outbreak response capacities (as defined in the outbreak response component) — delays in scaling up vector control operations, as well as resourcing constraints and other health sector challenges, have meant that these vector control operations usually have had limited success in bringing about the rapid control of outbreaks. The high cost and complexity of scaling up dengue vector control interventions in rapidly expanding populations, especially in urban areas, further contributed to this.

The capacity of Member States to respond to dengue was also strengthened in a number of other ways that were guided by the strategic plan. In addition to enhanced surveillance as outlined above, laboratory capacity was also strengthened. Building on a successful mechanism of global external quality assessment (EQA) of national influenza centres, WHO initiated an EQA programme for dengue (DENV EQA). The latest results of the EQA programme showed that 94% and 89% of laboratories correctly identified dengue virus infection by PCR and IgM, respectively.

During this period, strategic partnerships were also promoted. As a result, many joint activities have been conducted, including four Asia-Pacific dengue workshops organized jointly by Singapore's National Environmental Agency and WHO to build capacity in support of the dengue strategic plan. In collaboration with WHO, the Ministry of Health of Malaysia and the National Institute for Communicable Disease Prevention and Control of China each organized several trainings on integrated vector management.

The research component of the strategy was to promote and facilitate the introduction of new tools, such as laboratory diagnostics, medicines, vaccines and vector control. However, the tools did not become available during the period of the strategy as expected. This further constrained the ability of Member States to contain dengue.

There has been significant effort made in the social mobilization and communications component of the strategy, including the establishment of ASEAN Dengue day. Reports are already showing some impact in terms of increased knowledge and awareness; however, social mobilization and communications efforts have faced some challenges, particularly during outbreaks in the Region. Limited attention to these issues during the inter-epidemic period limits the ability to rapidly increase social mobilization and community awareness during a response.

Conclusions

Although progress has been made, including important reductions in dengue case fatality rates, key constraints still exist, such as an incomplete understanding of the disease, limitations in currently available tools and non-availability of more effective tools. There has also been a potential increase in factors conducive to dengue transmission. All of these signs point to a rising trend of dengue infections that has not yet been reversed.

Along with dengue, Member States continue to face challenges with the emergence of other arboviral diseases such as Zika and chikungunya, which are also transmitted by *Aedes* vector mosquitoes.

These continued challenges to Member States and to their health systems will require a new approach in addressing dengue and other arboviral diseases.