



NCDC Newsletter

Quarterly Newsletter from the National Centre for Disease Control (NCDC)



From the desk of the Director



Dr. L.S. Chauhan
Director, NCDC

This issue of the NCDC Newsletter covers many public health topics, beginning with the lead story of dengue situation in the country. It also includes summary findings of recent outbreaks investigated by EIS officers and IDSP staff.

The NCDC Highlights section presents details of a strategic workshop held on disease surveillance in collaboration with IANPHI, an update on the 2nd EIS cohort, budget allocation for antimicrobial resistance monitoring, evaluation of the national TB surveillance system, and an update on emerging and re-emerging infections in India. Development of an indigenous JE vaccine, news of 5th IPCC report on climate change, measles elimination target in the South-East Asia Region are covered in the News and Events section. Also included is a selected piece from the MMWR and latest information on MERS-CoV infection in the Global Health Update section.

I hope the information contained in this newsletter is of benefit to you. Looking forward to your feedback.

In This Issue	
Lead Story	1
Dengue Problem in India	
Outbreak update	4
Cholera in Maharashtra	
Crimean-Congo Haemorrhagic fever (CCHF) in Gujarat	
NCDC Highlights	6
News and Events	8
Forthcoming Meetings/ Conferences	9
Global Health Update	10
Epidemiology of MERS-CoV Infection, 2012-2013	
MMWR selected coverage	11
Monitoring Disease Trends	12
Dengue in India, 2010 to 2013	

Lead Story



Dengue Problem in India – A Public Health Challenge

The virus causing dengue/dengue hemorrhagic fever (DHF) is present almost throughout India and has emerged as a major public health concern. It is the most common mosquito-borne viral disease of humans.

Globally, 2.5 billion people live in areas where dengue viruses can be transmitted and the incidence of dengue has increased dramatically in recent decades. WHO currently estimates 50–100 million dengue infections worldwide every year. Before 1970, only nine countries had experienced severe dengue/DHF epidemics. Today, the disease is endemic in more than 100 countries in WHO’s African, Americas, Eastern

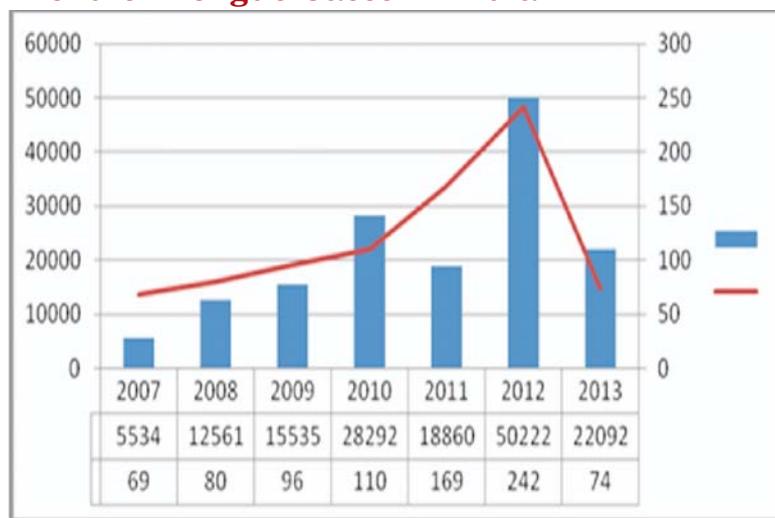
Mediterranean, South-East Asia and the Western Pacific regions. *Aedes aegypti* is the main vector for transmission of dengue. *A. albopictus*, a secondary dengue vector in Asia, has spread to North America and Europe largely due to the international trade in used tyres (a breeding habitat) and other goods (e.g. lucky bamboo).

Dengue infection is caused by any one of four types of distinct but closely related viruses, namely, DEN1, DEN2, DEN3 and DEN4 of the genus *Flavivirus*. By the last decade of the 20th century *A. aegypti* and the four dengue viruses had spread to nearly all countries of the tropical world.

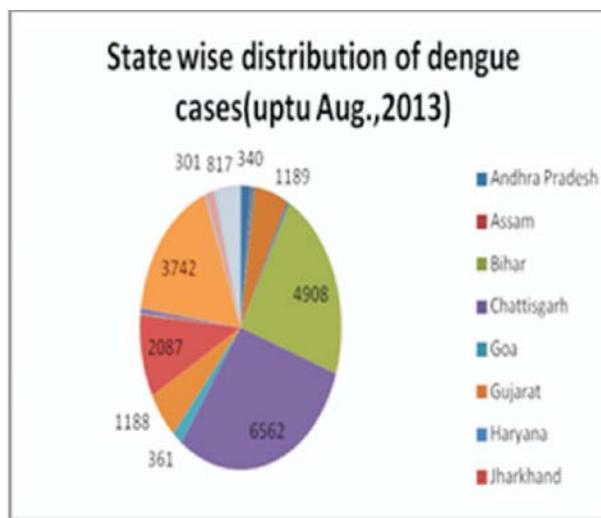
Disease Burden in India

In India, this year a total of 22,092 cases and 74 deaths were reported through August. Maximum number of cases were reported from Kerala (6,562), Karnataka (4,908), Tamil Nadu (3,742) and Odisha (2,087). Maximum deaths were recorded from Kerala and Maharashtra.

Trend of Dengue Cases in India



In Delhi too, dengue cases have increased rapidly with 2,092 cases and 3 deaths reported until end of September 2013 versus only 65 cases and 3 deaths reported in the corresponding period of 2012. The worst affected zones in 2013 have been Rohini, Shahdra (North), Narela, Najafgarh, Karol Bagh and central zones. *A. aegypti* was identified as the only vector in these areas.



Diagnosis and Management

Symptoms

A patient generally has abrupt onset of high fever accompanied by severe frontal headache, pain behind the eyes which worsens with eye movement, muscle and joint pains, loss of sense of taste and appetite. Measles-like rash over chest and upper limbs can appear indicating hemorrhages under the skin. Many patients also complain of nausea and vomiting.

Laboratory diagnosis

A clinician records the temperature, performs a tourniquet test and looks for petechial rashes. All suspected cases of dengue fever with bleeding (DHF) need to be investigated thoroughly for low platelet count. In case of dengue shock syndrome (DSS), patients should be tested for fluid in the abdomen or chest.

Management

Across India, 347 sentinel surveillance centres and 14 apex referral laboratories have been established. Management primarily includes early reporting to the health facility for symptomatic and supportive care. The recommendation for DSS is replacement of lost plasma, correction of electrolyte and metabolic disturbances, and a blood transfusion.

Vector Dynamics

Primarily an urban problem, dengue has extended to semi-urban, rural, and semi-arid regions of the country due to spread of two vector species — *A. aegypti* and *A. albopictus*. *A. aegypti* is prevalent in western, northern, Indo-Gangetic and eastern plains, the Assam valley and coastal areas of Odisha. The species is non-existent in the Himalayan region. In the north-central highlands, the species showed low-to-moderate prevalence, while in the south-central highlands, the vector population was high in the valleys only. The eastern plateau, including the Eastern Ghats, is comparatively free of the vector except in large towns in the Mahanadi basin. The Satpura ranges of the North Deccan were also found to be free of *A. aegypti*.

Breeding sites

A. aegypti is common in urban locations. Cement water tanks, water coolers, plastic containers and tyres are the preferred breeding habitats of *Aedes* mosquitoes. Coconut shells and latex cups are important breeding sites in Kerala and Lakshadweep Island. *A. aegypti* mosquitoes, being hygroscopic, tend to move to central areas of the city which are humid in the dry season, and spread out during the wet season.

Vector breedings sites



Site 1: Collected water



Site 2: Desert Coolers



Site 3: Used tyres

Vector Control

In the absence of a vaccine, vector control is the primary means of controlling dengue infection. Vector control options include elimination of *Aedes* mosquito breeding sites by using petroleum oil/kerosene oil/temephos on water surfaces at weekly intervals; mosquito proofing of water tanks (overhead and ground tanks) and buildings; use of mosquito nets to prevent infection in hospital wards to others; and pyrethrum space spray/ULV during outbreaks.

The control of *Aedes* mosquitoes is very challenging and requires community involvement. Behavioral change must be promoted at the individual, household and community levels to control the dengue vector. Proper solid waste disposal and improved water storage practices, including covering containers

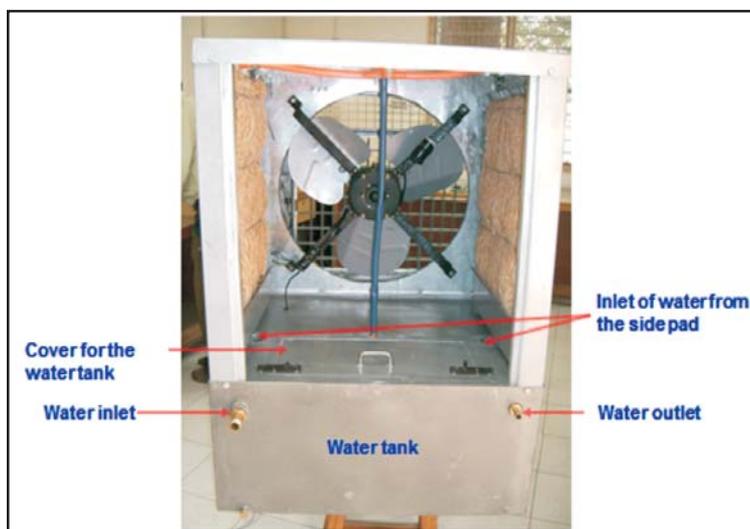
to prevent access to egg-laying female mosquitoes, can be attempted and encouraged through community-based programmes.

Epidemic containment focusing on insecticide spraying for adult mosquitoes has been unproductive. This is because *Aedes* mosquitoes often hide within homes during the day, therefore normal fogging efforts cannot effectively kill them. Since they feed during the day, insecticide-treated bed nets are also an ineffective intervention to reduce number of bites.

NCDC has developed a modified cooler (see below) with a covered water tank which prevents breeding of mosquitoes. Use of this cooler can be very helpful in preventing vector breeding and thus contribute towards control of dengue as a public health problem particularly in urban areas.



Ordinary desert cooler



NICD desert cooler

(Contributed by Dr R.S. Sharma, Additional Director & Head and Dr Roop Kumari, Joint Director, Centre for Medical Entomology & Vector Management, NCDC) for Medical Entomology & Vector Management, NCDC)

Outbreak Update

Cholera in Maharashtra

Cholera is endemic to many states of India with 3–5 million cholera cases reported annually. Cholera outbreaks are common, causing considerable morbidity and mortality. In August 2013, cholera cases were reported from Jalgaon district, Maharashtra. We sought to describe the epidemiological characteristics, identify any risk factors associated with this outbreak, and recommend control measures.

A case of cholera was defined as “a person of any age with acute watery diarrhea residing in Vishnapur or Malapur villages of Jalgaon district since July 1, 2013”. Controls did not have diarrhea three months prior to the start of the outbreak and were age-, gender- and village-matched to cases. We collected socio-demographic and clinical data, travel, food and water exposure history, and conducted univariate analysis using Epi Info.

We identified 50 cases that met the case definition of cholera (see epidemic curve). Of these cases, 60% were females with a median age of 8.5 years; 80% of cases were from Vishnapur village.

Twenty (45%) cases were hospitalized, of which

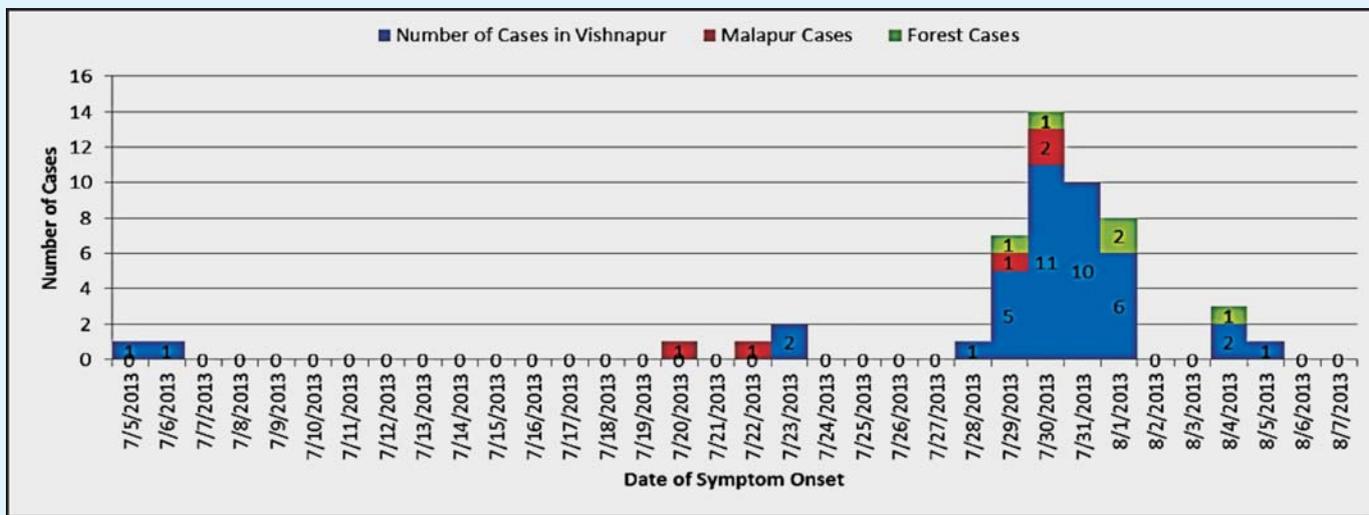
12 (60%) had severe dehydration. Three of five stool samples tested grew *Vibrio cholerae* 01 El Tor, Ogawa, and seven of 14 water samples from Vishnapur drinking sources were found to be contaminated.

In a case–control study carried out, the cases were significantly more likely than controls to have drunk from contaminated village water sources (OR=3.5). No other risk factors were identified.

We concluded that the outbreak in Jalgaon in Maharashtra was caused by *Vibrio cholerae* 01 Ogawa, most likely through contamination of drinking water sources in Vishnapur village and/or through drinking river/canal water. To prevent cholera outbreaks in this area, we recommend provision of safe drinking water for forest visitors/residents, and regular chlorination of drinking water sources and water testing for contamination.

(Contributed by: Y. Tulsian, EIS Officer; B. Wable, S. Pawar, V.B. Mavlekar, Jalgaon District Public Health Office, Maharashtra; A. Yadav, NCDC Varanasi Branch; P. Lomte and Pramod, PHC Gorgavle, Jalgaon District, Maharashtra; and K.F. Laserson, CDC Resident Advisor, India EIS Programme)

Number of cholera cases, Epi curve, n=50



NCDC Highlights

Strategic workshop on disease surveillance (NCDC-CDC-IDSP-IANPHI)

This two-day strategic workshop (August 8–9, 2013) was held with the objective to develop a road map for strengthening IDSP implementation in the 12th Plan Period and identifying the role to be played by public health institutes/medical colleges in disease surveillance. Workshop participants included state surveillance officers, experts from the Ministry/Dte. GHS, NCDC, International Association of National Public Health Institutes (IANPHI), CDC, GDD-IC, WHO, NIC, NIHF, NIE, PHFI and experts from public health institutes and selected medical colleges.

IANPHI provided organizational support and a IANPHI team also visited two states (Gujarat and Odisha) during August 5–7, 2013 to understand IDSP implementation.

The workshop provided an overview of IDSP, its strengths and weaknesses, its role in response to public health emergencies of international



concern (PHEICs), public health laboratories under IDSP, training needs, and use of information technology for data collection and analysis. Three states (Gujarat, Assam and Tamil Nadu) gave presentations on weekly data generation, weekly feedback to districts on completeness and timeliness, and outbreak capacity developed under IDSP; the IANPHI team gave a presentation on public health surveillance systems. The meeting also facilitated discussions to develop a strategic plan for the future.

(Contributed by Dr Amit Karad and Dr Jagvir Singh, IDSP, NCDC Delhi)

Second cohort of India EIS

The second cohort of EIS officers completed their EIS Inception Course on October 17, 2013, and will begin their EIS Programme work in their placement sites the week of October 20, 2013. The

names of EIS officers, states that have sponsored them and/or where they were residents, and their placement sites/mentors are listed on the NCDC website www.ncdc.gov.

(Contributed by Dr Kayla Laserson, CDC Resident Advisor)

Finalisation of assessment tools for public health laboratories under IDSP

The IDSP plans to conduct, with technical support from the CDC/Global Disease Detection-India Centre (GDD-IC), a standardized assessment of its public health laboratories and laboratory system. The goal of these assessments is to provide objective data so that the IDSP can make evidence-based decisions on improving its laboratory capacity for disease detection, surveillance, and outbreak response to also support the International Health Regulations 2005 implementation in the country.

IDSP organized a workshop on September 9–13, 2013 at NCDC, Delhi. The workshop was attended by CDC, GDD-IC, NCDC and WHO

staff. Dr Antoine Pierson, Founder and Chief Scientific Officer from Integrated Quality Laboratory Services, France also participated in the workshop and shared his experience on the adaptation and use of WHO's laboratory assessment tool in other countries. The workshop ended with the presentation of the finalized assessment tool. This tool will be used to conduct laboratory assessments by a cadre of trained assessors. The data generated during these assessments will form the basis of a detailed gap analysis on which interventions to strengthen IDSP laboratory system capacity will be developed.

(Contributed by Dr Lata Kapoor, NCDC)

Evaluation of the national epicenter-based TB surveillance system, 2013

During 2013, an evaluation of the epicenter-based TB surveillance system was carried out, with three specific objectives: (1) to describe the surveillance system; (2) to evaluate the system with respect to defined attributes as per CDC; and (3) to propose recommendations for strengthening this system.

The surveillance system was evaluated by reviewing published national TB programme reports, training manuals and technical/operational guidelines; field reviews; and interviews with 34 stakeholders.

Review of patient records showed that the surveillance system maintains data of good quality. However, errors were noted due to multiple handling of data at multiple places. Despite this the data were clean because of data validation at the local (TU team) and district levels, and also due to software-aided checks. Field data review showed 100% reporting of public units and TB cases were being entered in the system based on positive sputum microscopy results. However, review of the records and

information from the TB programme, indicate that approximately 40% of TB patients who go to the private sector are not captured by the system and more than 50% of those with TB disease remain undiagnosed and are left untreated. Moreover, while the system is relatively timely, it does have a time delay of one quarter for receipt of TB reports from PHC to the national level.

It is concluded that the national epicenter-based TB surveillance system is simple, flexible and acceptable to stakeholders. Many of the above mentioned issues are already being addressed: the TB programme has initiated NIKSHAY from January 2013, which is an online real-time case-based web-based live data surveillance system. The Government of India passed a “TB notification order”, on May 7, 2012 for private registration, stating that it is compulsory to notify each diagnosed TB case to the public health system to obtain the actual TB case load in the community.

(Contributed by Dr Yogita Tulsian, EIS Officer)

Government approves 30 crores for NCDC antimicrobial resistance programme

The Ministry of Health and Family Welfare has approved Rs 30 crore for a national programme on containment of antimicrobial resistance during the 12th Five Year Plan (2013–2017). Under this, the focus will be on strengthening of quality assured laboratory network in the country and awareness generation among various stakeholders regarding use of antimicrobial agents. The programme will be

implemented in a phased manner to strengthen 30 quality assured laboratories in the country and for training of microbiologists, laboratory technicians and others. The programme also includes additional resources allocated for developing health education materials and training modules.

(Source: NCDC, Delhi)

Emerging and re-emerging infections in India: an overview

Emerging infectious diseases are “diseases of infectious origin whose incidence in humans has increased within the recent past or threatens to increase in the near future”. Over 30 new infectious agents have been detected worldwide in the past three decades; 60% of these are of zoonotic origin. Developing countries such as India suffer disproportionately from the burden of infectious diseases given the confluence of existing environmental, socioeconomic and demographic factors.

Emerging infections in India remain a real and present danger. A meaningful response must

approach the problem at the systems level. A comprehensive national strategy on infectious diseases cutting across all relevant sectors with emphasis on strengthened surveillance, rapid response, partnership building and research to guide public policy is needed.

More details can be obtained from the following publication: Dikid T, Jain SK, Sharma A, Kumar A, Narain JP. Emerging and re-emerging infections in India: An overview. *IJMR* 2013;138:19-31.

(Contributed by Dr Tanzin Dikid, NCDC)

News and Events

Indigenous Japanese encephalitis vaccine launched in India

India's first indigenously developed Japanese encephalitis (JE) vaccine was launched on October 4, 2013. The vaccine JENVAC — to fight against the mosquito-borne viral infection — has been jointly developed by scientists of NIV, Indian Council of Medical Research (ICMR) and Bharat Biotech Ltd. Till now, a vaccine imported from China was being used in India.

The main work to develop this vaccine began in 2008 with the signing of an agreement between NIV and Bharat Biotech and after more than five years (during which scientists went through all phases of development and clinical trials), the Drug Controller General of India (DCGI) finally approved the final

Government regulates sale of antibiotics to limit antibiotic resistance

The Ministry of Health and Family Welfare on September 30, 2013 has notified amendments to the Drugs and Cosmetics Act, 1940 to check the indiscriminate use of antibiotics, anti-tuberculosis drugs and some other drugs in the country. A new provision Schedule H1 has been included to curb over-the-counter sale of certain antibiotics and anti-tuberculosis drugs from March 1, 2014.

Forty-six drugs, comprising mainly of third- and fourth-generation antibiotics, have been placed under this restricted category and the sale of these drugs can only be done on furnishing an appropriate prescription letter from a doctor. Also, the seller has to retain a copy of the prescription letter and

vaccine product in September 2013.

JE is the leading cause of viral encephalitis in Asia. Mild infections occur without apparent symptoms other than fever with headache. More severe infection is marked by quick onset, headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions (especially in infants) and spastic paralysis.

A national programme for prevention and control of JE with an outlay of more than Rs 4,000 crore is now being implemented in 60 priority districts for a period of five years from 2012–13 to 2016–17 by the concerned ministries.

Interventions are being focused in five states namely, Assam, Bihar, Tamil Nadu, Uttar Pradesh and West Bengal.

maintain a separate register that records the name of the buyer and the doctor who prescribed the medicine along with other necessary details.

Regulating over-the-counter sale of antibiotics was one of the key recommendations of the Chennai Declaration; the other recommendations included the need for monitoring antibiotics usage in hospitals, stepping up infection control, regulating antibiotics in veterinary practice, setting up a National Antibiotic Resistance Monitoring Network, and facilitating clinical research for preventive strategies.

Antibiotic resistance is a global concern but the problem is particularly pressing in a developing country like India, where the burden of infectious diseases is high and healthcare spending is low.

WHO, FAO and OIE call for elimination of human rabies

On the occasion of World Rabies Day, September 28, 2013, WHO, Food and Agriculture Organization (FAO), and the World Organisation for Animal Health (OIE) have called for elimination of human rabies and control of animal rabies. Each year 60,000 people die due to rabies, which is a preventable disease. Vaccination of animals is a key strategy to control rabies. Two regions — Americas and South-East Asia — already have developed regional strategies for elimination of human rabies.

5th IPCC report on climate change: highlights

A landmark report from the 5th Intergovernmental Panel on Climate Change (IPCC) released on September 30, 2013 states that scientists are 95% certain that humans have been the “dominant cause” of global warming since the 1950s.

After a week of intense negotiations in the Swedish capital, the summary for policymakers on the physical science of global warming was finally released. Since the 1950s, many of the observed changes in the climate system are “unprecedented” in nature, according to the report.

It adds that global climate change is “unequivocal”; and states that the duration of monsoons is increasing in the Indian subcontinent. The panel issued a warning that continued emissions of greenhouse gases will cause further warming and changes in all aspects of the climate system. “Substantial and sustained reductions of greenhouse gas emissions” will be required to contain these climate changes.

FAO warns bird flu viruses could re-emerge in upcoming flu season



The FAO issued a new warning to the international community on September 16, 2013 that the H7N9 and H5N1 avian influenza viruses continue to pose a serious threat to human and animal health, especially in view of the upcoming flu season.

“The world is more prepared than ever before to respond to bird flu viruses in the light of a decade of work on H5N1 and the recent response to H7N9,” said FAO Chief Veterinary Officer Juan Lubroth at a joint meeting with United States Agency for International Development (USAID), WHO and OIE.

“However, constant vigilance is required,” Lubroth said. “Bird

Countries of South-East Asia Region commit to measles elimination by 2020

Measles remains a significant cause of morbidity and mortality worldwide. Of the estimated 158,000 global measles deaths in 2011, around half occurred in the South-East Asia Region, with India alone accounting for more than one third of the deaths.

A regional consultation in Kathmandu, in February 2013, reaffirmed the technical and programmatic feasibility of measles elimination and rubella/congenital rubella syndrome (CRS) in the Region by 2020. Measles elimination is defined as interruption of indigenous measles virus transmission in a geographical area (WHO Region/Member State) for at least 12 months in the presence of a good surveillance system. Measles elimination will be

implemented as an integrated approach with rubella/CRS control strategies.

The strategies for measles and rubella elimination include: (i) 95% coverage with measles and rubella vaccination; (ii) case-based surveillance with adequate laboratory support; (iii) prevention of outbreaks; (iv) linkages with other child health interventions; and (v) increased public confidence and demand for immunization.

There is consensus among all Member States of the South-East Asia Region that measles elimination is technically, biologically and programmatically feasible by 2020. Member States also agree that measles elimination and rubella/CRS control must go hand-in-hand.

flu viruses continue to circulate in poultry. Efforts must continue and be strengthened, not only in affected countries, but also in neighbouring states

and areas with strong trade linkages. This is especially true for H7N9 since it causes no clinical signs in birds and is therefore very difficult to detect in poultry.”

Forthcoming Meetings/Conferences

First India Epidemic Intelligence Service (EIS) Conference

Dates: 21–23 November, 2013
 Venue: National Centre for Disease Control
 22 Sham Nath Marg,
 New Delhi–110054
 Theme: Epidemiology in the Context of
 Emerging Infections and
 Noncommunicable Diseases
 For details: www.indiaeisconference.comsurveillance

The Third International Conference on Dengue and Dengue Hemorrhagic Fever 2013 (Dengue 2013)

Dates: 21–23 October 2013
 Venue: The Imperial Queen’s Park Hotel in
 Bangkok, Thailand.
 Theme: Global Dengue: Challenges and
 Promises
 For details: www.dengue2013bangkok.com

2013 SAFETYNET (SEARO/WPRO) Conference

Dates: 12–14 November, 2013
 Venue: Da Nang City, Vietnam
 The deadline for abstract submission was July 31, 2013

Global Health Update

Epidemiology of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) Infection, 2012–2013

The Middle East respiratory syndrome coronavirus (MERS-CoV) was first reported to cause human infection in September 2012. In July 2013, the WHO International Health Regulations Emergency Committee determined that MERS-CoV was of “serious and great concern”.

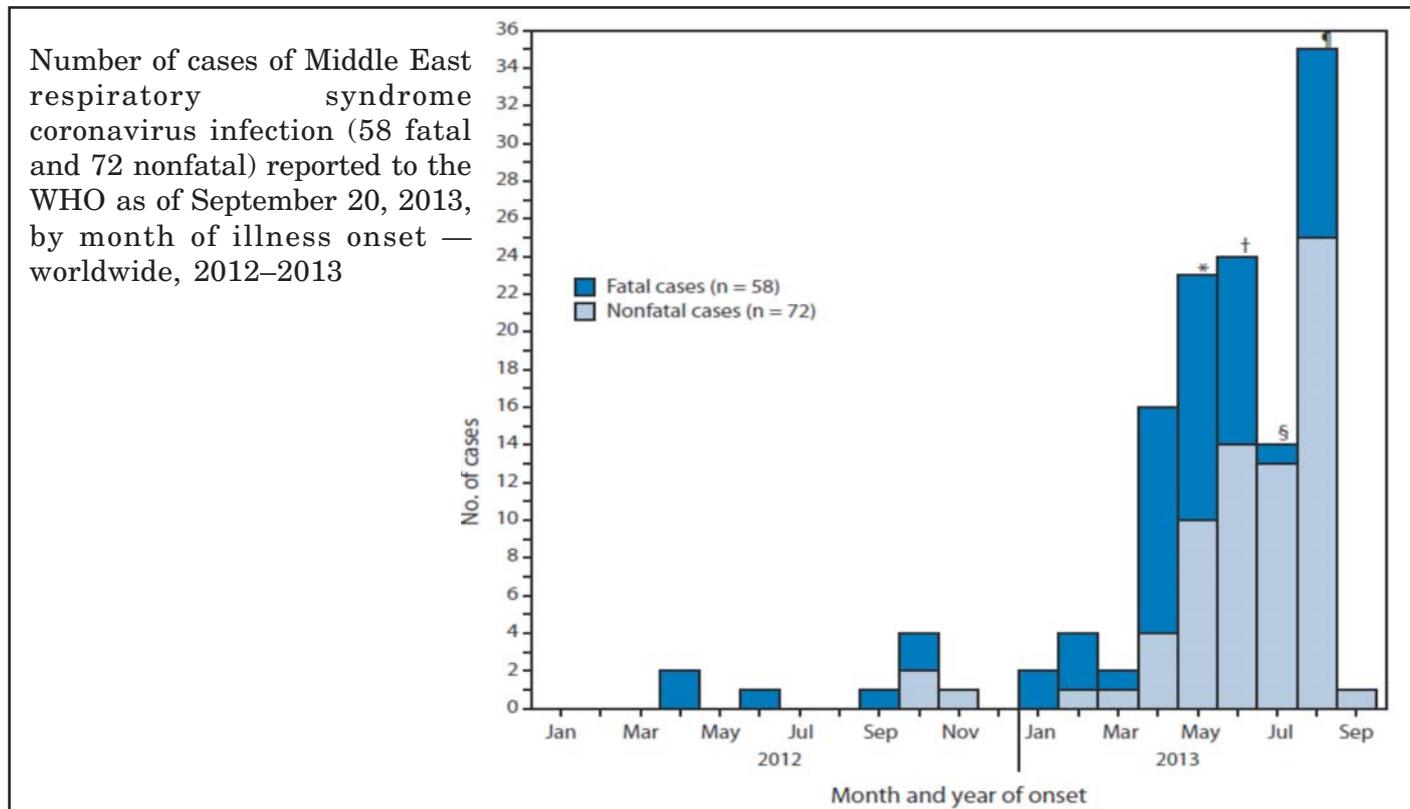
As of September 20, 2013, a total of 130 cases from eight countries have been reported to WHO; of which 58 (45%) have been fatal (see figure).

All cases have been directly or indirectly linked to travel through, or residence in four countries, namely Saudi Arabia, Qatar, Jordan and the United Arab Emirates. The median age of persons with confirmed MERS-CoV infection is 50 years (range: 2–94 years). The male-to-female ratio is 1.6 to 1.0. Twenty-three (18%) of the cases occurred in persons who were identified as health-care workers. Although most reported cases involved severe respiratory illnesses requiring hospitalization, at least 27 (21%) involved mild or no symptoms. Despite evidence of person-to-person transmission, the number of contacts by persons with confirmed infections appears to be limited.

Potential animal reservoirs and mechanism(s) of transmission of MERS-CoV to humans remain unclear. A zoonotic origin for MERS-CoV was initially suggested by its high genetic similarity to bat coronaviruses. Some recent reports have described serologic data from camels and the identification of related viruses in bats. However, more epidemiologic data linking cases to infected animals are needed to determine if a particular species is a host, a source of human infection, or both.

To date, the largest, most complete clinical case series published included 47 patients; most had fever (98%), cough (83%) and shortness of breath (72%). Many also had gastrointestinal symptoms (26% had diarrhea, and 21% had vomiting). All but two patients (96%) had one or more chronic medical conditions, including diabetes (68%), hypertension (34%), heart disease (28%), and kidney disease (49%).

Source: *MMWR*, September 27, 2013; 62(38): 793-796



MMWR: selected coverage Morbidity and Mortality Weekly Report (MMWR)

Progress in Increasing Electronic Reporting of Laboratory Results to Public Health Agencies — United States, 2013

September 27, 2013 / 62(38);797-799

Electronic reporting of laboratory results to public health agencies can improve public health surveillance for reportable diseases and conditions by making reporting more timely and complete. Since 2010, CDC has provided funding to 57 state, local, and territorial health departments through the Epidemiology and Laboratory Capacity for Infectious Diseases cooperative agreement to assist with improving electronic laboratory reporting (ELR) from clinical and public health laboratories to public health agencies. As part of this agreement, CDC and state and large local health departments are collaborating to monitor ELR implementation in the United States by developing data from each jurisdiction regarding total reporting laboratories, laboratories sending ELR by disease category and message format, and the number of ELR laboratory reports compared with the total number of laboratory reports. At the end of July 2013, 54 of the 57 jurisdictions were receiving at least some laboratory reports through ELR, and approximately 62% of 20 million laboratory reports were being received electronically, compared with 54% in 2012. Continued progress will require collaboration between clinical laboratories, laboratory information management system (LIMS) vendors, and public health agencies.

Monitoring of ELR progress began in 2012 with creation of a list of laboratories for each jurisdiction based on 2010 data from the Clinical Laboratory Improvement Amendments database of certified laboratories and the American Hospital Association directory of laboratory facilities. To date, these lists, which have been further refined by public health agencies, identify approximately 10,400 laboratories that send reportable results to public health agencies nationwide. Of these, approximately 5,320 (51%) are hospital laboratories, 420 (4%) are facilities owned by one of four large commercial laboratories, 400 (4%) are public health laboratories, and 4,260 (41%) are other laboratories, including small or regional, commercial, specialty, and federal.

For more details, see MMWR, September 27, 2013 / 62(38);797-799

Important health days (From October-December, 2013)

October	November	December
10 World Mental Health Day	2 World Pneumonia Day	1 World AIDS Day
26 World Obesity Day	14 Diabetes Day	2 National Pollution Prevention Day
29 World Stroke Day	19 World COPD Day	3 International Day of Disabled Persons
		9 World Patient Safety Day

Monitoring Disease Trends

Dengue in India, 2010 to 2013 (up to 22 September)

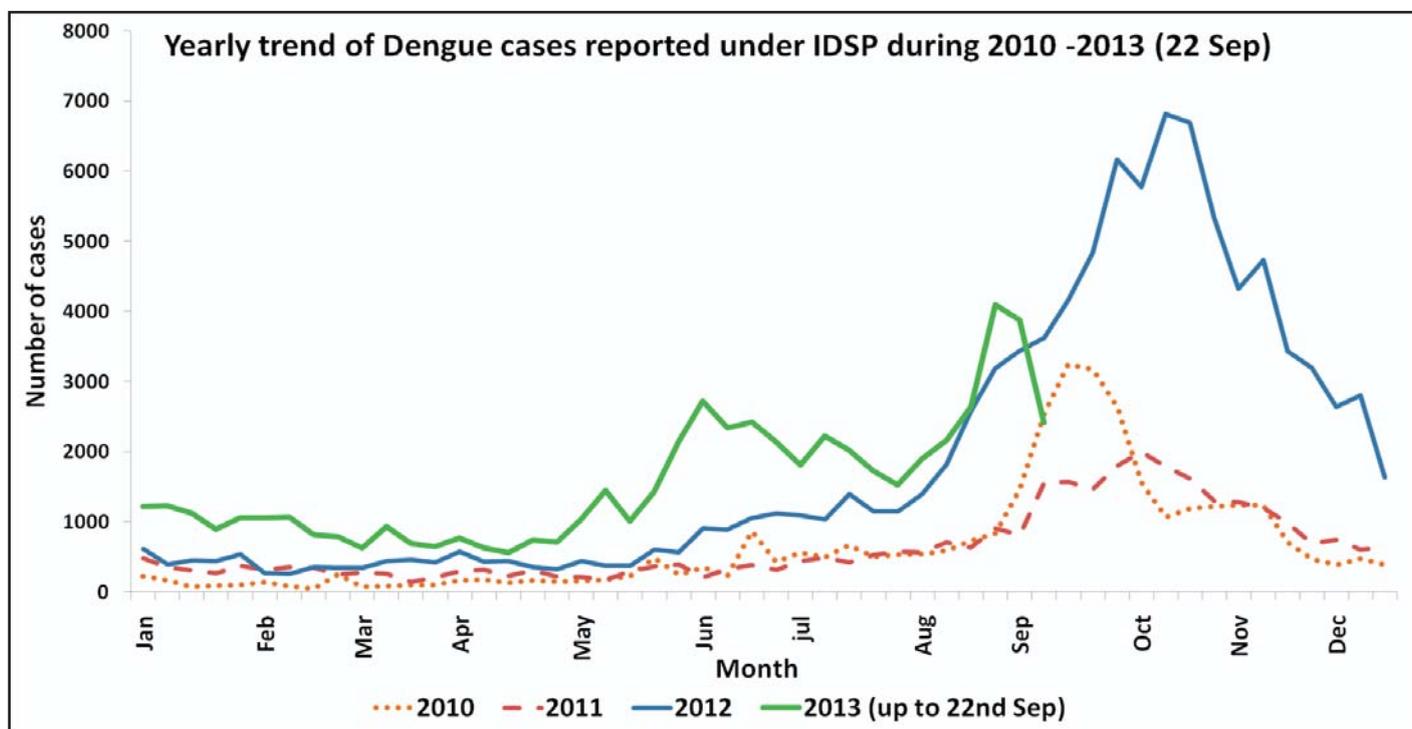
Dengue fever was first reported in India in 1946. Outbreaks of dengue were first reported in 1963–1964, along the eastern coast of India, 1967 in Delhi and 1968 in Kanpur.

The first major widespread epidemic of DHF/DSS occurred in 1996 involving areas around Delhi and Lucknow, which later spread to the whole country.

Under IDSP more than 350 outbreaks of dengue fever have been reported from 2010 to 2013 (up to September 22). Maximum outbreaks were reported from Tamil Nadu (93), Maharashtra (83), Karnataka (49), West Bengal (28) and Kerala (22).

IDSP data show that (see figure below) more dengue

fever cases are reported during the post monsoon period every year with a peak between mid-September to November. During 2013, the rise in trend was seen early owing to an early monsoon. Most cases were reported from Tamil Nadu (26%), Karnataka (13.9%), Kerala (8.1%), West Bengal (7.8%) and Maharashtra (6.9%).



(Contributed by Dr Amit Karad, Mr Prasun Sharma and Dr Jagvir Singh, IDSP, NCDC Delhi)

NCDC Newsletter

October-December 2013

Editorial Board

Editor: L.S. Chauhan

Editorial Adviser: Jai P. Narain

Editorial Panel: R.L. Ichhpujani, Mala Chhabra, Pradeep Khasnobis, Tanzin Dikid, Rajeev Sharma

Design and Layout: Vani Kurup & Avnesh Sharma

Editorial Coordinator: Neha Pandey

Quarterly Newsletter from the National Centre for Disease Control (NCDC)

Volume 2, Issue 4

Support provided by the U.S. Centers for Disease Control & Prevention is duly acknowledged

For comments and inputs, e-mail ncdcnewsletter@gmail.com

The editorial panel does not hold any responsibility for the materials contained in this publication which is based on information available from various sources.

Reproduction of material from the NCDC Newsletter, in part or in whole, is encouraged, as long as credits and acknowledgement are given.

Online version of NCDC Newsletter is available at NCDC website www.ncdc.gov.in

Copyright©2013 National Centre for DiseaseControl, 22-Sham Nath Marg, Delhi-110024. INDIA

Printed at Power Printers : 23272445, 9717411800