Infectious diseases continue to challenge public health. This is exemplified by the Ebola outbreak which is unfolding rapidly and with unprecedented potential to spread beyond West Africa. India has taken steps to augment surveillance and response capacities to prevent and control the spread of Ebola to and within its borders. Against this background, this issue of the NCDC newsletter provides a global update on the Ebola virus outbreak and MERS-CoV. This issue also highlights some of the initiatives underway at NCDC, such as SHOC room table top exercise, independent appraisal of yaws eradication activities, and reports on outbreak investigations — acute encephalitis syndrome (AES) in Bihar, hepatitis A in Kerala and mumps in Punjab — conducted by EIS officers. The major hike in tobacco taxes, new immunization initiatives, availability of hepatitis treatment guidelines, etc. are some articles included under the ‘news and events’ section.

Besides the regular snapshot from MMWR, this issue of the newsletter also describes how mobile phones can save lives.

I look forward to your feedback.

Lead Story
MERS-CoV Infection: Current Status and Threat to India

The Middle-East respiratory syndrome (MERS) is a viral respiratory disease caused by a novel coronavirus (CoV). MERS-CoV was named by the Corona virus Study Group of the International Committee on Taxonomy of Viruses in May 2013. MERS-CoV is related to but is not the same as severe acute respiratory syndrome-CoV (SARS-CoV). MERS-CoV was first identified in September 2012, and cases were detected retrospectively as early as March 2012. Several studies have found MERS-CoV in high
proportions in camels (the likely reservoir). An identical gene segment has been found in a species of bat. Few primary cases had direct contact with a camel.

CoVs belong to Betacoronavirus genera, subfamily Coronavirinae and family Coronaviridae. These are enveloped viruses with a positive-sense RNA genome and a nucleo-capsid of helical symmetry. CoVs are named for the crown-like spikes on their surface. They are common viruses that most people get in their lifetime. These viruses mostly cause mild-to-moderate upper respiratory tract illnesses. The infectious period for MERS-CoV is not clearly established but is likely to extend from the onset of fever until 10 days after fever resolves. It is not believed to be contagious before onset. Incubation period may vary from 2 to 14 days.

The first MERS-CoV case was reported on 13th June in a 60-year-old Saudi man who presented with 7-day history of fever and cough and recent shortness of breath. There was an increase in blood urea nitrogen (BUN) and creatinine from day 3 of admission. White blood cell count was normal on admission (but 92.5% neutrophils) and increased to a peak of 23,800 cells per cubic millimeter on day 10 with neutrophilia, lymphopenia and progressive thrombocytopenia.

Globally, 837 laboratory-confirmed cases of MERS-CoV infection and at least 291 related deaths have officially been reported to WHO as on 23rd July 2014. The virus can affect anyone and the reported age range is from younger than 1-year-old to 94-year-old (median age 49 years). Male predominance was reported.

**Source of Infection**

The origin of the virus is unknown. In addition to humans, MERS-CoV has been found in camels in Qatar, Oman, Egypt and Saudi Arabia, and a bat species in Saudi Arabia. Camels in several other countries have also tested positive for antibodies to MERS-CoV, indicating that camels were previously infected with MERS-CoV or a closely related virus. People possibly became infected after contact with camels, although more information is needed to understand the possible role that camels, bats and other animals play in the transmission of MERS-CoV. No antibodies to MERS-CoV have been found in goats, cows, sheep, water buffalo, swine and wild birds.

**Mode of Transmission**

A considerable proportion of MERS-CoV cases have been part of clusters in which limited non-sustained human-to-human transmission has occurred, such as in...
health-care settings, among close family contacts, and in the work place.

The mode of transmission is not exactly understood in primary cases. In secondary cases CoV is transmitted in a similar manner to alternate strains which include direct transmission through droplets expelled during coughs and sneezes. Indirect transmission is through touching surfaces and devices contaminated with the virus, and then touching the mouth, nose or eyes.

Nearly 75% cases have been identified as secondary of which 19% were health-care workers, many with no or minor symptoms. Many health-care and household clusters have been identified. There is no sustained person-to-person transmission. Researchers studying MERS have not seen any ongoing spread of MERS-CoV in the community. All reported cases have been linked to countries in and near the Arabian Peninsula. Most of the infected people have either lived there or recently traveled from there.

Clinical Aspects

According to the discovered cases so far, the symptoms may include the following:
- Fever and cough
- Shortness of breath
- Congestion in the nose and throat
- Diarrhea.

In advanced cases, the patient can have very serious complications, such as severe pneumonia, which may lead to death.

There is no specific antiviral treatment recommended for MERS-CoV infection. Individuals with MERS can seek medical care to help relieve symptoms. For severe cases, the current treatment includes care to support vital organ functions.

Threat to India and its Preparedness

A substantial number of Indians live and work in Gulf countries. People from India also travel to Saudi Arabia as Pilgrims to Hajj (13th to 18th October)/Umrah (9th July to 7th August). There is a huge threat of spreading infection via travelers coming from the Middle East too.

In 2012, 16.8 million travelers flew on commercial flights out of Saudi Arabia, Jordan, Qatar and the United Arab Emirates between June and November 2012 (the period starting one month before Ramadan and ending one month after the Hajj). Of the 51.6% who proceeded to destinations in just eight countries, 16.3% came to India. Hence the preparedness for risk communication and formulation of IEC strategies at all levels is crucial.

People who may be at increased risk for MERS include recent travelers from the Arabian Peninsula, close contacts of travelers from the Arabian Peninsula, contacts of a confirmed or probable case of MERS, health-care personnel not using recommended infection-control precautions and health-care personnel who had close contact with a confirmed or probable case of MERS. People with diabetes, renal failure, chronic lung disease, and immuno-compromised persons are considered to be at high risk of contracting severe disease.

As part of the preparedness plan, the Directorate General of Health Services (DGHS) has organized three regional trainings at Bengaluru, Pune and Delhi for airport/port health officers, regional directors, state surveillance officers, state and district epidemiologists, teaching faculty from medical colleges, clinicians etc. across India. Trainings will cover topics related to MERS-CoV infection including epidemiology, laboratory diagnosis, clinical case management, risk assessment, outbreak risk communication and IEC strategies.

Advisories have been issued by the Ministry of Health and Family Welfare (MoHFW) to travelers, immigration personnel and all airlines to ensure that all suspected cases entering through airports report to airport health officers for clinical examination. Referral hospitals have also been identified to refer cases for further management.

(Contributed by Dr Anil Kumar, Epidemiology Division, NCDC)
Outbreak Updates

Mumps in Punjab

On 6th March 2014, the Civil Surgeon of Mohali (SAS Nagar), Punjab received a report from the Senior Medical Officer of PHC Gharuan regarding an unusual rise in mumps cases among children from the Government primary/middle school of Baroli village. A team from the District Headquarters visited the school and 15 cases were line listed based on clinical features such as unilateral/bilateral tender swelling in the parotid region and pain in the ear on opening the mouth. Of the nine blood samples sent to the District Priority Laboratory in Mohali for IgM ELISA, three were found to be positive for mumps.

A community survey of 200 households that was carried out on 7th March 2014 reported no mumps cases. An Epidemic Intelligence Service Officer (EISO) joined the local health authorities to conduct an outbreak investigation on 2nd April 2014. The objectives were to describe the epidemiological characteristics and determine the associated risk factors.

We conducted a descriptive and 1:2 unmatched case–control study. A case was defined as “any child, 5–14 years old, belonging to Baroli village and suffering from acute onset of unilateral or bilateral tender swelling of the parotid or other salivary gland lasting for 2 or more days, with onset after 1st March 2014”. Data were entered into SPSS 16 and analysed.

Of the 118 children who attend the Government primary/middle school in Baroli, 26 met the case definition, of which 13 (50%) were in the age group of 6–9 years and 13 (50%) were in the age group of 10–14 years. All affected children who attended the school lived in Baroli village. The epidemic curve (Figure) shows that the first 2 cases occurred on 1st March and peaked to 15 cases from 2nd to 5th March. Primary school children had an attack rate of 33% compared to 8% among middle school children.

The results of the case–control study of 26 cases and 52 controls revealed that history of contact with a mumps case >2 hours within 2 feet within 1 month prior to onset of symptoms (OR: 9.7; 95% CI: 3.2–29.5) had a strong association with contracting mumps. Other factors such as living in a kachha house (OR: 4.3; 95% CI: 1.38–13.2) and shared living (room/bed) of family members with/without a case (OR: 4.8; 95% CI: 1.3-18.0) were also found to be associated with mumps. None of children had received mumps immunization.

We recommend that susceptible children be restricted from sharing a room (or bed) or be in close contact with the case for at least 5 days. As none of the students received prior immunization against mumps, immunization against mumps should be considered an important intervention for preventing occurrence of such outbreaks in the future.

(Contributed by Dr Mohan K Papanna, EIS officer, Dr Somnath K, NCDC New Delhi, Dr Deepti S District epidemiologist IDSP, Dr Kayla Laserson, Resident Advisor India EIS, Dr Jai P Narain, Senior advisor India EIS)
Hepatitis A in Kerala

On 2nd April 2014, the District Surveillance Unit at Malappuram reported an outbreak of "hepatitis A" from Puramannur area of Irimbilium PHC. The first information report, noted 20 cases of acute jaundice. Two cases reported positive for anti-hepatitis A virus (HAV) IgM. Our team of two EIS officers from NCDC reached on 28th April 2014 to further investigate the outbreak. The objectives were to describe the epidemiological characteristics and determine the associated risk factors.

Data on epidemiological characteristics were collected at the household level, cases were examined and records were reviewed. We also conducted a case–control study to determine the associated risk factors. A case of hepatitis A was defined as "a person of any age/sex, residing in Puramannur area with acute jaundice and at least one of the following symptoms: fever, dark urine, anorexia malaise, extreme fatigue and right upper quadrant tenderness between 1st February 2014 and 3rd May 2014". Water samples from wells were tested and all collected data were entered in MS Excel and analysed using SPSS version 16.0.

Puramannur has 117 households with a population of 763. All houses had closed pit latrines and wells as their water source. In this outbreak, the first case occurred on 4th February 2014. A total of 25 cases from 12 households were found to be clustered around 2 wells. The epicurve shows a propagated outbreak with two peaks on 10th March 2014 and 5th April 2014, respectively (Figure). The median age was 15 years (range 6–23 years) and the overall attack rate was 3.3%; it was maximum (11.3%) in the 10–14 years age group, and 3.7% in males vs 2.9% in females.

Of the 25 cases, 21 had raised sustained response alanine aminotransferase (ALT) levels. Two of 25 cases tested positive for anti-HAV IgM; 4 of 25 cases tested negative for hepatitis B surface antigen (HBsAg) and anti-hepatitis E virus IgM.

Drinking water from wells 1 or 2 (p=0.0001) and not using any method of water purification at the household level (p=0.0001) were significantly associated with hepatitis A. Water samples from the two wells were found to be suitable for drinking. IEC activities in the community regarding regular chlorination of wells, safe food and hygiene practices were recommended.

(PDr Arghya Pradhan and Dr Ar Pasi, EIS officers, Dr Aakash Shrivastava, Epidemiology Division, NCDC, Dr Noona Marja, DSO, Malappuram)

Figure: Distribution of hepatitis A cases by date of onset, Puramannur area in Kerala, February–April, 2014
NCDC Highlights


Seasonal outbreaks of an acute neurologic illness commonly described as “acute encephalitis syndrome” have been reported in Muzaffarpur district of Bihar state since 1995. The illness routinely starts in May, peaks in June, and declines with the onset of monsoon rains. This illness primarily affects young children (ages 2–5 years), is characterized by acute onset seizures and altered mental status, and associated with high mortality. To date, the etiology and risk factors for this illness have not been confirmed.

In 2013, NCDC with technical support from US Centers for Disease Control (CDC) Global Disease Detection Programme (GDD India) conducted a hospital-based surveillance and a nested case–control study to better characterize the clinical and epidemiologic characteristics of the illness. The data confirmed that the outbreak was predominantly among young children (1–5 years), was characterized by generalized seizures, altered mental status, and lack of fever in a majority of patients, and was associated with high mortality.

Laboratory testing revealed that the spinal fluid was normal (non-inflammatory) and that 21% of the examined patients had hypoglycemia (blood glucose <70 mg/dL) at presentation. Clinical samples tested at NCDC for key infectious pathogens, including Japanese encephalitis (JE) virus, West Nile virus, Chandipura virus, and Enteroviruses, were negative. Analysis of risk factors for death among 94 affected children showed that the presence of hypoglycemia at presentation trended toward an increased risk of death (OR=2.6, 95% CI 1.0–7.2). The case–control study enrolled 101 cases and 202 age-matched controls from the hospital (n=101) and the community (village-matched, n=101). Analysis revealed that affected children were less likely to have access to electricity (matched OR (mOR) 2.1, 95% CI 1.2–3.5) or latrines (mOR 3.8, 95% CI 1.7–8.7) in the household, suggesting that cases were more impoverished compared to controls. Affected children also spent a greater amount of time in agricultural fields/orchards (mOR 2.6, 95% CI 1.2–5.2) than those who did not fall ill. Limited anthropometric data suggested that younger cases (<5 years old) were more likely to be wasted (lower weight for height) than age-matched controls (p=0.03). No association between JE virus vaccination status and illness was observed, and the reported vaccination coverage was less than 10% in both cases and controls.

Based on the findings of the 2013 investigation, we concluded that the outbreak appeared to be more consistent with a non-inflammatory encephalopathy rather than infectious encephalitis. These findings raised concerns for toxin mediated illness. One specific hypothesis generated from the 2013 findings included the potential presence of a toxin (methylene cyclopropyl glycine (MCPG)) with hypoglycemic activity that is found in the litchi seed. Animal studies suggest that ingestion of MCPG may have the potential to cause acute hypoglycemia and encephalopathy, similar to ackee fruit poisoning described in the Caribbean and West Africa. It is possible that exposure (ingestion) of this toxin, may have the potential to lead to acute hypoglycemia and precipitate the seizures that seem to be the clinical hallmark of this illness.

As a result of our 2013 findings, the following key recommendations were shared with the relevant health authorities at the state and district levels in Muzaffarpur and Bihar:

- Provide glucometers to hospitals and PHCs.
- Ensure rapid assessment and treatment of hypoglycemia in children with suspected illness to reduce potential mortality.
- Conduct a detailed field study (2014) to evaluate potential toxins and environmental factors.

Building upon the 2013 investigation, NCDC-CDC again conducted a comprehensive investigation of this acute encephalopathy in 2014. This investigation comprised: (1) facility-based clinical surveillance for examining clinical features, clinical course, and outcomes of hospitalized cases; (2) an epidemiologic case–control study and environmental field study for examining risk factors for disease, including food, water, environmental and toxin exposures (pesticides, heavy metals, naturally occurring plant or fruit...
based toxins) as well as nutritional status; and (3) laboratory assessment of patient biological specimens and environmental samples for evaluating infectious pathogens as well as pesticide and toxin metabolites and residues.

The NCDC-GDD hospital-based surveillance for acute encephalopathy was conducted between 26th May and 17th July 2014. In this year’s investigation, data were collected from 390 patients who met the following case definition: “acute onset seizures and/or altered sensorium in the past seven days in a child <15 years admitted to a participating hospital”.

Findings indicated that a majority (63%) of patients experienced significant hypoglycemia (blood glucose \(\leq 70\) mg/dL), and that the spinal fluid was non-inflammatory. Additional neurodiagnostic testing with brain magnetic resonance imaging (MRI) and electroencephalography (EEG) also indicated findings consistent with generalized encephalopathy. Thus, the 2014 clinical and diagnostic surveillance data again support our diagnosis of this outbreak as a non-inflammatory encephalopathy rather than encephalitis.

Furthermore, these 2014 findings suggest that implementation of our 2013 recommendations for rapid assessment and correction of hypoglycemia may have, in part, helped to reduce mortality from 44% in 2013 to 26% in 2014.

The focus of early recommendations to district and state officials in Bihar in June 2014 was on strengthening the clinical management of cases to further reduce morbidity and mortality, including enhancing supportive intensive and respiratory care. The NCDC-GDD investigation team is in the process of evaluating the etiology and epidemiologic risk factors for this outbreak to guide the development of appropriate illness prevention measures to reduce morbidity and mortality in Muzaffarpur in the coming years.

(Contributed by Dr Padmini Srikantiah, CDC India and Dr Aakash Shrivastava, Epidemiology Division, NCDC)

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**Sixth Independent Appraisal Mission Assesses Yaws Eradication in India**

The sixth independent appraisal of the Yaws Eradication Programme (YEP) was undertaken in two phases from 7th to 15th May 2014 and 17th to 26th June 2014 with the objective to assess the various activities of YEP.

During these two phases, sixteen teams of experts visited sixteen districts of all ten states under YEP. Each team comprised an independent expert, a representative from the WHO country office, an NCDC officer, a state/district representative and a dermatologist from the district. In phase I, eight teams visited Assam, Chhattisgarh (3 teams), Jharkhand, Gujarat, Madhya Pradesh and Maharashtra. In the phase II, eight teams carried out the appraisal in Andhra Pradesh (2 teams), Orissa (3 teams), Tamil Nadu (2 teams), and Uttar Pradesh.

The Mission held discussions with health officials, reviewed records, visited medical colleges, district hospitals, CHC/PHC and sub-centres, identified villages, and interacted with community members. The teams verified cases if any and reviewed results from sero-surveys carried out at the field level.

The teams recommended that as no new case had been detected in the past 10 years despite continuous active search and monthly reporting from health facilities, review meetings, independent appraisals and no sero-positivity in 1- to 5-year-old children, the country should request for an eradication certification from the WHO. The teams also recommended that sero surveys be discontinued. However, IEC activities including awareness about cash incentives may be intensified until the certification process is completed.

(Contributed by Dr SK Jain, DPD, NCDC)
Progress in Implementation of New Programmes

National Programme on Prevention and Control of Viral Hepatitis In India under the 12th Five Year Plan (2012–2017)

The State Finance Commission (SFC) has been approved for the 12th Five Year Plan (2012–2017) with an allocated budget of Rupees 30 crores. Activities include training and capacity building of professionals in relevant sectors, finalization of the prevention, control and treatment guidelines for viral hepatitis, development of IEC for providers and the community, as well as the establishment of baseline data for hepatitis to assess the impact of the programme.

Current Status

The first meeting of the Expert Working Group was conducted at NCDC Delhi to develop treatment guidelines for various types of viral hepatitis, which is under finalization.

The first meeting of Expert Working Subgroup (IEC) was conducted at NCDC, Delhi in April 2014 to develop strategies for IEC and training modules on various types of hepatitis. A decision was taken to also prepare a handbook on safe injection practices.

The “Handbook on Safe Injection Practices on Viral Hepatitis” was released on 30th July on the annual day of NCDC by Dr Jagdish Prasad, Director General of Health Services (DGHS). On this occasion NCDC also developed fact sheets on hepatitis A, B, C and E.

The first draft of the Prevention, Control and Treatment Guidelines was developed.

A Memorandum of Understanding (MoU) was signed by the two medical colleges (Sher-I-Kashmir Institute of Medical Sciences, Srinagar and Madras Medical College, Chennai) following which surveillance activities are in the process of being initiated.

Two more medical colleges are in the process of signing MoUs.

(Contributed by Dr Shashi Khare, Microbiology, NCDC)

National Programme on Containment of Anti-Microbial Resistance under the 12th Five Year Plan (2012–2017)

The SFC has been approved for the 12th Five Year Plan (2012–2017) with an allocated budget of Rupees 30 crores vide Office Memorandum No. T-14018/02/2013-PH-II, dated 23rd October, 2013.

Activities to be Undertaken

Surveillance for containment of antimicrobial resistance in various geographical regions.
Rationale use of antibiotics.
Development and implementation of national infection control guidelines.
Training and capacity building of professionals in relevant sectors.
IEC for dissemination of information about rational use of antibiotics.
Development of a national repository of bacterial strains/cultures.

Current Status

Two separate groups — the Expert Working Group and the Steering Committee — have been constituted under the chairmanship of the DGHS for programme implementation.

In the first phase of the programme, 10 medical college laboratories were identified and MoUs were signed between these colleges and the NCDC, following which funds transfer from MOH&FW’s Integrated Finance Division is underway.

Two meetings of the Expert Working Group were held during February and March 2014 regarding a common unified national treatment guidelines for different infectious diseases that is in the process of finalization. This could serve as a guide to all the hospitals to formulate their own guidelines on basis of which physicians would be trained.

Awareness guidelines are under preparation.

The laboratory network will be expanded in a phased manner to include another 20 medical college laboratories for a 30-laboratory network.

(Contributed by Dr Shashi Khare, Microbiology, NCDC)
Programme for Prevention and Control of Leptospirosis

A Programme for Prevention and Control of Leptospirosis under the 12th Five Year Plan (2012–2017) with a total budget allocation of Rupees 3.753 crores is being implemented in 6 endemic states and Union Territories, viz. Gujarat, Maharashtra, Karnataka, Tamil Nadu, Kerala and Andaman & Nicobar Islands. The main objective of the programme is reduction in morbidity and mortality due to leptospirosis.

An MoU has been signed with 5 states and the process of releasing funds has been initiated. An Expert Group Meeting was organized to develop operational guidelines for the implementation of the programme and the same is being finalized.

(Contributed by Dr Veena Mittal, Zoonosis, NCDC)

National Rabies Control Programme

The MoHFW has approved the National Rabies Control Programme under the 12th Five Year Plan which includes both human and animal health components with a total allocation of Rupees 50 crores. The objective of the programme is to reduce human deaths due to rabies and to cut down transmission in dogs. The NCDC is the nodal centre to co-ordinate the implementation of human health components. The strategy tested for preventing human deaths due to rabies under the Eleventh Plan was found to be effective, feasible and implementable; and it is being rolled out throughout the country. An MoU has been signed with 9 states and the process of releasing funds has been initiated. A total of 12 states have identified nodal officers. An Expert Group Meeting was held to develop operational guidelines for implementation of the programme and the same is being finalized. The “National Guidelines on Rabies Prophylaxis” has been uploaded on the NCDC website.

The Animal Welfare Board of India (AWBI), Ministry of Environment and Forests is the nodal centre to coordinate the implementation of the animal health component. The strategy consisting of dog population surveys, training of veterinarians and para-veterinarians, mass vaccination of dogs and animal birth control will be implemented in a phased manner. It is initially being pilot tested in Haryana state and Chennai city. An MoU has been signed with AWBI and Rupees 70 lakhs were transferred during 2013–2014 to carry out various activities. Dog census has been initiated in the Haryana.

(Contributed by Dr Veena Mittal, Zoonosis, NCDC)

Table Top Exercise for the Strategic Health Operations Centre (SHOC)

A team of experts from CDC, Atlanta visited NCDC during May 2014 for a 2nd round of the Table Top Exercise and dummy exercise workshop; following the 1st round of Table Top Exercise held in February 2014. EIS officers along with identified SHOC staff and NCDC faculty members participated in this workshop.

During the practice exercise, issues with activation levels and triggers were identified. The Infectious Disease Outbreak Plan (IDOP) was revised so that the activation levels corresponded with the NCDCs ability to staff the SHOC and triggers were more clearly defined. Incident Response System (IRS) staff positions were identified as needing Job Action Sheets and Activity Checklists. The IRS organizational structure chart was updated and included in the latest version of the IDOP. Further, a dummy exercise for SHOC activation during acute encephalitis syndrome and Crimean Congo hemorrhagic fever (CCHF) was practiced with the IRS staff members.

(Contributed by Dr Pradeep Khasnobis and Ms Pallavi Luthra, IDSP, NCDC)
The India EIS Officers Visit CDC, Atlanta and Attend EIS Conference

The 63rd EIS conference held in Atlanta from 28th April to 1st May 2014 was attended by 800 participants including the current and incoming (78 of them) EIS officers, EIS alumni, CDC faculty, selected Field Epidemiology Training Programme candidates from around the world, and state epidemiologists. The EIS Conference provides a forum that showcases the life-saving work conducted by current EIS officers in the form of outbreak investigations and epidemiological analysis carried out domestically and overseas.

The Conference highlighted presentations made either in plenary or 26 parallel sessions in two halls, covering public health topics, such as antimicrobial use and resistance, vaccine preventable diseases, zoonosis, TB, STD/HIV, foodborne diseases, vector-borne diseases, hepatitis (all communicable diseases), as well as chronic disease prevention, environmental health, injury prevention, occupational safety and health, maternal, child and adolescent health, and global health. Around 105 oral presentations and 24 poster presentations were made primarily by the EIS officers.

Overall, the presentations by the current EIS officers were of high quality, well prepared and rehearsed, each following a uniform format, presenting new and relevant data on a problem of topical public health importance, backed by latest and modern laboratory techniques such as genetic and molecular studies. Each presentation was of 10-minute duration followed by 10 minutes of discussion. The moderators kept strictly to the time. The presentations were found to be extremely useful by the India EIS officers, who benefited greatly from the experience to make their presentations equally clear, concise and compelling.

During the International night on the 30th April, oral presentations were made by six representatives of different FETPs around the world. India EIS officers, namely by Dr Yogita Tulsian and Dr Tripurari Kumar contributed in the form of posters on cholera outbreak in Maharashtra and viral hepatitis in Punjab, respectively.

During and following the conference, there were opportunities to meet with CDC officials and other partners to discuss areas of collaboration, such as the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET), the Carter Center, CDC Foundation. The EIS officers met with CDC colleagues from different divisions and branches including hepatitis, vector-borne diseases, cancer, birth defects, and also visited the Emergency Operations Center, the GDD Overseas Operations Center and the Georgia Public Health Laboratory.

(Contributed by Dr Jai P Narain, NCDC)

One-Week Epidemiology Training Conducted in Mumbai

NCDC in collaboration with the GDD-IC and the Department of Health Services, organized a one-week epidemiology training course for public health officials serving either the health department or medical education institutions in Maharashtra, Gujarat, Goa and Andhra Pradesh. The course was held during the third week of May 2014 at the Family Welfare Training & Research, Mumbai. Dr Anil Kumar and Dr Ruchi Jain from NCDC and Dr Kayla Laserson and Dr RL Ichhpujani from CDC trained over 24 participants from Maharashtra, Gujarat, Goa and Andhra Pradesh in field epidemiology competencies and skills. The course consisted of Epi info, didactic lectures, case studies, and field exercises that helped the trainees practice skills needed to analyse and interpret data usually collected during their routine public health service, and make them useful for action. The participants were also informed about the India Epidemic Intelligence Service (EIS) Programme. A few participants showed keen interest to take up this full 2-year training at NCDC, Delhi.

(Dr Anil Kumar, Epidemiology Division, NCDC, Ms Pallavi, GDD-IC)
India EIS Programme Recruits its 3rd Cohort

As a result of the recruitment announcement made in the newspapers, and numerous advocacy visits, 87 individuals, both state-sponsored and self-sponsored, applied for the 3rd India EIS (Epidemic Intelligence Service) cohort. Interviews were held from 30th June to 1st July at NCDC and the best 22 candidates were selected via a competitive process. Of these, 15 are being sponsored by their state, 1 will be sponsored centrally, 2 state candidates are attending as self-sponsored, and 4 are self-sponsored candidates.

EIS is a unique, competency-based, 2-year training programme on epidemiology where EIS officers learn epidemiology by applying epidemiological principles and methods in real time under the guidance of an experienced and technically competent mentor. Following the inception course lasting 4 weeks during September/October, these EIS officers will be placed in national programmes, state health departments, or non-governmental organizations through a process of matching.

(Contributed by Dr Jai P Narain, NCDC and Dr Kayla Laserson, CDC)

Regional Training for State Epidemiologists from the North East

The Integrated Disease Surveillance Project (IDSP) conducted a two-day regional training of state epidemiologists, data managers and finance consultants for the north-eastern states (Assam, Nagaland, Tripura, Manipur, Mizoram Meghalaya, Arunachal Pradesh and Sikkim) on 31st July and 1st August 2014 at the State Surveillance Unit (SSU), Assam. A total of 51 participants from all north-eastern states attended the training. Dr Megha Khobragade, Dy. Director from the Central Surveillance Unit (CSU), Mr Ajay Kumar, an IT consultant, and Mr Amit Mittal, a finance consultant were the resource persons for the training. The trainees were trained on weekly data reporting, data analysis and report generation on the IDSP portal, investigation of outbreaks and writing the final outbreak report, as well as on finance.

(Contributed by Dr Megha Khobragade, IDSP, NCDC)

Forthcoming Conferences/Meetings

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<th>2nd India EIS Conference, NCDC</th>
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<tr>
<td>Theme: Emerging Public Health Challenges in India</td>
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<tr>
<td>Dates: 11, 12 and 13 September, 2014</td>
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<tr>
<td>Venue: NCDC, Delhi</td>
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<td>Contact: EIS Conference Secretariat</td>
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<td>email: <a href="mailto:eisindiacon@gmail.com">eisindiacon@gmail.com</a></td>
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<td>Dates: 10-12 October, 2014</td>
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<tr>
<td>Venue: Goa, India</td>
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<tr>
<td>Contact: Organising General Secretary C/o National Institute of Malaria Research (ICMR), Field unit DHS, Campal Panaji, Goa 403001</td>
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<tr>
<td>Venue: Indian Public Health Association (IPHA), 110, Chittaranjan Avenue, Kolkata 700073</td>
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<tr>
<td>Contact: Congress Secretariat: KW Conferences Pvt. Ltd. A 56/12, DLF Phase 1, Gurgaon 122002, India.</td>
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**News and Events**

**Ebola is a Global Public Health Emergency: WHO**

On 8th August 2014, the WHO declared the Ebola outbreak in West Africa a Public Health Emergency of International Concern (PHEIC) under the International Health Regulations (IHR, 2005). This was based on the recommendation of the Emergency Committee which deliberated on the issue during 6th–7th August.

The current Ebola Virus Disease (EVD) was reported in Guinea in December 2013, and since then the virus has been spreading in an unprecedented manner. The Emergency Committee advised that: the Ebola outbreak in West Africa constituted an ‘extraordinary event’ and a public health risk to other states; the possible consequences of further international spread are particularly serious in view of the virulence of the virus, the intensive community and health facility transmission patterns, and the weak health systems in the currently affected and most-at-risk countries; and that the situation requires a coordinated international response in order to stop and reverse the international spread of the virus.

At present, this largest EVD outbreak ever recorded is in Guinea, Liberia, Nigeria and Sierra Leone with 1,779 reported cases (1,134 confirmed, 452 probable, 193 suspect), and 961 deaths as of 8th August 2014.

The outbreak is being monitored closely by WHO along with US CDC. The number of cases and deaths has doubled over the past month, with a surge in the number of new cases and spread to urban areas.

The speed with which the virus is spreading and causing deaths, with no available vaccine or treatment, is a cause for much concern.

Populations-at-risk include health-care workers caring for suspected cases and close contacts, such as family members.

Priority intervention should be augmenting surveillance including contact tracing. Countries need to establish laboratory diagnostic capacity; rapid response teams with the capacity to investigate and manage EVD cases and their contacts; and ensure that health-care workers are aware of and trained in appropriate procedures for universal precautions.

Interventions need to be targeted at two levels:
(i) in health-care setting to ensure isolation of suspected cases, strict adherence to infection control practices, etc.; and (ii) in the general population with regard to education of and awareness creation among the community including international travelers and precautions to protect themselves and others.

**Hike in tobacco taxes**

The Government in its budget unveiled on 10th July 2014 has imposed a major hike in taxes on cigarettes, chewing tobacco products, and unmanufactured tobacco, to clamp down on tobacco use. The increase in excise duty of 11%–72% for different types of cigarettes is the steepest in a decade. This across-the-board increase in tax on tobacco products is the direct result of advocacy from the MoHFW especially the Health Minister himself.

This policy initiative is being widely welcomed by the public health community in the country as nearly 1 million deaths in India each year are attributable to tobacco-related diseases. The death toll is set to rise as the absolute number of male smokers is rising — from 83 million in 1998 to 105 million in 2010 as per Centre for Global Health Research in 2013 and as quoted in the Lancet recently. Young men aged 15–24 years account for the largest proportion of the increase.
New Immunization Initiatives in India

The Indian government is going to shortly introduce four new vaccines — rotavirus, rubella, polio (injectable) and Japanese encephalitis (JE) — in the national immunization programme, which will provide free vaccines against 13 life-threatening diseases to 27 million children annually. These vaccines will collectively expedite India’s progress in meeting the Millennium Development Goal 4 targets to reduce child mortality by two-thirds by the year 2015 and meet global polio eradication targets. The JE vaccine would be available for adults in 179 districts in nine states where the disease is highly prevalent. Along with the recent introduction of the pentavalent vaccine, this decision represents one of the most significant policy leaps in 30 years in public health, preventing at least one lakh infant deaths, deaths of adults in the working age group and up to 10 lakh hospitalizations each year.

Diarrhea caused by rotavirus kills nearly 80,00,000 children each year and results in up to 10 lakh hospitalizations, pushing many Indian families below the poverty line while rubella causes severe congenital defects in newborns. The injectable polio vaccine (IPV) is being introduced in 125 countries in a globally synchronized manner. India was certified as polio-free in March 2014 and the introduction of IPV in addition to the oral polio vaccine (OPV) will provide long lasting protection to the population against the virus. The recommendations to introduce new vaccines were made by the National Technical Advisory Group of India (NTAGI), the country’s apex scientific advisory body on immunization.

The introduction of four new lifesaving vaccines will play a key role in reducing childhood and infant mortality and morbidity in the country. Strengthening of routine immunization programmes is an essential investment for India’s children and will ensure a healthy future for the country.

India in the Global Health Security Meeting, Helsinki (Finland), 5th-6th May, 2014

The India delegation led by Secretary (H&FW), MoHFW attended the Global Health Security (GHS) Agenda Commitment Development meeting at Helsinki, Finland on 5th–6th May, 2014. Dr LS Chauhan, Director, NCDC and Dr P Ravindran, Director (Emergency Medical Relief) from the DGHS were other members of this delegation. The meeting had representatives from 35 countries, UN agencies (WHO, FAO, World Organization for Animal Health (OIE)) and the European Union.

Hosted jointly by the Government of Finland and Government of USA, the objective of the meeting was to advance measurable progress on the nine objectives of the GHS. To accelerate such progress, the meeting deliberated on action packages around three thematic areas of ‘prevent’, ‘detect’ and ‘respond’. All countries were supportive of implementing these action packages as part of the International Health Regulations (IHR), 2005. The participants agreed in principle that the GHS agenda and specific action packages cited under the three thematic areas is a way forward to accelerate implementation of the IHR.

WHO releases guidelines for screening, care and treatment of hepatitis C infection

Much progress has been achieved in the treatment of hepatitis C infection as evidenced by availability of antivirals such as boceprevir and telaprevir and from the results of two phase 3 trials of simeprevir.

Hepatitis remains a significant public health challenge and reducing the burden of disease caused by chronic HCV infection is a priority including in India. This requires, firstly identifying the individuals with undiagnosed infection, and secondly to provide them access to care. Toward these aims, WHO in April 2014 issued its first ever guidance for the screening, care, and treatment of people with chronic HCV infection.

However, the cost of treatment at present is too high and beyond the reach of most people with chronic HCV infection who reside in countries with insufficient resources.

A major effort is required to make these treatments affordable, safe and accessible for individuals in developing countries who desperately need the treatment.

How Can Mobile Phones Save Lives

According to the World Bank, three quarters of people in the world have access to a mobile phone. There are now at least 6 billion mobile phone subscriptions, up from 1 billion in the year 2000. Of these 5 billion are in developing countries. In India, the mobile user base is expected to grow to 815 million in 2014 from 755 million connections in 2013; there are more people having access to a mobile phone than a toilet.

The question now is with growing density and reach, can mobile phones help save lives or can they make a difference in public health? As mobile phones have become commonplace in the country, the field of ‘mHealth’ (mobile health) has emerged as a priority area. mHealth programmes can connect remote communities with health-care services and expertise.

The advantages of using mobile phones in health care are manifold. Health messages and reminders can be made available to larger and geographically diverse populations and can be customized if required. Also, with increasing availability of mobile telephones in resource-constrained settings, the cost-effectiveness of using mobile telephones in health care is likely to increase.

There are of course a number of ways by which mobile phones can be used in preventing disease, improving adherence to treatment and response to therapy, in surveillance and outbreak reporting and containment, facilitating access to care during emergencies, and in supporting health services in remote and inaccessible areas. There are many examples of this already happening in the field in India.

Disease prevention and treatment

A recent study carried out in Chennai demonstrated the effectiveness of mobile phone messaging in prevention of type 2 diabetes by lifestyle modification in men. In a prospective, parallel-group, randomized controlled trial published in Lancet Infectious Diseases by Ambady Ramachandran et al., the participants in the intervention group received frequent lifestyle modification advice messages on their mobile phone compared with controls who received standard lifestyle modification advice at baseline only. After follow up, the cumulative incidence of type 2 diabetes was found to be lower in those who received mobile phone messages than in controls, demonstrating thereby that mobile phone messaging is an effective and acceptable (and inexpensive) method to deliver advice and support towards lifestyle modification to prevent type 2 diabetes in men at high risk.

Another innovative use of text messages is in HIV prevention, by helping young people access information about the disease, and promoting adherence to antiretroviral therapy (ART) in patients with HIV infection. According to Sharma and Agarwal, who carried out a Cochrane review aimed to compare the effect of using mobile text messaging as an intervention for improving adherence to ART and better viral load control, there is high-quality evidence in favour of effectiveness of text messages of any length in order to attain the above goals. ART adherence is only one of many modifiable health behaviours that can be targeted through the use of mobile phones. High rates of adherence to medications...
have been reported in patients opting to receive text messages as medication reminders.

**Improving efficiency in disease surveillance and outbreak response**

Mobile phones can also be used in data collection, analysis of large pools of data and to ensure data quality, which can be used for planning and policy development in an efficient manner. By reducing the amount of time spent on paperwork, it allows health-care workers to spend more time in providing care and treatment. Such an approach leads to an informed planning process at all levels of government, and increases the likelihood of resources being properly allocated. Programmes can be monitored in real time, providing updates on whether or not performance goals are being met, and identifying areas requiring greater degree of support.

In addition, mobile phones can now be used to track disease incidence and alert officials in case of disease outbreaks in an area or among a population group, for seeking rapid action. When combined with GPS capabilities, mobile phone technologies can also be used to create spot maps or ‘disease hot-spots’, identifying areas requiring additional support.

**Supporting health services in remote areas**

Health-care workers in remote and inaccessible areas such as border areas with limited health facilities, can use mobile phones to contact medical specialists in a central facility and seek guidance in diagnosis and treatment especially relating to critical health issues. This helps field workers determine what is treatable in the field and identify patients who may need to be taken to a hospital. These technologies increase the likelihood of accurate diagnosis and treatment suggestions, while reducing the burden on health-care workers with limited training and limited access to local medical professionals. Mobile phones with a high resolution camera can be used to send images to assist in diagnosis.

**Mobile phones can save lives in emergencies**

The proliferation of mobile phone users in the community means that emergency services can be notified quickly in the event of an accident improving their response time.

In a study published in the Journal of Emergency, the authors concluded that use of mobile phones to alert emergency services in a life-threatening situation is associated with improved mortality rates at the scene in patients with medical problems, and a lower likelihood of admission to the emergency department.

Clearly, the use of mobile phones has the advantage of immediacy of access, particularly in road traffic incidents or when a pregnant woman living in a rural area (where landlines are unlikely to be readily available) needs to call for help in case of difficult or complicated labor.

These examples show the huge potential of mobile phones in saving lives and improving quality of life in the country. All efforts are needed for making mHealth a priority, such as carrying out studies and pilots to better understand how mobile phones can be better used to serve people.

*(Compiled by Dr Jai P Narain, NCDC)*

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<th>Mark Your Calendar</th>
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<td><strong>World Breastfeeding Week</strong></td>
<td>1st to 7th August, 2014</td>
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<td><strong>World Heart Day</strong></td>
<td>28th September, 2014</td>
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<td><strong>National Nutrition Week</strong></td>
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Since 2008, the World Health Organization (WHO) has coordinated the Global Rotavirus Surveillance Network, a network of sentinel surveillance hospitals and laboratories that report to ministries of health (MoHs) and WHO clinical features and rotavirus testing data for children aged <5 years hospitalized with acute gastroenteritis. In 2013, WHO conducted a strategic review to assess surveillance network performance, provide recommendations for strengthening the network, and assess the network’s utility as a platform for other vaccine-preventable disease surveillance. The strategic review team determined that during 2011 and 2012, a total of 79 sites in 37 countries met reporting and testing inclusion criteria for data analysis. Of the 37 countries with sites meeting inclusion criteria, 13 (35%) had introduced rotavirus vaccine nationwide. All 79 sites included in the analysis were meeting 2008 network objectives of documenting presence of disease and describing disease epidemiology, and all countries were using the rotavirus surveillance data for vaccine introduction decisions, disease burden estimates, and advocacy; countries were in the process of assessing the use of this surveillance platform for other vaccine-preventable diseases. However, the review also indicated that the network would benefit from enhanced management, standardized data formats, linkage of clinical data with laboratory data, and additional resources to support network functions.