Communicable diseases leading to noncommunicable diseases

Noncommunicable diseases (NCD) are a major public health problem throughout the world. With rapid economic progress, changing social mores and lifestyles along with widely prevalent risk factors for NCDs, developing countries have also shown substantial impact of NCDs. As much as 22% of the global NCD deaths occur in the South-East Asia Region; 8 million people die from NCDs each year in the Region and, as of now, 55% of all deaths in the Region are due to NCDs. These deaths exceed in number those caused by communicable diseases, maternal, perinatal and nutritional causes combined.

Some of these NCDs are well-recognized major public health problems, especially liver and cervical cancers. Every year, almost half a million deaths in the Region are due to liver cancers. Cervical cancer is the second most common cancer in women in the Region, with around 200,000 cases occurring every year. It is the cause of more deaths than any other cancer. More than 85% of the global burden occurs in developing countries, where it accounts for 13% of all female cancers.

Can communicable diseases lead to NCDs?

There has been a traditional and historical divide between communicable diseases and NCDs. These two categories of disease are usually considered independent of each other. The facts are different.

There are several communicable diseases that lead to NCDs. These can be divided into two broad groups: (1) those communicable diseases/infections for which overwhelming evidence is available as causes for NCDs; and (2) those communicable diseases/infections that are incriminated as possible causes of NCDs.

### Table 1: Communicable diseases/infections with overwhelming evidence of causing NCDs

<table>
<thead>
<tr>
<th>Disease/syndrome/disorder</th>
<th>Agent</th>
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<tbody>
<tr>
<td>Chronic gastritis</td>
<td><em>Helicobacter pylori</em></td>
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<tr>
<td>Peptic ulcer</td>
<td><em>Helicobacter pylori</em></td>
</tr>
<tr>
<td>Haemolytic–uraemic syndrome</td>
<td><em>Escherichia coli</em> 0157</td>
</tr>
<tr>
<td>Human T-cell leukaemia</td>
<td>HTLV-1</td>
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<tr>
<td>Hairy cell leukaemia</td>
<td>HTLV-2</td>
</tr>
<tr>
<td>Hepatocellular cancer</td>
<td>Hepatitis B</td>
</tr>
<tr>
<td>Hepatocellular cancer</td>
<td>Hepatitis C</td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>Human Papilloma Virus (HPV)</td>
</tr>
<tr>
<td>Burkitt’s lymphoma</td>
<td>Epstein Barr Virus</td>
</tr>
<tr>
<td>Congenital mental retardation</td>
<td>Cytomegalovirus (CMV)</td>
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<tr>
<td>Congenital rubella syndrome</td>
<td>Rubella virus infection</td>
</tr>
<tr>
<td>Rheumatic heart disease</td>
<td>Streptococcal infection</td>
</tr>
<tr>
<td>Acute glomerulonephritis</td>
<td>Streptococcal infection</td>
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</tbody>
</table>
In 1994, the International Agency for Research on Cancer classified *Helicobacter pylori*, a stomach bacteria, as a carcinogen, or cancer-causing agent, in humans. Since then, colonization of the stomach with *H. pylori* has been increasingly accepted as an important cause of stomach cancer. Epidemiology studies have shown that individuals infected with *H. pylori* have an increased risk of gastric adenocarcinoma. In 2001, a combined analysis of 12 studies of *H. pylori* and gastric cancer estimated that the risk of adenocarcinoma in all regions of the stomach except the top portion was nearly six times higher for *H. pylori*-infected people than for uninfected people.

Chronic infection with hepatitis B virus may either be asymptomatic or associated with a chronic inflammation of the liver (chronic hepatitis), leading to cirrhosis over a period of several years. This type of infection dramatically increases the incidence of hepatocellular carcinoma (liver cancer). Hepatitis B virus has been linked to the development of membranous glomerulonephritis, a slowly progressing disease of the kidney.

The hepatitis B vaccine has an outstanding record of safety and effectiveness. Since 1982, over 1 billion doses of hepatitis B vaccine have been used worldwide. In many countries, where 8–15% of children used to become chronically infected with the hepatitis B virus, vaccination has reduced the rate of chronic infection to less than 1% among immunized children. Various studies in developing countries have shown a reduction in liver cancers subsequent to vaccination with hepatitis B.

High-risk Human Papilloma Virus (HPV) infection accounts for approximately 5% of all cancers worldwide. Most high-risk HPV infections occur without any symptoms, and some can persist for many years. Persistent infections with high-risk HPV types can lead to more serious cellular abnormalities, if untreated, may progress to cancer. Almost all cervical cancers are caused by HPV infections, with just two HPV types, 16 and 18, responsible for about 70% of all cases. HPV also causes anal cancer, with about 85% of all cases caused by HPV-16. HPV types 16 and 18 have also been found to cause close to half of vaginal, vulvar, and penile cancers.

Most recently, HPV infections have been found to cause cancer of the oropharynx, the middle part of the throat including the soft palate, the base of the tongue, and the tonsils. The incidence of HPV-associated oropharyngeal cancer has increased during the past 20 years, especially among men. It has been estimated that, by 2020, HPV will cause more oropharyngeal cancers than cervical cancers in the United States.

Haemolytic–uraemic syndrome (HUS) is a rare condition, which can be caused by infection with a bacteria that releases toxins into the body. Toxic strains of *Escherichia coli* bacteria, such as *E. coli* 0157, belong to a group of enterohaemorrhagic *E. coli* (EHEC), which cause haemorrhagic colitis (bloody diarrhoea). About 10% of patients with EHEC develop HUS. Children under five years of age are at greatest risk of developing HUS. This infection leading to a serious NCD is caused by ingestion of contaminated food.

Post-streptococcal glomerulonephritis (PSGN) is an uncommon complication of either a “strep throat” or a streptococcal (bacterial) skin infection. It is classified as a type III hypersensitivity reaction. Symptoms of PSGN develop within 10 days following a throat infection or 3 weeks following a streptococcal skin infection. PSGN involves inflammation of the kidney.

Acute rheumatic fever (ARF) is another complication of respiratory infections caused by streptococci. It is an autoimmune disease that could arise due to infection with group A streptococci in certain tissue, especially in those of the heart, joints, and blood vessels.

<table>
<thead>
<tr>
<th>Communicable diseases/infections incriminated as possible causes of NCDs</th>
<th>Campylobacter jejuni</th>
<th>Borrelia burgdorferi, Herpes simplex virus</th>
<th>HTLV-1</th>
<th>Escherichia coli 0157</th>
<th>Hepatitis B virus</th>
<th>Enterovirus</th>
<th>Chlamydia pneumoniae, CMV</th>
<th>Salmonella spp., Yersinia spp., Chlamydia</th>
<th>Epstein Barr Virus</th>
<th>Human Herpes Virus 8</th>
<th>Human Herpes Virus 8</th>
<th>Human Herpes Virus 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guillain-Barre syndrome</td>
<td>Campylobacter jejuni</td>
<td>Borrelia burgdorferi, Herpes simplex virus</td>
<td>HTLV-1</td>
<td>Escherichia coli 0157</td>
<td>Hepatitis B virus</td>
<td>Enterovirus</td>
<td>Chlamydia pneumoniae, CMV</td>
<td>Salmonella spp., Yersinia spp., Chlamydia</td>
<td>Epstein Barr Virus</td>
<td>Human Herpes Virus 8</td>
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</tr>
</tbody>
</table>
Prevention of NCDs through control of communicable diseases

Currently the focus of prevention and control of NCDs is through mitigation of the known risk factors for important diseases. However, for the diseases mentioned above, NCDs result from communicable diseases. Clearly, prevention and control of communicable diseases shall have substantial impact on NCDs caused by these diseases. Major mechanisms by which this objective can be achieved are:

**Use of vaccines**: effective vaccines are available against hepatitis B and cervical cancers. Hepatitis B must be administered to children immediately after birth. Similarly polyvalent Human Papilloma virus vaccine and rubella vaccine must be given to women in the early child-bearing age.

**Use of antimicrobial agents**: prophylactic and prolonged treatment of infection in children to prevent streptococcal induced diseases of the heart and kidney. Similarly complete eradication of *Helicobacter pylori* using antibiotics precludes occurrence of gastric ulcers and chronic gastritis.

**Efficient screening of blood for hepatitis viruses**: assuring safe blood reduces hepatitis B and C transmission.

**The way forward**

The disease control programmes for NCDs should be aware of these linkages and include this component in their programme. Further research is needed to better understand linkages between communicable diseases and NCDs so that primary prevention of such diseases, the most cost-effective public health strategies, can be undertaken to reduce NCD burden.

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Outbreaks and public health emergencies

**Influenza A(H7N9) infections in humans**

An influenza virus subgroup that has only previously been reported on rare occasions in birds, called Influenza A(H7N9), has been detected as infecting human beings for the first time, in China. WHO was first notified of a 70-year-old man from Jiangsu Province who became ill on 29 March 2013 and was confirmed as being infected with this virus. As of 29 April 2013, 126 confirmed cases of human infection with influenza A(H7N9) and 24 deaths have been reported from eastern and northern China, including Beijing.

The patients were aged between 4 and 87 years, and the majority were male. Most cases have presented with pneumonia. Some showed influenza-like-illness (ILI). Symptoms include fever, cough and shortness of breath. No vaccine for the prevention of influenza A(H7N9) infections is currently available.

More than 1000 close contacts of the confirmed cases are being closely monitored. However, to date, there is no evidence of efficient human-to-human transmission of this virus.

Investigations into the possible sources of infection and reservoirs of the virus are ongoing. Until the source of infection has been identified, it is expected that there will be further cases of human infection with the virus in China.

Although the source of infection and the mode of transmission of the virus are uncertain, people are advised to practice basic hygiene, including hand-washing and proper handling and thorough cooking of raw meats.

WHO has been closely monitoring the situation and providing information to countries. Assistance has been provided with epidemiological investigation and support to CDC China for risk assessment. WHO is also working with animal health partners to investigate possible circulation in animals. In order to strengthen laboratory diagnosis and clinical management for this disease, WHO is working closely with WHO collaborating centres. The public has been kept informed through the media, including social media and the Internet. The latest updates are on the WHO web site http://www.who.int/csr/don.

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**Nipah Virus infections in Bangladesh**

From 1 January to 4 April 2013, 24 cases of Nipah virus infection were reported in Bangladesh, of which 21 cases have died. These cases are from 13 different districts (Gaibandha, Jhinaidaha, Kurigram, Kushtia, Magura, Manikgonj, Mymensingh, Naogaon, Natore, Nilphamari, Pabna, Rajbari, Rajshahi). The age distribution of cases is from 8 months to 60 years. Sixteen cases are male and eight are females.
Human Nipah virus (NiV) infection is an emerging infectious disease and was first recognized when a large outbreak (involving 276 cases) occurred in Malaysia and Singapore between September 1998 and May 1999. NiV is a highly pathogenic paramyxovirus belonging to the genus Henipavirus. It is an enveloped RNA virus.

In infected people, Nipah virus causes severe illness characterized by inflammation of the brain (encephalitis) or respiratory diseases. In general, the case-fatality rate is estimated at 40–75%; however, this rate can vary by outbreak. Currently, there is no known treatment or vaccine available for either people or animals. Intensive supportive care with treatment of symptoms is the main approach to managing the infection in people.

Since it was first reported in Bangladesh in 2001, outbreaks and sporadic cases of Nipah virus infection have been reported on an annual basis. The natural host of the virus is believed to be the fruit bat, and the most important risk factor identified in the majority of cases has been the consumption of raw date-palm sap (kancha khejurer rosh) contaminated with NiV through contact with bats. In addition, a small number of people are believed to have been infected through close physical contact with infected individuals.

Bangladesh started Nipah surveillance in 2006, when the Institute of Epidemiology, Disease Control and Research (IEDCR) in collaboration with ICDDR, B established surveillance in 10 district level Government hospitals where Nipah outbreaks had previously been identified. At present, surveillance is functioning in five hospitals. Efforts are currently also being undertaken to strengthen communications to members of the public about the risk associated with consumption of unprocessed date-palm sap.

Evidence of Ebola virus infection in bats in Bangladesh
A recently published study has reported evidence of Ebola infection in bats in Bangladesh, raising some concern about the possibility of human infection with this virus in the South-East Asia Region. Ebola virus was first recognized in 1976 in Sudan, and the form of the virus that is responsible for outbreaks of viral haemorrhagic fever in Africa (largely in the Congo, Gabon and Uganda) is associated with very high levels of mortality. Although another type of Ebola virus, which causes severe hemorrhagic fever in macaques, is known to be endemic in the Philippines (called Reston Ebolavirus, after an outbreak in monkeys in a laboratory in Reston, Virginia, United States) it only causes very mild disease in humans. However, other recent studies have also found evidence of Ebola infection in bats in China, and in Orangutans in Indonesia. In these studies, as well as the one from Bangladesh there is tentative evidence that these viruses may have more similarity to the African strains. If confirmed, this apparent wide geographical distribution of Ebola-like viruses in the Asia Pacific region may suggest that it has been present for some time, in which case the complete absence of any reports of human infections may suggest that the risk is very low. However, in a situation where countries are increasingly being recommended to develop ‘all-hazard’ preparedness and response plans, it may be prudent to consider what measures would be required to deal with human cases of viral haemorrhagic fever. Robust event surveillance, especially if linked to health-care settings would help to detect such an event. Health-care facilities should be equipped to apply rigorous, but simple infection control measures including standard and contact precautions. Arrangements for safe collection, transport and laboratory diagnosis of clinical specimens can be made in advance. The development of standard operating procedures will also help to ensure that individuals involved in managing an outbreak understand their roles and work closely together during the event. A communications plan may also help to mitigate understandable concerns expressed by members of the public.

Communications for behavioural impact (COMBI): an innovative way to prevent dengue infection in Indonesia

Introduction
Dengue has become a serious public health problem in Indonesia, which has the highest number of cases in the South-East Asia Region. The first dengue case was reported in 1968. In spite of various prevention programmes, the number of dengue cases and deaths, continued to increase, spreading to more districts, and from urban to rural areas. In the late 1970s around 100 people were infected with dengue. Today, more than 100,000 people are affected and dengue outbreaks are reported every year.

Initial efforts to mitigate the impact of the disease included early detection, epidemiological investigation, case management, information–education–communication (IEC) activities, and fogging. However, the number of cases did not decrease. On the contrary, the public perception was that fogging was the solution to dengue prevention. After evaluating the situation, the Dengue Control Programme made a decision to shift the focus of prevention and control of dengue from fogging to “cleaning the breeding places”.

Developing a COMBI approach
The COMBI (communications for behavioural impact) approach was introduced to the dengue programme in the year 2000, with training and implementation of the plans in some of the endemic provinces. The concept of “Piquet together” was followed, in which a neighbourhood area was divided into groups of 10 houses, with a dengue volunteer for each group from that area. These volunteers were trained on the cycle of Aedes mosquitoes (the dengue carrier), its breeding places, larva-finding techniques, as well as on delivering the “3M’ message (Menguras, Menutup, Mengerikan – scrubbing, covering and drying). The volunteers inspected the breeding sites in their area every week, and reported to the supervisor, who then reported the results to the health centre officer.

A team consisting of all stakeholders, and headed by the governor or mayor, was then formed. The team developed a realistic workplan and continuously monitored progress. Specific, clear, focused messages on protective behaviour were developed, and used in an integrated “5-point” mass campaign through slogans, posters, leaflets, stickers on motorcycles; broadcast media; interpersonal communication by volunteers; outreach to policymakers; and by developing points of service at health...
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conducted, and a major decision taken to switch from fogging to community participation with focused behavioural goals and communication goals, and training of dengue volunteers to check larvae. Heads of offices, the private sector, nongovernmental organizations, media, universities, students and member of parliament and all partners were involved.

The brown line (dengue cases in 2006) shows that by community participation in conducting weekly inspection at the potential breeding places at the same time on a given day, i.e. every Friday from 8 to 9 am, the number of the dengue cases can be decreased, and the outbreak even stopped. This is one example of how, with the COMBI approach of coordination, cooperation and collaboration and community participation, dengue can be prevented. However, to win the long-term war against dengue, the activities must be sustained year after year during the rainy season.

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Results and lessons learnt
The plan worked well with well-trained volunteers, and had a “snowball effect” as a partnership with the education sector led to a school health dengue larvae monitoring programme, with students taking home messages to their families. The activities (such as checking for larval breeding, covering vessels so that mosquitoes don’t breed, etc.) were conducted weekly on a regular basis. The impact was behaviour change at the personal level, the family level, the neighborhood level and eventually, at the hamlet and even at district and provincial levels.

The impact of the COMBI campaign and community empowerment is apparent from the epidemiological data in the city of Jakarta in 2005 (Figure 1). The yellow line represents data showing dengue trends; the dengue cases trend to increase and in spite of spraying/fogging all over city, cases continued to increase on week 48. Then, in the second week of January 2006, the COMBI campaign was conducted, and a major decision taken to switch from fogging to community participation with focused behavioural goals and communication goals, and training of dengue volunteers to check larvae. Heads of offices, the private sector, nongovernmental organizations, media, universities, students and member of parliament and all partners were involved.

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Malaria elimination in Sri Lanka
Sri Lanka is making steady progress towards the elimination of malaria. In 2012 there were only 23 indigenous (i.e. locally acquired) and 70 imported cases. There has been no death due to malaria since 2008. Although malaria elimination appears to be feasible, the ecological, social and economic conditions make the country highly receptive and vulnerable to malaria transmission. Much more needs to be done to eliminate and prevent resurgence of malaria in the country. These are the highlights of the report of the recently concluded external review of the antimalaria campaign in Sri Lanka, conducted during 18–28 February 2013.

Figure 1: Decreasing number of dengue cases following community participation using the COMBI approach in Jakarta, 2005—2006
The country has a long history of antimalaria campaigns that dates back to 1911 (Figure 2). After the launch of the malaria eradication campaign in 1958, the goal was nearly achieved in 1963 when there were only seven indigenous cases. However, malaria came back with a vengeance in 1967–1968 and since then progress has been punctuated by disastrous resurgences.

The turning point in the current situation may have occurred in 1999 when the Roll Back Malaria Initiative was launched by the Anti-malaria Campaign (AMC), Ministry of Health, Sri Lanka, with support from WHO and other partners. In addition to other interventions, mobile clinics were launched to reach populations in remote areas where health services are lacking. Sustained reduction of confirmed cases was noted, from 264 549 in 1999 to 210 039, 66 522, 41 411 and 10 510 in 2000, 2001, 2002, and 2003, respectively (Figure 3). The Global Fund to Fight AIDS, Tuberculosis and Malaria grant started in 2003 and long-lasting insecticide-treated bednets (LLINs) were distributed in 2004. The support from Global Fund may have sustained the achievements from 2003 onwards. The Global Fund-supported malaria elimination strategy, which was launched in 2009 when the confirmed indigenous cases were down to 531 played a role in bringing down the indigenous cases to 23 in 2012 – the lowest since 1963. These achievements are all the more remarkable given that the north and east of the country which are also endemic for malaria were in a civil war during this period.

An external review of the Anti-malaria Campaign – the first since 1991 – was carried out during on 18–28 February 2013. The external review team comprised three international consultants (entomologist/vector control specialist/malariologist who served as team leader; malariologist/epidemiologist; and communications/advocacy
specialist), and three national consultants (parasitologist/malariologist; health economist; and health systems specialist). Staff from the Global Fund Secretariat also participated. The technical secretariat included staff from the WHO South-East Asia Regional Office (Regional Adviser, Malaria and another expert), WHO Country Office Sri Lanka and the Director and Deputy Director of the Anti-malaria Campaign, Ministry of Health, Sri Lanka. Aside from specific recommendations per thematic area that would be reflected in the review report, the review team recommended the following to the Honourable Health Minister in order to eliminate malaria and prevent its resurgence in Sri Lanka:

- submit a cabinet paper on malaria elimination, make presidential and ministerial declaration; establish a National Malaria Elimination Steering Committee; and sustain financing;
- engage key development sectors: tourism, port authorities, armed forces, construction, agriculture and the private sector in malaria elimination;
- revise the national malaria elimination strategic plan and update the technical policies and guidelines; and
- restructure the anti-malaria campaign to align with the goal of elimination; strengthen capacities; fill vacant posts; and train staff.

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Progress in measles control in the South-East Asia Region – 2013

The South-East Asia Region has made significant progress in reducing morbidity and mortality caused by measles and rubella. As the Region has been free from polio for past two years and is preparing for polio-free certification, Member States have been using the lessons learnt and the established structures and systems to increase the focus on measles elimination and rubella. The Region has been able to increase the routine coverage with the measles-containing vaccine MCV1 from 61% in 2000 to 79% in 2011.

In line with WHO recommendations, Member States have introduced the second dose of measles containing vaccine (MCV2) in their national immunization programme either through routine immunization or through supplemental immunization activities. As a result, measles incidence in the South-East Asia Region declined from 79.7 per 1 million population in 2000 to 36.0 per 1 million population in 2011 – a decline of 44%.

WHO has estimated that between 2000 and 2010, the Region, excluding India, averted 96 600 measles deaths – that is a 78% reduction in measles-related deaths. Four of 11 South-East Asia Region countries (Bhutan, Democratic People’s Republic of Korea, Maldives and Sri Lanka) may have already achieved measles elimination and should be ready for verification. For the remaining seven countries, elimination is feasible and may be achieved by 2020 if elimination strategies are successfully implemented.

Five of six WHO regions currently have a measles elimination goal with established target dates endorsed by their respective Regional Committees, and one of these (the Region of the Americas) has achieved both measles and rubella...
Although the South-East Asia Region has not set a target date for measles elimination, it has been aggressively implementing mortality reduction strategies to control measles and rubella. With the objective of agreeing a target year for regional measles elimination and rubella/CRS control, a Regional Consultation was held in Kathmandu from 19 to 22 February 2013. Based on the 2009 regional consensus and this consultation, all Member States of the South-East Asia Region reaffirm the feasibility of measles elimination in the Region by 2020. This sets the stage for the Sixty-sixth Regional Committee to consider a resolution on establishing 2020 as the target date for measles elimination in the South-East Asia Region.

Owing to the successful introduction of new vaccines while expanding and improving routine immunization services, the burden of vaccine preventable diseases reduced and has become one of the main approaches for achieving the Millennium Development Goal 4 target of reducing child mortality.

However, successive introduction of new vaccines has increased the cost of immunization services for governments, mainly due to the higher cost of newer technologies and more complex antigens. Growing concerns on the ability of governments to sustainably fund immunization programmes after the introduction of some of the more expensive vaccines has become the focus for governments that will not be eligible for GAVI support in the near future. Concerted efforts are now being made to support graduating countries through transitional sustainability evaluations and plans of action for ensuring graduating countries are able to transition from external funded support to domestic resources.

As industry increases capacity to supply new vaccines such as the pentavalent vaccine, countries using DTP have increasingly experienced difficulties in accessing adequate supplies. Market forces will inevitably provide fewer choices for countries which do not switch to newer technologies. This is mostly the case for vaccines that replace old technologies.

WHO’s Regional Office for South-East Asia held two consultations on prioritizing new vaccines for introduction in May 2009 and in December 2012 and identified six criteria...
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for consideration in arriving at decisions to introduce new vaccines:

- disease burden (incidence/prevalence, morbidity/mortality, epidemic/pandemic potential);
- efficacy of the vaccine in consideration;
- safety of the vaccine;
- affordability (sustainability);
- programme capacity to introduce a new antigen, including cold chain capacity;
- availability of domestic or regional vaccine production and capacity.

An algorithm for making decisions on introducing new vaccines was developed for countries. In this context, the Regional Office is assisting Member States to take rational decisions on introducing new vaccines based on the burden of disease, technical and programmatic feasibility, affordability and sustainability.

In order to achieve this, the Immunization and Vaccines Development Unit of the Regional Office (IVD) is assisting Member States by establishing good practices, standards and norms in strengthening their decision-making bodies such as national technical advisory groups on immunization (NITAGS, NTAGI, and NCIP). IVD is also assisting countries to implement their programmes once they take the decision to introduce any vaccine or other immunization-related product that expands services and improve its quality.

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Chikungunya fever: status and challenges in the South-East Asia Region

Chikungunya is an emerging viral disease (genus Alphavirus) transmitted to humans by infected Aedes aegypti and Ae. albopictus mosquitoes. The name “chikungunya” originates from a verb in the Kimakonde language, meaning “to become contorted”. This refers to the “stooped” appearance of those suffering joint pain.

The symptoms of chikungunya, which appear between 4 and 7 days after the mosquito bite, share many similarities with dengue, such as high fever, joint pain (lower back, ankle, knees, wrists, or phalanges), joint swelling, headache and muscle pain. Although rarely fatal, and in most cases self-limiting, the convalescent phase can usually last from weeks to months. However, recovery from an infection will confer lifelong immunity.

The impact of chikungunya fever has been often overlooked, although it causes a significant burden and disability in the world, including in the South-East Asia Region. In this Region, all countries except Democratic People’s Republic of Korea have reported cases. Other countries in Asia that have reported chikungunya include Cambodia, China (province of Taiwan), Lao People’s Democratic Republic, Malaysia, Pakistan, Philippines, Singapore, and Viet Nam.

Chikungunya was first identified in United Republic of Tanzania in early 1952 and has caused periodic outbreaks in Asia and Africa since the 1960s. Outbreaks are often separated by periods of more than 10 years. In the past two decades there have been several chikungunya outbreaks, such as those in India in 2005 with more than 1.5 million cases reported, and Maldives in December 2006 with over 11 000 (4.5% total population of Maldives), respectively. Maldives experienced outbreaks for 3 months with attack rates of 38–41%. In 2012, Bhutan has reported a chikungunya outbreak for the first time, in the districts bordering West Bengal and Assam, in which 54% of those affected are in the productive age range of 15–44 years. Thailand reported a record of 98 951 cases in 2009, although in subsequent years the numbers have dropped to less than 600 cases a year, with most cases originating from southern provinces. Myanmar reported a total of 383 cases in 2009–2010, of which 138 are laboratory confirmed. Indonesia saw a drastic increase of reported chikungunya cases during 2009 (83 755 cases) and 2010 (53 183) as described in Figure 4. India is another high–burden country, with the highest number of cases in

![Figure 4: Trend of affected districts and number of cases in Indonesia, 2011-2012](image-url)
“One Health” in Bhutan: National Zoonoses Workshop

A National Zoonoses Workshop was organized in Paro, Bhutan, by the Ministry of Health from 9 to 10 January 2013 to assess the existing coordination mechanism for prevention and control of zoonoses, to define the concept of “One Health” (i.e. the human–animal–environment interface) in the Bhutanese context and to formulate a strategic plan for operationalization of the “One Health” concept. The workshop was attended by government officials working in human health, animal health, environment sectors, and technical discussions were facilitated by the Food and Agriculture Organization of the United Nations (FAO) and WHO. Group discussions were held on strengthening coordination mechanisms, prioritization of zoonoses, and development of an action plan for operationalization of One Health. Participants were convinced that the “One Health” approach should be applied not only for the control of zoonoses but also for food safety, food security and environmental health. The participants defined “One Health” and developed an action plan to implement the concept adapted to the country’s needs. Among the recommendations were the need to develop public awareness material on brucellosis, scrub typhus and leptospirosis in the local language using prototype material developed by the WHO Regional Office for South-East Asia, and to organize a training on clinical recognition, case management and control of emerging infectious diseases including zoonoses.

Enhancing regional capacity for influenza data management

Seasonal influenza is prevalent in all countries of the WHO South East Asia Region, but patterns of seasonality and burden of disease are only well characterized in selected countries, leading to a situation where there is insufficient evidence for the majority of Member States to inform any policy on vaccination. Strengthening influenza surveillance is a priority for all countries and a common understanding on influenza surveillance and producing epidemiological reports to feed into the WHO Global influenza Surveillance and Response System (GISRS) is desirable. It not only helps Member States to study influenza epidemiology in their country but will also help WHO to collect virological and epidemiological data to monitor trends, inform risk assessment and guide vaccine selection.

Accordingly a training workshop was organized for Influenza Data Management and Epidemiological Analysis in Bangkok, Thailand, from 11 to 15 February 2013. The objective of the training workshop was to enhance Regional capacity in influenza data management and epidemiological analysis. The training was jointly conducted by the WHO Collaborating Centre in Epidemiology at the Prince of Songkla University, and the United States Centers for Disease Prevention and Control (CDC) and their office in Bangkok, with WHO headquarters and the Regional Office for South-East Asia providing support. A total of 20 professionals working in influenza surveillance attended the workshop from
8 Member States of the Region – Bhutan (2 participants); Indonesia (3); Maldives (2); Myanmar (2); Nepal (3); Sri Lanka (3); Thailand (3); and Timor-Leste (2); and three from CDC Programmes, Thailand National Influenza Centre and National Institute of Health (2), and International Clinical Epidemiology Network, India (1).

Some countries expressed a need for technical support to strengthen the influenza surveillance systems including establishment of databases and data analysis. WHO’s Regional Office for South-East Asia remains committed and plans to work with collaborating institutions and CDC to extend such support to its Member States.

Second meeting of Regional Advisory Committee on multidrug-resistant tuberculosis

A second meeting of the Regional Advisory Committee on MDR-TB (r-GLC) was held from 5 to 6 December 2012 in WHO’s Regional Office for South-East Asia, New Delhi, India. The Regional Green Light Committee Secretariat (r-GLC) was established in 2012 to meet the challenge of drug-resistant TB, and is the secretariat comprising the MDR-TB advisory board.

The meeting reviewed the activities and progress made after the first r-GLC meeting in May 2012, including the country r-GLC review mission reports. The committee reviewed especially recommendations from reports of r-GLC missions to Bhutan, Democratic People’s Republic of Korea and Thailand. Specific comments and recommendations from the r-GLC committee were incorporated in the mission reports which were subsequently endorsed by the committee. With respect to the process for review of mission report, the committee agreed to adopt new communication strategies to ensure provision of earlier and timely inputs to the country missions, and discussed the need for standardization of country mission reports.

The meeting also discussed issues related to rolling out of newer diagnostic tools in the context of the South-East Asia Region. In this regard, the Committee recommended that National TB Programmes need to develop setting-specific, evidence-based and cost-effective algorithms designed to ensure universal access to quality diagnosis for all TB cases, and also to identify patients groups using different tests based on complexity of the test, level of health care, capacity and cost-effectiveness. The committee also recommended that the use of a molecular testing algorithm should be developed as there are other competing tests that are being evaluated for use.

The committee also reviewed country plans for programmatic management of drug resistant TB (PMDT) scale-up and recommended guidance on case-finding strategies and diagnosis, laboratory capacity-strengthening, treatment, infection control, advocacy, communication and social mobilization (ACSM), PMDT expansion plans and implementation research.

Finally the meeting discussed about next steps to be taken by r-GLC including organization of the next r-GLC meeting and issues related to country missions.

Progress in eliminating kala-azar in India by 2015

WHO is committed to eliminating neglected tropical diseases from the Region, such as lymphatic filariasis and soil-transmitted helminthiasis by 2020 and kala-azar or visceral leishmaniasis by 2015. To review the progress in kala-azar elimination in India, therefore, a WHO team consisting of experts from WHO headquarters, the Regional Office for South-East Asia and the WHO Country Office India, visited India’s Bihar state during 28 February–3 March 2013.

Kala-azar is a disease caused by the parasite Leishmania donovani, and transmitted by the sandfly, Phlebotomus argentipes. Its signs and symptoms include fever of long
duration (>2 weeks), enlargement of the spleen, anaemia, and progressive weight loss, and can lead to death. Kala-azar affects the socially marginalized and the poorest communities, and is endemic in three countries of the Region – Bangladesh, India and Nepal. These three countries signed a commitment to eliminate kala-azar by 2015. Bangladesh and Nepal have almost achieved the goal by changing their drug policy to the use of amphotericin B injection, while India is progressing towards its goal.

In India kala-azar is endemic in 52 districts in 4 states – Bihar, Jharkhand, West Bengal and some parts of Uttar Pradesh. Bihar has the highest burden, with 80% of the total kala-azar cases in India, and with 31 out of 38 districts endemic for the disease. Data from 2012 indicate 20,600 cases with 29 deaths (case–fatality rate 1.4%).

The Kala-azar Elimination Programme involves various actors, such as national and state government bodies, international organizations such as The World Bank, development aid agencies, such as the United Kingdom’s Department for International Development (DFID), and other non-governmental organizations (NGOs) such as Care, the Drugs for Neglected Diseases Initiative (DNDi), Gates

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**First person**

**Safeguarding health in the atoll**

Much acclaimed as a tropical paradise, the remote islands of Addu Atoll, located near the equator at the southern tip of the Maldives, seem a rather agreeable place to live – for humans, and more recently for the dengue-carrying *Aedes* mosquito. When a dengue outbreak occurred in the Maldives in 2011, Addu City, the second largest city in the Maldives, was among the areas affected. Helping to prevent dengue is only one of many responsibilities for Shazni Naseer, a young health worker based at Addu City’s Hithadoo Regional Hospital. Health workers like Shazni play a crucial role in ensuring local people remain healthy and safe from communicable diseases.

Shazni, among many others, including schoolteachers, students, health workers and Addu City Council officials, conducted a door-to-door survey of a neighbourhood to check potential breeding places for the dengue-carrying mosquito. This was part of a training on communications for behavioural impact (COMBI) to prevent and control dengue on the Island, organized by Addu City Council and supported by WHO.

But her work extends beyond that to other communicable diseases. “Much of my work involves mothers and children, especially monitoring pregnant women and ensuring all children get their required vaccination shots,” she says. “At the same time,” she adds, “we also inform the people about what they can do to prevent different diseases. For example, we keep emphasizing the importance of hand-washing.”

She also plays a role in ensuring DOTS (directly observed treatment – short course) compliance among tuberculosis patients, by observing them take their medicine. But she admits that can be challenging. “The TB medicine can have unpleasant side-effects, so I had one patient who was very reluctant to take the medicine every day. Persuading him was quite a challenge!” she explains.

Work is hard but also fulfilling. “It’s always busy and challenging, no two days are the same,” Shazni laughs.

**Dr Supriya Bezbaruah**

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Tuberculosis control in the South-East Asia Region: Annual TB Report 2013

This annual report tracks the progress in tuberculosis control in the WHO South-East Asia Region. All 11 Member States have sustained country-wide access to DOTS. Each year, more than 2 million TB cases are being registered for treatment, and the treatment success rate among new smear-positive pulmonary TB cases has remained above 85% since 2005, and was 88% in 2010. The TB mortality rate has decreased by 40% since 1990 and the South-East Asia Region is on track to achieve the global target of a 50% reduction by 2015.

Updated Regional Strategic Plan for TB Care and Control 2012–2015 (SEA-TB-345)

This update of the Regional Strategic Plan for TB care and control 2006–2015 describes the future directions and focus of work for TB control in the WHO South-East Asia Region. The targets, strategies and interventions in this document are consistent with the Stop TB Strategy and the Global Plan to Stop TB 2011–2015, but focus on priorities most relevant to the Region. The range of interventions proposed, help national TB control programmes in effectively meeting challenges. This document is intended for policy-makers, national programme managers, members of technical advisory groups, interagency coordinating committees or similar bodies, and all supporting partners.

Regional Strategy Plan for elimination of Yaws from South-East Asia Region, 2012–2020 (SEA-CD-257)

Yaws is a contagious disease prevalent predominantly in poor and marginalized populations in Africa and Asia. WHO and UNICEF have jointly treated about 50 million people in 46 countries from 1952-1964 reducing the prevalence by more than 95%. In the South-East Asia Region, India, Indonesia and Timor-Leste continue to be yaws-endemic. This report contains made recommendations to the yaws-endemic countries and revised the Regional strategic plan for eradication of yaws, 2012–2020, following an expert consultation.

The WHO expert team visited the kala-azar ward in the Vaishali district hospital, the primary health centre, Bidupur, and some villages to observe the practice of indoor residual spraying (IRS) using DDT.

The team concluded that the Kala-azar Elimination Programme is on track but, since there are multiple actors, the programme needs strong leadership at the national and state levels as well as proper coordination for optimal use of resources. Greater emphasis is also needed for strengthening the surveillance system, strengthening supervision and monitoring of IRS practices and engagement of ASHA in the front line, as well as a strong policy on drug regimen.
Dengue Bulletin, Volume 36, December 2012

The WHO Regional Office for South-East Asia, in collaboration with the Western Pacific Region, jointly publish the annual Dengue Bulletin. The objective of the Bulletin is to disseminate updated information on the current status of dengue fever/dengue haemorrhagic fever infection, changing epidemiological patterns, new attempted control strategies, clinical management, information about circulating DENV strains and all other related aspects.

South-East Asia Regional Office/Research and Training in Tropical Diseases - Small Grants Programme 2004—2010

To fill knowledge gaps in communicable diseases, the South-East Asia Regional Office/Research and Training in Tropical Diseases Joint Small Grants Programme (SGP) was initiated in 2004 by the WHO Regional Office for South-East Asia in collaboration with the UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR). This programme aims at facilitating and strengthening control-oriented operational research in tropical and communicable diseases and developing capacity among the young scientists in Member States of the South-East Asia Region. The key findings of 38 such projects are documented in this publication. It is hoped that the publication proves useful, interesting and informative for the Member States.

Surveillance corner

Influenza in the South-East Asia Region: 2012

Global influenza virological surveillance has been conducted through WHO’s Global Influenza Surveillance and Response System (GISRS) for over half a century. WHO GISRS monitors the evolution of influenza viruses and provides recommendations in areas including laboratory diagnostics, vaccines, antiviral susceptibility and risk assessment. WHO GISRS also serves as a global alert mechanism for the emergence of influenza viruses with pandemic potential.

National Influenza Centres (NICs) are national institutions designated by national ministries of health and recognized by WHO. They form the backbone of the GISRS. In the South-East Asia Region there are 10 NICs (3 in India and 1 each in Bangladesh, Democratic People’s Republic of Korea, Myanmar, Indonesia, Nepal, Sri Lanka and Thailand).

Table 3: Annual reported number of specimens positive for influenza by subtype and countries in the WHO South-East Asia Region, 2012

<table>
<thead>
<tr>
<th>Country</th>
<th>Total positive</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not subtyped</td>
<td>H1</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>611</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bhutan</td>
<td>258</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>India</td>
<td>3023</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Indonesia</td>
<td>878</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nepal</td>
<td>1047</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>706</td>
<td>51</td>
<td>0</td>
</tr>
<tr>
<td>Thailand</td>
<td>908</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>7431</td>
<td>65</td>
<td>0</td>
</tr>
<tr>
<td>%</td>
<td>100</td>
<td>0.87</td>
<td>0.00</td>
</tr>
</tbody>
</table>

†Provisional data from WHO FluNet
NICs collect virus specimens in their country and perform preliminary analysis. They ship representative clinical specimens and isolated viruses to WHO collaborating centres for advanced antigenic and genetic analysis. The results form the basis for WHO recommendations on the composition of influenza vaccine each year, as well as relevant risk assessment activities of WHO.

FluNet is a global tool for influenza virological surveillance. The virological data entered into FluNet, e.g. number of influenza viruses detected by subtype, are critical for tracking the movement of viruses globally and interpreting the epidemiological data. The data are publicly available and is real-time. The results are presented in various formats including tables, maps and graphs.

The data are provided remotely by NICs of the GISRS and other national influenza reference laboratories collaborating actively with GISRS, or are uploaded from WHO regional databases.

In 2012, a total of 39,229 specimens had been collected by NICs of Bangladesh, Bhutan, India, Indonesia, Nepal, Sri Lanka and Thailand, of which 39,143 were processed and 7,431 specimens were positive for influenza viruses (18.94%).

Influenza A and B viruses were found to be almost equally common; i.e. 3563 (47.95%) and 3867 (52.04%) samples, respectively. The Influenza A (H1N1) pandemic 2009 was highly prevalent while the majority of Influenza B viruses were of undetermined lineage. Influenza A that contained H3 protein accounted for 8.92% (663 samples). Other Influenza B viruses were of Victoria (1.81%) and Yamagata (0.84%) lineage.

Surveillance and characterization of influenza virus data provide insights about transmission and epidemiology and resistance patterns of circulating virus strains. This information is important for Member States to develop and implement prevention and control measures; i.e. vaccines and antiviral drugs, required in this era of increased international travel and trade.