SEA-CD-176
Distribution: Limited

Prevention and Control of Chikungunya in South-East Asia

Report of the Expert Group Meeting
Aurangabad, India, 27–29 September 2007

World Health Organization
Regional Office for South-East Asia

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Contents

Abbreviations

APSED	Asia Pacific Strategy for Emerging Diseases
CDS	Department of Communicable Diseases
CHIK	Chikungunya
COMBI	Communication for Behavioural Impact
CSR	Communicable Diseases Surveillance and Response
HQ	Headquarters
IEC	Information, Education, and Communication
IHR	International Health Regulations
RO	Regional Office
SEA	South-East Asia
SEARO	Regional Office for South-East Asia
VBD	Vector-borne diseases
WHO	World Health Organization

Executive summary

Chikungunya fever has become a public health problem in the South-East Asia Region. The purpose of this report is to describe the magnitude of the problem including its risk factors that can be reduced or eliminated through appropriate corrective action, in order to develop policy to prevent and control the disease as well as to identify the funding sources.

Chikungunya is a vector-borne disease of public health significance in South-East Asia. It has been reported from countries of South-East Africa, South Asia and South-East Asia. In the South-East Asia Region, outbreaks have been reported from India, Indonesia, Maldives, Myanmar, Sri Lanka and Thailand. There have been massive outbreaks of chikungunya fever in recent years in India and in some island countries of the Indian Ocean. Similarly, Maldives reported outbreaks of chikungunya fever for the first time in December 2006. Although it is not a killer disease, high morbidity and prolonged polyarthritis and chronic illness cause substantial socio-economic impact in the affected countries.

Various factors that affect chikungunya fever include mutation of the virus, lack of herd immunity and insufficient vector control activities. It has been observed that in addition to Aedes aegypti, Aedes albopictus is also identified as a vector of chikungunya virus as well. Urbanization and population movement creating larger slum areas and increasing population density have significantly contributed to the spread of chikungunya. Climate change and social behaviour play a significant role in chikungunya outbreaks.

Surveillance and response capacity, especially at national level, is critical. There is an urgent need to have a strong surveillance and response system in place, and it can be achieved through multi-sectoral approach and community participation to help detect and respond to the first signs of chikungunya.

There is no specific treatment for chikungunya fever and no vaccine is available for this viral disease. The only way to prevent chikungunya is through vector control and prevention of further transmission through early case detection and prompt treatment. Vector control is not an easy task,

since it involves technology and community participation. Integrated vector management is needed to integrate multi-sectoral efforts on vector control.

In line with country's limited resource allocation, chikungunya has been put in low priority compared to other diseases; it has less resource been allocated on chikungunya for surveillance, case management as well as vector control. The socio-economic burden of the disease is mainly due to higher illness rate in outbreak areas.

There is a need to know the epidemiological situation of chikungunya fever in every country in the Region and to develop a national policy on its prevention and control. For these reasons, the WHO Regional Office for South-East Asia organized an informal consultation with experts to review gaps in prevention and control of the disease. As an output of this consultation, research priorities on dengue and chikungunya fever were identified.

The objective of this meeting of experts was to review the epidemiological situation and control measures taken for chikungunya in countries of the Region, to identify areas of research and review new technologies to overcome the transmission of the disease as well as to develop Regional strategy for prevention and control of chikungunya. The meeting consisted of presentations followed by country experiences, group discussions and recommendations. Recommendations were made to WHO to further refine the regional strategy for chikungunya prevention and control, to finalize the guidelines for prevention and control of chikungunya fever, to finalize priority areas for research and develop a mechanism for capacity building including resource mobilization for prevention and control of chikungunya. Strengthening capacity for implementation of IHR in Member countries was also discussed. Member States were urged to develop a national strategy and plan for chikungunya control as part of national vector-borne disease control programmes, to strengthen capacity on dengue prevention and control which would contribute to chikungunya prevention and control as well. There was a recommendation to include chikungunya in the existing surveillance systems as well as for resource mobilization and intersectoral collaboration.

1. Background

Chikungunya (CHIK) is a mosquito-borne disease first described during an outbreak in the United Republic of Tanzania in 1952. In recent years, South-East Asia Region especially South Asia, has been severely affected by an outbreak of chikungunya fever. The outbreaks in the Region were observed in Thailand in 1995, followed by 24 outbreaks in Indonesia between 2001 and 2003. In March 2005, an outbreak of chikungunya fever occurred in Reunion Island, where nearly 35% of the population of 770,000 were infected in six months and 254 deaths were repeated suspected chikungunya fever cases. Outbreaks were reported from Mayotte, Seychelles, and Mauritius in January 2006. In India, the outbreaks of chikungunya fever started in December 2005 and in 2006, nearly 1.4 million cases of suspected chikungunya fever were reported from 13 states and 210 districts. Even now reports of suspected and confirmed chikungunya fever continue to be received. An outbreak of chikungunya fever occurred in Sri Lanka in October 2006, wherein nearly 38,000 were reported affected. In Maldives, an outbreak of chikungunya fever was reported in December 2006, wherein 11,000 people (4.5% of total population) were reported affected.

In July 2007, an informal consultation with experts from several Indian institutes was convened at the WHO Regional Office to review gaps in prevention and control of chikungunya. This resulted in identification of research priorities on dengue and chikungunya fever. At the initiative of the Regional Director and Director, Department of Communicable Diseases (CDS), draft guidelines for prevention and control of chikungunya fever were developed by CDS. These documents formed the basis of discussions during the expert group meeting.

2. Objectives of the meeting

This meeting was organized to review the current situation and to develop a strategic plan for the prevention and control of chikungunya fever and to identify research priorities. The specific objectives of the meeting were:

(1) To review evolving epidemiological situation and the control measures taken for containment of chikungunya fever in SEA countries.

(2) To identify areas for research and review new technologies best suited to tackle the spread of disease, discuss and exchange information and technical knowledge on chikungunya.

(3) To develop a regional strategy for prevention and control of chikungunya.

The participants included experts from Bangladesh, India, Indonesia, Maldives, Sri Lanka, Thailand, WHO-HQ, WHO/SEARO and from the WHO country office, India. The agenda of the meeting and list of participants are placed at Annex 1 and 2, respectively.

3. Inaugural session

While inaugurating the meeting, Dr Chusak Prasittisuk, Coordinator Communicable Disease Control, WHO/SEARO, explained the situation of chikungunya in the South-East Asian Region. The disease burden was expressed to be high with as many as 16 states in India having experienced the outbreaks of chikungunya in the last two years. Dr Chusak conveyed the message from the Regional Director, Dr Samlee Plianbangchang, and his concern over the large-scale morbidity caused by these outbreaks. Dr Michael Nathan, from WHO/HQ, expressed his concern over chikungunya being labelled as a neglected infectious disease and highlighted the necessity of studying the re-emergence of chikungunya in greater detail. Dr. Khanchit Limpakarnjanarat, Regional Adviser, Communicable Disease Surveillance, WHO/SEARO explained the objectives of the meeting and urged the participants to provide inputs to the draft documents, namely guidelines for prevention and control of chikungunya and development of research priorities for the Region. He requested the participants to debate on the reasons for the continued outbreaks of chikungunya in recent times in the Region.

4. Presentations and discussions

4.1 Country experiences and discussions

A history of chikungunya outbreaks in the world, including the South-East Asia Region (SEAR) were presented including outbreaks in Sri Lanka during

2006-07. Referring to the distribution of cases in Sri Lanka, it was reported that the maximum number occurred in Colombo Municipality. Both the vectors, *Aedes aegypti* and *Aedes albopictus* are present in Sri Lanka and the virus was detected in both the vectors. The steps taken by the government for prevention and control of outbreak was described. A total of 37,667 suspected cases were reported in Sri Lanka, with the most commonly affected age group being 20-24 years old. However, none of the deaths were attributed to chikungunya. The details on the outbreak of chikungunya in Sri Lanka can be found at http://www.epid.gov.lk/pdf/chikungunya/OBOFCHIGYA.pdf.

The discussion on presentation on Chikungunya fever in Sri Lanka mainly revolved around isolation of the virus, especially non-availability of tests at the country level and clinical presentations, including deaths attributed to chikungunya.

The presentation on the situation in India during 2005-2007 included distribution of cases in different states, their clinical presentation, diagnosis, risk factors, factors contributing to continued transmission, and deaths due to chikungunya in Kerala. The prevention and control methods in India mainly included control of vectors and source reduction.

The therapy undertaken for case management primarily consisted of provision of anti-pyretics and anti-inflammatory drugs. Antibiotics were also used in some parts of Kerala. The outbreaks in Tamil Nadu occurred not only in urban areas but also in rural areas which was attributed primarily due to presence of *Aedes aegypti* in rural areas. It is likely to be related to the natural breeding place of mosquitoes such as the axis of sugarcane plants and coconut shells preserved for extraction of husk.

During the discussions it emerged that these outbreaks were confirmed by testing a small number of samples collected during the initial phase of the outbreak and subsequently all the suspected cases were being treated as chikungunya. There was a discussion on the reported deaths due to chikungunya in Kerala; a majority of the people felt that the deaths were due to co-morbidity. It was also felt that the large number of reported deaths that occurred during the outbreak were labelled as due to chikungunya in order to avail the financial compensation being provided by the state government to the families of deceased individuals.

The various control measures undertaken during the outbreaks in Gujarat, India were mentioned in detail. The Government of Gujarat launched the 'Clean Gujarat Campaign' prior to the outbreaks in Tamil Nadu and Kerala, in order to tackle the impending chikungunya outbreak. It was suggested that pro-active measures by the government to curb the sources for vector breeding could have significant impact on the prevention of chikungunya. The measures during the Clean Gujarat Campaign included information, education and communication (IEC) on vector-borne diseases (VBD), distribution of bed nets, application of insecticides, source reduction by fish introduction and other methods, constant monitoring and supervision of the campaign, weekly reporting and surveillance system for fever, and commitment from various government departments. This strategy employed by the Gujarat state was found to be effective in the control of possible outbreaks of chikungunya in the state.

The outbreak in Maldives in December 2006 continued for three months, and 10,831 (4.5% of the population) suspected cases of chikungunya were reported. The attack rates ranged from 38%-41%. Laboratory samples were taken from 67 patients, all of them were positive for chikungunya; 21% of specimens were anti-CHIK IgM positive and 96% were positive for CHIK in PCR testing. Both *Aedes aegypti* and *Aedes albopictus* are present in Maldives.

Three outbreaks of chikungunya fever occurred in Thailand in 1991 (33 cases in one geographic area) and two in 1995 (95 and 576 suspected cases in two geographic locations). The clinical manifestations were fever and arthralgia. Data on entomological indices showed, the main vector in urban areas to be *Aedes aegypti* with the presence of *Aedes albopictus*. In 2005, several dengue cases were cross-checked for presence of chikungunya but none tested positive. The discussion was focused on the absence of chikungunya fever in Thailand after 1995 and it was hypothesized that dengue and chikungunya could have conferred cross-immunity against each other or the control measures undertaken for dengue prevention were effective in preventing chikungunya as well. Other possibilities for the absence of chikungunya in Thailand include low infectivity of the virus, herd immunity, or reservoir containment measures being undertaken by the government. It is possible that the required vector density for outbreak of chikungunya is more as compared to dengue.

The clinical case management procedures followed during the outbreak in Thailand were primarily supportive and mainly consisted of provision of anti-pyretic and anti-inflammatory drugs. Use of aspirin was avoided. Similar measures are being used in India and other countries. However, in India and Sri Lanka, chloroquin or hydroxy-chloroquin has been used successfully for treatment of persisting arthralgia following chikungunya infection. It was felt that there are no clinical studies on use of chloroquin for the treatment of chikungunya and such studies were needed to understand its beneficial effects.

An overview of available diagnostic techniques for chikungunya, their advantages, disadvantages and appropriateness in different phases of the disease was presented. There is a need to develop a simple and less expensive test for community diagnosis (a test with high sensitivity and reasonable specificity). The need to develop rapid diagnostic kits that can be made available for commercial manufacture and large-scale use was expressed. However, the validity of the tests in a multi-centric mode need to be carried out in order to identify a test that can be used during outbreaks. The financial viability of a commercially available test kit is also of concern. It was expressed that there should be a network of laboratories with adequate facilities and quality assurance and quality control (QA/ QC) procedures in place. The presentation briefly mentioned that the common co-infections with chikungunya include infections with adenovirus, dengue, respiratory syncytial (RS) virus and influenza virus A and B and that there is a need to develop guidelines for differential diagnosis.

The presentation on surveillance and outbreak response discussed the pros and cons of development of surveillance systems for chikungunya. There is a need to analyse in detail whether the situation demands establishment of surveillance system for chikungunya. The participants felt that a surveillance system is needed for understanding the epidemiology of chikungunya but it need not to be a stand-alone system and should be combined with the Integrated Disease Surveillance Programme (IDSP) or dengue surveillance. This is especially important because there is a big burden of disease in terms of morbidity and a major economic impact as reflected by 60% decline in tourism in Reunion Islands following a chikungunya outbreak. The possibility of chikungunya as a potential public health emergency of international concern (PHEIC) can not be ruled out. The response to chikungunya outbreaks can be clubbed with dengue

prevention and control. The vector indices need to be re-examined and the larval indices seem to be more appropriate and correlated with the chikungunya outbreaks and should be increasingly used in environmental assessments. The timing of vector control is critical and can help in flattening the epidemic curve, and surveillance systems can provide useful information for designing appropriate prevention and control programmes.

4.2 Background presentations including communications and discussion, vector biology and control, presentation of draft documents on research priorities and prevention and control of chikungunya

The second day started with a presentation on the outbreaks of chikungunya in two states in India viz. Tamil Nadu and Kerala.

Of Tamil Nadu's 30 districts, 28 were affected by outbreaks of chikungunya, and there were 62,000 suspected cases of which 111 were subjected to chikungunya diagnosis and confirmed. The outbreak moved from the northern regions of the state to the southern regions. Both *Aedes aegypti* and *Aedes albopictus* were present. Data on entomological indices and breeding habitats were presented. A common perception was that people in the affected areas had fairly good knowledge of the breeding places of chikungunya vector mosquitoes. The vector control measures in Tamil Nadu mainly included larval control using temephos. The number of chikungunya cases peaked during June although the monsoon started in Tamil Nadu in September. Pre-monsoon showers could be related to the early appearance of chikungunya cases. Rural areas contributed to as much as 83% of cases.

In Kerala, unlike Tamil Nadu, 70% of the breeding was of *Aedes albopictus*, the main breeding places were latex collection cups of rubber plantation and pineapple calyces. While rice cultivation was decreasing, there was an increased emphasis on rubber and pineapple plantation, which led to a tremendous increase in the number of breeding places. The main strategy for prevention and control of chikungunya in Kerala state relied on vector control.

At some places in Kerala, suspected cases of chikungunya are being reported (only 1% of samples are sent for confirmation) especially in northern districts. In Gujarat state, it was mentioned that there was continued reporting of suspected cases but no testing of specimens have done and the possibility of chikungunya assuming endemic proportions in Gujarat and other states can not be ruled out.

The vector control measures undertaken in Thailand during outbreaks in 1991 and 1995 were discussed. Both *Aedes aegypti* and *Aedes albopictus* were present during outbreaks in Thailand (95% were *Aedes aegypti*). The presentation emphasized that the ecology of the vector including peak biting times should be understood for which increased collaboration with epidemiologists was needed to develop prevention and control programmes. There was a lack of knowledge on the bionomics of vectors in different countries which needed to be studied in depth.

No outbreak of chikungunya has been reported in Bangladesh despite it being in close proximity to the areas of India where outbreaks had occurred. In Bangladesh, 175 sera samples from suspected cases were tested in laboratories at the U S Centers for Disease Control and Prevention (CDC), and none of them was found positive for chikungunya although some were positive for dengue. There is a need to be vigilant in the border areas and the governments should work together to prevent the spread of chikungunya. A network of laboratories for chikungunya virus diagnosis should be developed.

The community and peripheral health care workers play a very important role in vector-borne disease prevention and control, Community involvement relies on motivation and on using the incentives/disincentives approach. There was a discussion on whether model civic bye-laws (such as penalty on badly maintained coolers) are a substitute for community participation. In old Mumbai, India, penalties for improper maintenance of over-head tanks have been found effective. It was further discussed that it is hard to involve the community although it is a condition for the success of chikungunya/dengue prevention and control programmes. It was emphasized that everyone is responsible and has a role to play in VBD control and there is a need for training of health care workers and development of communication material for the community. Simple measures like a ban on plastic cups and bags have been successful in reducing mosquito breeding in Kerala.

The Communication for Behavioural Impact (COMBI) approach involves using commercial market principles in the social marketing of public health. The COMBI approach has been successfully used in Caribbean countries. The key elements include advocacy, social mobilization and legislation, inter-sectoral and intra-sectoral collaboration, and bi-directional flow of information. Prior to implementation of the programme for behavioural change, there is a need to critically think of the objectives. The objectives need to be measurable, specific, appropriate, realistic and time-bound. The top five integrated communications actions include advocacy; community and social mobilization; sustained and appropriate advertising; inter-personal communication; and point of service promotion. The design process in COMBI involves convergence of strategies like key container measures. However, it was expressed that there could be considerable financial constraints to implement the COMBI approach in the South-East Asia Region.

While discussing the role of effective communications during outbreaks, the role of the media was emphasized. Do's and Don'ts for communicating messages to media-persons were discussed. The discussion revolved around examples of media involvement in different countries and settings. Some examples of developing effective media relations included the need for public health journalism awards as done in the Caribbean and developing a good rapport between public health personnel and the media and balanced reporting of facts. It was emphasized that there is no need to hide information. The outbreak investigation teams and rapid response teams should be trained in media relations and communications.

There has been a keen interest in defining the role of climate change and its effect on disease outbreaks, breakdown of health systems, and rise in the risk of communicable diseases such as malaria. However, how much can be attributed to climate change was discussed in length and it was felt that there is a lack of scientific knowledge on the impact of climate change on the re-emergence of communicable diseases. The presentation focused on the hypothesis that climate change has, and will lead to an increase in malaria cases in different countries. While a clean environment is a must and a matter of concern, presently it was not known how much the present disease burden of chikungunya can be attributed to climate change.

Presentations were made on the two draft documents. Priority Areas for Research in Chikungunya and Dengue; and Guidelines for the

Prevention and Control of Chikungunya Fever. The issues identified during the brainstorming meeting held on July 20 and 21, 2007 were presented. The participants were urged to carefully examine the two documents and provide feedback for improvement. The two documents formed the basis of the discussions on the third day of the meeting.

4.3 Discussions in groups, group presentation, compiling recommendations and wrap up

The participants were divided into two groups based on their expertise. The first group worked on the "Guidelines for prevention and control of chikungunya" and the second group worked on "Priority areas for Research in Chikungunya and dengue" and examined with a regional perspective.

The third day was devoted to group work followed by presentations and discussions. The recommendations made by the groups were discussed in the open forum, wherein members of the other group provided their comments. These discussions led to the recommendations.

Discussion on guidelines for prevention and control of chikungunya fever: The participants reviewed the draft document and made useful recommendations. to improve the document. It will be modified in the light of the discussions and will be circulated to the participants for their final comments.

5. Recommendations

The recommendations were made both to WHO and to the Member States of Region.

The meeting discussed at length the regional needs for the prevention and control of chikungunya and stressed that the major areas needing special attention are finalization of the Regional Strategy for Prevention and Control of Chikungunya (Annex 3), and strengthening surveillance and capacity development to address outbreaks in the Member States. This will be achieved by finalizing the draft guidelines for the prevention and control of chikungunya. In addition, participants provided inputs on the document

on research priorities which will be finalized by WHO/SEARO. WHO/SEARO is also expected to develop mechanisms for capacity building and resource mobilization through the Asia Pacific Strategy for Emerging Diseases (APSED) and other mechanisms for chikungunya prevention and control programmes. The capacity building initiatives are perceived to support the effective implementation of IHR (2005).

The specific recommendations for WHO are:

(1) To finalize the regional strategy for chikungunya prevention and control based on the feedback received from the participants (Annex 3).

(2) To finalize the draft document, "Guidelines for the Prevention and Control of Chikungunya Fever", based on the discussions arising out of the meeting.

(3) To finalize the document, "Priority Areas for Research in Chikungunya and Dengue", with particular focus on chikungunya.

(4) To develop mechanisms for capacity development and resource mobilization including exploring the Asia Pacific Strategy for Emerging Diseases (APSED) for chikungunya prevention and control programmes.

(5) To strengthen capacity building for implementation of IHR (2005) in Member States.

Member States were urged to

(1) Develop national strategy and plan in accordance with the regional strategy as an integral part of the national vector-borne disease control programme.

(2) Strengthen capacity in the dengue prevention and control programme which will contribute to effective chikungunya prevention and control programmes.

(3) Expand existing surveillance systems to include chikungunya.

(4) Mobilize local resources and promote an inter-sectoral approach including the private sector and NGOs.

6. Acknowledgements

The prevention and control of chikungunya in the South-East Asia Region depends on efforts to combat the disease at the national level and the mutual cooperation of the Member States to prevent its cross-border spread. The efforts made by SEARO have been made possible as a result of all Member States participating in, and setting directions for, chikungunya and dengue prevention and control. Accordingly, SEARO acknowledges the contributions of governments and experts from Member States including experts from laboratories in providing background information and inputs on the prevention and control of chikungunya. Without their close collaboration, this meeting would not have been possible.

The contributions made by Dr Erna Tresnaningsih, Dr Paba Palihawadana, Dr S.L. Hoti and Dr Fathmath Nadhiya in facilitating the meeting are gratefully acknowledged.

Annex 1

Programme

Day 1 - Thursday, 27 September 2007

	Agenda I: Inaugural Session	
08.30-09.00	Registration	
09.00-10.00	Opening Address	*Dr Chusak Prasittisuk Coordinator, WHO/SEARO*
	Opening Remarks	*Dr Michael Nathan, WHO/HQ*
	– Background and objective of the meeting – Introduction of participants	*Dr Khanchit Limpakarnjanarat Regional Adviser, CSR SEARO*
	– Nomination of Chairman, Co-chairman, and Rapporteur	*Dr Chusak Prasittisuk*
	– Announcements	*Dr Khanchit Limpakarnjanarat*
10.00-10.30	Group photo and tea/coffee	

Agenda II: Technical session

Chairperson: Dr Erna Tresnaningsih

Co-chairperson: Dr Paba Palihawadana

Rapporteur: Dr S.L. Hoti

Co-Rapporteur: Dr Fathimath Nadhiya

10.30-11.15	Review of epidemiological situation of Chikungunya fever	*Dr Paba Palihawadana MoH, Sri Lanka* *Dr Anant Chatterjee WHO India Office*
11.15-12.00	Experience in chikungunya fever research	*Dr S.L. Hoti, VCRC, Pondicherry, India*
13.30-14.15	Clinical case management of chikungunya fever	*Dr Siripen Kalyanarooj Queen Sirikit National Institute of Child Health, Bangkok, Thailand*

14.15-15.00	Surveillance and Outbreak Response	*Dr Yogesh Choudhri CSR Sub-unit, WHO SEARO, Delhi*
15.00-15.30	Tea/coffee	
15.30-16.45	Country experiences:	Maldives: *Dr Nadhiya*
		Thailand: *Dr Sopomo*
		India: *Dr Prajapati*
19.00	Reception	Hotel Taj Lawns

Day 2 - Friday, 28 September 2007

08.30-08.45	Recap of previous day's discussions	
08.45-09.30	Vector biology and control	*Dr B.K. Tyagi, CRME, Madurai, India*
		Mr Ong-arj Charoensuk Adviser, MoPH, Thailand
09.30-10.00	Chikungunya in Bangladesh	*Prof. Mahmudur Rahman, IEDCR, Dhaka*
10.00-10.15	Tea/coffee	
10.15-11.00	Community participation	*Dr A.K. Harit Medical Officer (Public Health), MoHFW, India*
11.00-11.45	COMBI	*Dr Michael Nathan, WHO/HQ*
11.45-12.30	Outbreak communication	*Ms Shima Roy CSR/SEARO, Delhi*
13.30-14.00	Climate Change	*Dr Nitish K. Dogra, TERI, India*
13.30-15.00	Research need for control of chikungunya	*Dr Khanchit Limpakarnjanarat, CSR/SEARO, Delhi*
15.00-15.15	Tea/coffee	
15.15-17.00	Review of Guidelines and Strategies	*Dr Chusak Prasittisuk, CDC/SEARO, Delhi*

Day 3 - Saturday, 29 September 2007

08.30-0845	Recap of previous day's discussions	

	Agenda III: Group work	
0845-11.30	Group 1: Review of Guidelines	
	Group 2: Strategy for prevention and control of chikungunya fever	
11.30-12.30	Presentation of Group Work and Discussion	
12.30-13.30	Lunch	
13.30-15.30	Drafting recommendations of experts on prevention and control of Chikungunya fever	
	Round table discussion	
	Agenda IV: Closing Session	
1530-1600	Conclusion and Recommendations	*Dr Chusak Prasittisuk, CDC/SEARO, Delhi*
	Closing remarks	

Annex 2

List of participants

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Annex 3

Regional strategic plan for prevention and control of chikungunya

Background

The Regional Strategic Plan aims to provide the framework for developing regional collaboration, cooperation and solidarity in the prevention and control of chikungunya disease as a public health problem in Member countries of the South-East Asia Region. The plan will support country activities through national, multi country, regional and global partnership.

This strategic plan has been developed on the basis of interventions that are evidence based and implemented through best and proven practices. In order to enhance activities in achieving its objectives, networking will be developed to optimize the utilization of available resources.

The goal of this strategic plan is to enhance the capacity in the countries of the Region through partnerships for application of evidence-based interventions in a sustainable manner through better planning, prediction and early detection.

There are six components of the regional strategic plan that cover essential activities that need to be carried out:

- **Component 1** - Strengthen the surveillance system for prediction, early detection, preparedness and early response to chikungunya outbreaks
- **Component 2** - Improve early case detection and case management of chikungunya
- **Component 3** - Integrated vector management (IVM)
- **Component 4** - Social mobilization and effective communication
- **Component 5** - Partnership
- **Component 6** - Operation research to support prevention and control of chikungunya.

Component 1: Strengthen the surveillance system for prediction, early detection, preparedness and early response to chikungunya outbreaks

A surveillance system is similar to the nerve system in the human body which can detect and send a signal to make a body movement. An effective surveillance system should be sensitive enough to detect any deficiency or deviation in a disease control programme, so that immediate corrective action can be triggered to improve and maintain the control program effectively. It is essential part of disease control program to understand the spread of the disease, determine high risk groups as well as in the monitoring and evaluation of control measures. A critical component of a surveillance system is the early warning system which has the capacity to detect early any signal of a potential unusual event and mobilizes action to eliminate that unusual event as soon as possible. Another essential part of a strong surveillance system is laboratory support in order to arrive at a diagnosis, as well as for early detection of new strains.

Strengthening the surveillance system at country level should be part of strengthening the existing information system and in promoting integration and coordination of all surveillance activities run by disease control programme.

Component 2: Improve early case detection and case management of chikungunya

Case detection and case management for chikungunya are essential. There are two main purposes of having a strong case detection and case management system in term of control measures. First, early case detection is important in order to stop further transmission and case management is necessary to prevent severe development of the disease. A clear case definition for chikungunya has been developed by WHO in three categories suspected, probable and confirmed. The role of laboratory diagnosis is essential to differentiate the status of a case diagnosted through serological examination, virus isolation and RT-PCR. Demonstration of specific antibodies for chikungunya as early as possible will be meaningful for further corrective actions. Secondly, during an outbreak, community awareness on the signs and symptoms of chikungunya will improve care seeking and case detection. Although chikungunya is not a fatal disease, effective case management is required to overcome the persistent pain in the joints which might cause prolonged hospitalization and need sregular physiotherapy.

Component 3: Integrated vector management (IVM)

Integrated vector management is a process for managing vector populations in such a way as to reduce or interrupt transmission of disease. It consists of vector surveillance and vector control through better knowledge on the characteristics of vector biology, disease transmission, morbidity as well as a range of interventions and collaboration between all related parties. It also requires community empowerment in order to increase participation on vector surveillance as well as vector control and healthy public policy and environmental regulations.

There are five key elements of IVM. These include:

- Advocacy, social mobilization and legislation
- Collaboration within the health sector and with other sectors
- Integrated approach
- Evidence-based decision-making
- Capacity-building.

Component 4: Social mobilization and effective communication

Chikungunya as a mosquito borne disease is closely related to human behaviour, particularly related to environmental sanitation mainly in urban slums. Community knowledge and awareness of chikungunya's sign's and symptoms and its risk and impact is critical. It will affect the level of community participation on vector surveillance and control as well as in early case detection.

Component 5: Partnership

As a multi-factorial disease, chikungunya prevention and control need to be implemented through partnership and collaboration among various stakeholders as well as the private sector. A common understanding and better communication network between local authorities, stakeholders and other ministries on risk and impact of chikungunya disease is essential. Coordination and integration with the Dengue prevention and control programme as well as resource mobilization are important aspects to consider.

Component 6: Operations research to support prevention and control of chikungunya

Chikungunya fever is an emerging public health problem. However, there isl insufficient scientific information on it. In order to strengthen prevention and control measures and to be more effective and efficient, an operation research is needed. It is important to develop research priority as well as capacity building on research. Development of new tools for diagnosis, prevention and treatment of chikungunya need to be supported. There are various aspects of research needed such as epidemiology and surveillance, vector biology and control, environmental research, clinical management, laboratory diagnosis as well as social and behavioural research.

Monitoring and evaluation

Monitoring and evaluation are an integral part of prevention and control activities. It is essential to have a strong system in place on a regular basis to monitor various aspects of chikungunya prevention and control efforts in all Member countries. It includes the legal and regulatory framework, laboratory capacity and a good information system to monitor disease incidence and trends.