In today’s globalized world, new health risks and challenges have emerged. Any country in the world today is as safe as the weakest link in the chain. International cooperation in the area of health has assumed centre-stage. The sixth BRICS Health Ministers meeting was held in Delhi in December 2016 presided over by Hon’ble Union Minister of Health & Family Welfare Sh J P Nadda. Highlights of the meeting are covered in this issue of NCDC newsletter.

There has been increase in international travel between yellow fever (YF) endemic countries and India. Government of India follows strict measures for prevention of YF importation into the country. This is highlighted in the lead story on epidemiology of YF and India’s response strategy. The outbreak section showcases a systematic ADD outbreak investigated by EIS Officers in UP and an entomological investigation of outbreak of febrile illness in Rajasthan. I hope you enjoy going through the newsletter. I look forward to any feedback from you.
Delegates at the BRICS Health Minister’s Meeting

Recalling the Declarations and Communiques jointly issued by BRICS Health Ministers and Member States meetings in Beijing, Delhi, Capetown, Brasilia, Moscow and Geneva, Shri Nadda said that these joint statements are our pillars of strength and a guide to our future work together. “Our efforts have found support from our Heads of State or Governments. We are happy at the acknowledgement of the renewed commitment to health by the BRICS leaders as expressed in the Goa Declaration of October 2016,” Shri Nadda elaborated.

Highlighting the gains made by India, Shri Nadda said that India has achieved substantial improvements in human development index and impressive gains in health in the past several years. The Union Health Minister further stated that In 2016 India celebrated five years since the last case of wild polio was reported. WHO headquarters confirmed India’s claim of yaws free status in 2016. WHO has validated the elimination of maternal and neonatal tetanus in 2015 from India. Cases of kala-azar declined by 11% in 2015 from 2014, and 78% since 2006. Leprosy has been eliminated in 84% of all districts.

Enumerating the areas of mutual cooperation, Shri Nadda said that the threat of Non-Communicable Diseases is dangerous for our countries since they not only result in premature deaths and disabilities, but are also responsible for low productivity, losses in economic growth and high health-care costs. NCDs are also a major barrier to the achievement of Sustainable Development Goals relating to reduction in poverty, improvement of maternal and child health, child mortality as well as in control of AIDS, tuberculosis and malaria. “We

“BRICS gives us an important platform to collaborate in healthcare, in an environment of mutual trust & co-operation”

Sh J P Nadda, Hon’ble Union Minister of Health & Family Welfare
must, therefore, renew our resolve and commitment to fight NCDs together on the BRICS platform, through innovative strategies,” Shri Nadda expounded Shri Nadda urged the BRICS for adoption of the TB cooperation plan. “I would also urge that we agree to create a research consortium on TB, HIV/AIDS and Malaria,” Shri Nadda added. The Health Minister also proposed to convene a UN High-Level Meeting on TB at United Nations Headquarters, within the overall framework of Universal Health Coverage and the 2030 agenda for sustainable development.

A high level meeting on traditional medicinal knowledge was also held on 16 December 2016. This meeting discussed the way forward for bilateral and multi-lateral collaboration on Protection of Genetic Resources/Traditional Knowledge/Traditional Cultural Expressions at International Forum, mutual recognition of Pharmacopeia, practice and practitioners and import/export of traditional/alternative medicines etc.

The Ministers acknowledged the renewed commitment to health by the BRICS leaders as expressed in the Goa Declaration of October 2016, noted the progress made since the first BRICS Summit and resolved to continue cooperation in the sphere of health through the Technical Working Groups and the "BRICS Framework for Collaboration on Strategic Projects in Health".

The Ministers welcomed the recommendations made in the BRICS workshop on drugs and medical devices in Goa, India in November 2016, including the need for concluding a Memorandum of Understanding on regulatory collaboration with a view to improving the regulatory standards, certification and systems for medical products

They agreed to constitute a working group, to work on strengthening regulatory systems, sharing of information, appropriate regulatory approaches in case of international and national health emergencies and provide recommendations for the promotion of research and development of innovative medical products (drugs, vaccines and medical technologies).

The Ministers adopted the BRICS TB Cooperation Plan and supported the recommendations made by the BRICS workshop on HIV and Tuberculosis, held in Ahmedabad, India in November 2016, including the need for the suggested political, technical and financial actions to address the public health challenges of TB and HIV among BRICS countries.

They agreed to set up a BRICS network on TB Research and creation of a research and development consortium on TB, HIV and Malaria. The Ministers agreed to support the Global Ministerial Conference on the fight against TB to be held in Moscow in 2017 and the UN High-Level Meeting on TB at United Nations Headquarters in 2018.

They also welcomed the recommendations of the BRICS Workshop on “Strengthening Health Surveillance: System and Best Practices” held at Bengaluru, India in August 2016. The Health Ministers appreciated India for a successful organization of the seventh session of the Conference of the Parties to the WHO Framework Convention on Tobacco Control, in November 2016. They also acknowledged that Anti-Microbial Resistance (AMR) is a serious global public health issue and emphasized the need to implement the WHO’s Global Action Plan on AMR and National Plans in this regard.

Also present on the occasion were, distinguished delegates from Brazil, China, Russia and South Africa, Senior Officers from the Ministry of Health & Family Welfare and from the Ministry of AYUSH, and other representatives from the development partners.

(Extracted for Press Information Bureau of India)
Epidemiology of Yellow Fever and India’s response strategy for its prevention

Yellow fever (YF) disease, caused by an arbovirus, is transmitted to human by mosquitoes. Forty seven countries in Africa (34) and Central and South America (13) are either endemic for, or have regions that are endemic for YF.

In the recent years there has been increase in the international travel between YF endemic countries and India which is likely to increase further. Africa poses a substantial risk for YF importations into Asia. Consequences of YF importation in the Asia-Pacific region can be grave. The recent YF cases imported to China from an Angolan outbreak suggests that not all travellers were effectively vaccinated despite Chinese public health regulations.

YF has never been reported in India, but all the conditions that favour its establishment – presence of vector, Aedes aegypti and its infestation in urban regions, non-human primates, low levels of population immunity, large human population movements including frequent international air travel, and high density urban settlement – are present. Although, there is no specific treatment, YF vaccination provides effective protective immunity against YF disease. 99% of the persons vaccinated develop antibodies in 10 days.

Government of India is following strict measures for prevention of YF importation into the country; YF vaccination, surveillance of international traveller at international points of entry (Airports, Sea ports, Ground Crossings), quarantine and isolation, integrated vector borne disease control programme, etc.

Epidemiology of Yellow Fever

Yellow fever is caused by an arbovirus (Flavivirus) which is transmitted to humans by the bites of infected mosquitoes Aedes and Haemogogus mosquitoes. Case fatality rates for reported cases are in the order of 15 to 50%.

There are three types of transmission cycle

1. Sylvatic (or jungle) cycle: Involves transmission of the virus between non-human primates (e.g., monkeys) and mosquito species found in the forest canopy. The infected mosquitoes bite humans entering the forest resulting in sporadic cases of yellow fever, usually in young men working in the forest (e.g. loggers). Sylvatic YF is the type most commonly seen in Central and South America.

2. Intermediate (Savannah) cycle: In humid or semi-humid parts of Africa, intermediate cycle exists that involves transmission of virus from mosquitoes to humans living or working in jungle border areas. In this cycle, the virus can be transmitted from monkey to human or from human to human via semi-domestic mosquitoes (that breed in the wild and around households). Intermediate transmission usually results in sporadic cases occurring simultaneously in different villages in the same area.

3. Urban cycle: Involves transmission of the virus between humans and urban mosquitoes, primarily Aedes aegypti. The virus is usually brought to the urban setting by a viremic human who was infected in the jungle or savannah. It results in large epidemics which occur when infected people move to densely populated areas where the local population has little or no immunity to YF and where Aedes aegypti is active. Infected mosquitoes transmit the virus from person to person.

In sub-Saharan Africa, YF is a major public health problem occurring in epidemic patterns.
Transmission can occur at altitudes up to 2300 metres in the Americas and possibly higher in Africa. Countries or areas where the yellow fever virus is present far exceed those officially reported. Regions of the world outside the YF endemic zone infested with Aedes aegypti and thus receptive to the introduction and spread of the disease include coastal areas of South America, Central America, the Caribbean, the southern USA, South Africa, India, Southeast Asia, Australia (Queensland), Southern China, Taiwan, and the Pacific Islands.

YF has not been able to get a foot hold in Asia. Possible explanations for absence of the disease in Asia are as follows:

1. Lower Susceptibility of Aedes aegypti to Yellow fever in Asia.
3. Dengue virus and other arbo-viruses may out-compete YFV with Ae aegypti.
4. Late introduction of Ae aegypti into Asia.
5. Preventive vaccination, conveyance disinsection, vector control, surveillance and quarantine measures at point of entries (to a limited extent in mitigating the risk)

DISEASE IN HUMANS

It can be recognized from historic texts stretching back 400 years. YFV almost certainly originated in Africa. Its initial spread to Central and South America, along with Ae aegypti, was a consequence of the trans-Atlantic slave trade.

YF has caused devastating epidemics in Europe, Africa, South, Central and North America in the past. The development of the live attenuated 17D vaccines in the 1930s was a turning point in the history of the disease. Successful attempts to control yellow fever through compulsory immunization took place in the beginning of the 20th century through mass vaccination campaigns in Africa and America. Discontinuation of routine YF vaccine immunization of children in 1960–1961 in African region led to resurgence of Yellow fever. No urban YF has been reported in Central or South America since 2008.

A yellow fever outbreak was detected in Luanda, Angola late in December 2015. In Angola the total number of notified cases has increased since early 2016. As of 17 June 2016 a total of 3294 suspected cases have been reported, of which 861 are confirmed. As of 20 June 2016, 59 cases were imported to Democratic Republic of The Congo (DRC), from Angola.

Two additional countries have reported confirmed yellow fever cases imported from Angola: Kenya (two cases) and People’s Republic of China (11 cases). These cases highlight the risk of international spread through non-immunised travellers. Six countries (Brazil, Chad, Colombia, Ghana, Peru and Uganda) are currently reporting yellow fever outbreaks or sporadic cases not linked to the Angolan outbreak.

For people who are residing in India and are visiting endemic areas or people who reside in areas where there is no transmission of yellow fever and are coming to India via endemic areas, need to have re- vaccination every ten years.

This is based on the fact that there is not enough evidence of lifetime immunity conferred upon by single dose of YF vaccine, among people residing in areas where there is no yellow fever transmission.

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Natural History of Disease

Infection with the YF virus can be asymptomatic or cause a wide spectrum of disease, from mild symptoms to severe illness with bleeding, jaundice and, ultimately, death. Physical symptoms usually appear 3–6 days after a bite from an infected mosquito, in one or two phases. People infected with yellow fever virus are infectious to mosquitoes (referred to as being "viremic") shortly before the onset of fever and up to 5 days after onset. The first, "acute", phase is abrupt, causes fever, muscle pain with prominent backache, headache, shivers, loss of appetite, and nausea or vomiting. Congestion of the conjunctivae and face are common, as well as relative bradycardia in the presence of fever. The patient is usually viraemic during this period, which lasts for approximately 3–6 days.

Approximately 15% of infected patients enter a second, more toxic phase within 24 hours of the initial remission. Symptoms include fever, nausea, vomiting, epigastric pain, jaundice, renal insufficiency, and cardiovascular instability. A bleeding diathesis can occur causing gastrointestinal bleeding, haematuria, skin petechiae, ecchymoses, epistaxis, and bleeding from the gums and needle-puncture sites. Physical findings include scleral and dermal jaundice, haemorrhages at different sites and epigastric tenderness without hepatic enlargement. The haemorrhagic manifestations are caused by reduced synthesis of clotting factors as well as by a consumptive coagulopathy. About 20%–50% of patients with hepato-renal failure die, usually 7–10 days after the onset of disease. Patients surviving YF may experience prolonged weakness and fatigue, but healing of the liver and kidney injuries is usually complete.

Immunity following Natural Infection

YF virus induces a rapid immune response with IgM antibodies appearing during the first week after infection. IgM antibody levels peak during the second week, then decline over the next 1–2 months but may last for several years. Therefore, the presence of IgM antibodies may not always represent evidence of recent infection. Specific IgG neutralizing antibodies, the principal mediators of protection, appear at the end of the first week and persist for at least 35 years or for the entire lifespan. Wild-type YF virus induces lifelong protection against subsequent infection.

Yellow fever vaccination is carried out for 3 reasons:
1. To protect populations living in areas subject to endemic and epidemic disease;
2. To protect travellers visiting these areas; and
3. To prevent international spread by minimizing the risk of importation of the virus by viraemic travellers.

DIAGNOSIS

Molecular tests are done on serum (RT-PCR or Conventional PCR) or blood (only conventional PCR) sample to detect antigen during early phase (5-10 days) of illness. 3-4 ml of blood sample is collected in EDTA vial (for blood sample) or plain vial (for serum). Sample is packed using triple layer packing and is transported within 24 hours while maintaining cold chain (4-8 degree C). In case the transportation takes more than 24 hours, sample is frozen using dry ice. Reference laboratories for yellow fever testing in India are located at NCDC Delhi, KIPIM Chennai, NICED Kolkata, NIV Pune, NIV Field Unit, Bangalore and NIV Field Unit, Alappuzha.

TREATMENT

There is no specific treatment for yellow fever, only supportive care to treat dehydration, respiratory failure, and fever.

PREVENTION

A. Vaccines

All the current commercially available YF vaccines are live attenuated viral vaccines from the 17D lineage, developed more than 80 years ago by empirical passage in tissue culture, principally chicken embryo. Lyophilized vaccine should be stored and kept at 2–8 °C and reconstituted immediately before use with the
sterile diluent provided by the manufacturer. After reconstitution, most YF vaccines should be kept on ice, protected from sunlight, and discarded after 1–6 hours or at the end of the vaccination session, whichever comes first. YF vaccines are given as a single dose (0.5 ml) and the manufacturers recommend that the vaccine be injected subcutaneously (or intramuscularly). Protection appears to last at least 20–35 years and probably for life. As per SAGE (WHO), a single dose of YF vaccine is sufficient to confer sustained life-long protective immunity against YF disease among those individuals who are residing in endemic areas. 

Serious adverse events following immunization (AEFI) with YF vaccine fall into 3 categories:

1. Immediate severe hypersensitivity or anaphylactic reactions.
2. YF vaccine-associated neurologic disease (YEL-AVD)- A group of neurologic conditions (meningitis, encephalitis, autoimmune reaction resulting in conditions such as Guillain-Barre syndrome or acute disseminated encephalomyelitis) has been reported in infants under 6 months of age and in vaccine recipients aged ≥ 60 years.
3. YF vaccine-associated viscerotropic disease (YEL-AVD) - Onset is within 10 days of vaccination and the pathological process is characterized by severe multi-organ failure and an overall case–fatality rate in excess of 60%. Known risk factors include a history of thymus disease (e.g. thymoma or thymectomy) and age ≥60 years. To date, all reported and published cases of YEL-AND and YEL-AVD have been described in primary vaccines.

Contraindications to vaccination include:

1. Infants aged less than 9 months, except during an epidemic when infants aged 6-9 months, in areas where the risk of infection is high, should also receive the vaccine.
2. Pregnant women or nursing mothers – except during a yellow fever outbreak when the risk of infection is high. Encephalitis has been reported as a rare event following vaccination, principally in infants under 6 months of age and in breast fed infants.
3. People with severe allergies to egg protein; and
4. People with severe immunodeficiency due to symptomatic HIV/AIDS or other causes, or who have a thymus disorder.

Several vaccination strategies are used to protect against outbreaks:

1. Routine infant immunization: All endemic countries should introduce YF vaccine into their childhood routine immunization programmes at 9 months of age, simultaneously with the measles first dose.

2. Preventive Mass vaccination campaigns (PMVCs): Reaching the desired level of population immunity takes more than 30 years with infant routine immunization only, even with a high coverage. Therefore this strategy needs to be combined with the implementation of mass preventive vaccination campaigns to rapidly increase the population immunity and to protect susceptible older age groups in selected high risk areas.

3. Combined vaccination strategy: Combination of Strategy 1 and 2. Gambia, one of the 34 YF endemic countries in Africa, was the first of those countries to build and put in place this combined strategy.

4. Reactive mass vaccination campaigns: In high-risk areas where vaccination coverage is low, prompt recognition and control of outbreaks using mass immunization is critical for preventing epidemics. To interrupt YF virus transmission effectively, reactive mass vaccination campaigns should be completed within 2 weeks. It is important to vaccinate most (80% or more) of the population at risk to prevent transmission in a region with a yellow fever outbreak.

5. Immunization of travellers: Vaccine should be offered to all unvaccinated travellers aged >9 months, travelling to and from at-risk areas, unless they belong to the group of individuals for whom YF vaccination is contraindicated. Yellow fever is the only disease specified in the
International Health Regulations (IHR) for which countries may require proof of vaccination from travellers as a condition of entry. International certificate of vaccination becomes valid 10 days after vaccination.

WHO determines those areas where “a risk of yellow fever transmission is present” on the basis of the diagnosis of cases of yellow fever in humans and/or animals, the results of yellow fever sero-surveys and the presence of vectors and animal reservoirs.

Lower doses of Yellow Fever Vaccine in Emergencies:

WHO Strategic Advisory Group of Experts (SAGE) on Immunization reviewed existing evidence that demonstrates that using a fifth of a standard vaccine dose (0.1 ml) would still provide protection against the disease for at least 12 months and possibly much longer. This approach, known as fractional dosing, is under consideration as a short-term measure, in the context of a potential vaccine shortage for use in emergencies, but not for routine immunization, as there is not yet enough data available to show that lower doses would confer the life-long protection provided by a vaccination with one full dose. A formal evaluation and recommendations by SAGE on the use of lower doses of yellow fever vaccine are planned for October 2016. In the interim, SAGE found that the available evidence is sufficient to determine that fractional dosing of yellow fever vaccine to one fifth of the standard dose (0.1ml instead of 0.5ml) could be a safe and effective option for mass vaccination campaigns to control urban outbreaks in situations of acute vaccine shortage. [10]

B. Mosquito control

The risk of yellow fever transmission in urban areas can be reduced by eliminating potential mosquito breeding sites by applying larvicides to water storage containers and other places where standing water collects. Insecticide spraying to kill adult mosquitoes during urban epidemics can help reduce the number of mosquitoes, thus reducing potential sources of yellow fever transmission.

C. Epidemic preparedness and response

A single, confirmed case of yellow fever is sufficient to identify a potential outbreak and justify planning for early investigation and intervention. Case investigations and outbreak responses should be adapted to the local context. Vaccination response to yellow fever outbreaks should increasingly target susceptible individuals or vulnerable groups. Operational framework to guide case investigation and outbreak response for yellow fever is tabulated below

Response Strategy for India (Aedes present and no human transmission)

A. Vector Surveillance And Risk Assessment

Intensification of entomological surveillance, assessing the density of Aedes mosquitoes around residences of detected cases (400 m radius), yellow fever patient treatment sites, and in areas where there is known to be a high risk of mosquito proliferation.

Intensification of entomological surveillance, assessing the density of Aedes mosquitoes around residences of detected cases, yellow fever patient treatment sites, and in areas where there is known to be a high risk of mosquito proliferation

Monitoring of ports of entry

Monitoring of insecticide resistance of Aedes mosquitoes where insecticide-based interventions are being used or planned

Monitoring and evaluation of the quality and impact of control measures

B. Vector Control

Adaptation of vector control strategies to the intensity of virus transmission and to the timing of the mosquito breeding season, including source reduction;
Provision of insecticide-impregnated mosquito nets as part of the management of suspected yellow fever cases, and where needed, to affected communities;

**Distribution and appropriate use of mosquito repellents.**

- Implementation of vector control measures integrated with surveillance
- Conduct adult vector control, including indoor space spraying in identified hot spots
- Application of larvicides in targeted areas not amenable to source reduction

**Specific social mobilization interventions**

- Community mobilization with source reduction;
- Risk communication and promotion of personal protection

Response strategy will include the highlighted measures if there is neighboring epidemic AND Aedes present AND limited human transmission (Few imported or autochthonous cases reported)

**YF DISEASE AND PUBLIC HEALTH MEASURES IN INDIA**

Yellow Fever does not occur in India. The conditions for transmission of yellow fever are very conducive in India - presence of mosquito vectors in abundance and susceptible population.

Strategy:

1. **YF Vaccination and quarantine:**
   - Government of India has been following a policy of yellow fever vaccination to all the travelers who are visiting YF endemic countries for protection and mitigation of risk of entry of yellow fever in India.

2. **Screening of international travelers for valid vaccination against YF disease:**
   - All passengers coming to India or passengers going from India to countries endemic for Yellow Fever are recommended to have a valid International Vaccination. All the International travelers, who are arriving in India within 6 days after visiting any yellow fever affected Country, are being screening by Immigration officials for valid Yellow Fever vaccination. In case they are not having valid yellow fever vaccination certificate they will be quarantined for a period of 6 days or till the YF vaccination become valid (whichever is earlier).

3. **Vector control:** In accordance with IHR (2005) all the international airports and port premises are required to have effective control strategy for ensuring zero aedes aegypti index in the airport/port premises and in an area 400 mtrs. around the perimeter of Airports/Ports.

IHR-2005: The purpose and scope of these Regulations are to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.

**Yellow Fever Vaccination in India**

All passengers coming to India or passengers going from India to countries endemic for Yellow Fever should have a valid International Vaccination Card for Yellow Fever. Government of India has authorized yellow fever vaccination centres in various Government Institutes/Organizations/Medical Colleges for providing vaccination to International travellers. Presently there are 35 yellow fever vaccination centres authorized by Government of India. These centres are distributed over the states of Tamil Nadu, West Bengal, Gujarat, Uttar Pradesh, Kerala, Maharashtra, Karnataka, Himachal Pradesh, Andhra Pradesh, Goa and Delhi. These centers follow all stringent measures abiding international health regulations and the rules of the country. The details of these centres can be downloaded from the website: [www.mohfw.nic.in](http://www.mohfw.nic.in)
In India vaccine is partly produced (and also procured through WHO/WHO pre-qualified vaccine manufacturers) and supplied by Central Research Institute, Kasauli to all the authorized yellow fever vaccination centre on cost reimbursement basis. In case of emergency or breakdown of vaccine production/supply, vaccine procurement by CRI, Kasauli is also done through WHO and then supplied to various vaccination centers as above.

India’s Reservations and Understandings to IHR 2005

1. The Government of India reserves the right to consider the whole territory of a country as infected with yellow fever whenever yellow fever has been notified under Article 6 and other relevant articles in this regard of IHR (2005). The Government of India reserves the right to continue to regard an area as infected with yellow fever until there is definite evidence that yellow-fever infection has been completely eradicated from that area.

2. Yellow Fever disease will be treated as disease of Public health emergency of international concern and all health measures being applied presently like disinsection of conveyance, vaccination requirements and quarantine of passengers and crew (as may be required) (as per Article 7, 9.2(b), 42 and

Countries and areas regarded as having risk of yellow fever transmission are, in Africa: Angola, Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo, Cote d’Ivoire, Democratic Republic of Congo, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Mali, Mauritania, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, South Sudan, Togo and Uganda and in America: Argentina, Bolivia, Brazil, Columbia, Ecuador, French Guiana, Guyana, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Venezuela.

[Note: When a case of yellow fever is reported from any country, that country is regarded by the Government of India as a country with risk of yellow fever transmission and is added to the above list.]

(Contributed by: Drs. Neelima Bhagat, Megha Khobragade & Sujeeet Singh, International Health Division, Dte General of Health Services, Govt. of India)
Acute Diarrhoeal Diseases (ADDs) are one of the commonest infections especially among under five children. In 2015, more than 12 million cases of ADD with 1216 deaths were reported in India. Uttar Pradesh accounted for about 7.75 lacs cases and 320 deaths of these. In 2015, 450 ADD outbreaks are reported by IDSP which accounted for about one third of all outbreaks reported by IDSP in the year.

On 11 November 2016, Mathura District IDSP reported rise of Acute Diarrhoeal Disease (ADD) cases from Radhakund, Mathura, Uttar Pradesh starting from 02 November, 2016. Three deaths were reported on 01, 04 and 06 November, 2016. On 21 November, 2016, National Centre for Disease Control (NCDC) deployed 2 Epidemic Intelligence Service Officers (EISO) to assist in the investigation. The investigating team comprised of District epidemiologist and a pharmacist from Community Health Centre (CHC) Govardhan apart from two EISOs. The investigation was carried out with objectives to describe the characteristics of the outbreak, identify risk factors and propose recommendations.

Radhakund is a small town of religious importance located in Govardhan block of Mathura district, Uttar Pradesh (India) about 25 kms from Mathura. Administratively Radhakund has a Nagar Panchayat (NP) office which is responsible for water supply, hygiene and sanitation of the town. Radhakund NP has population of 7,511 as per census, 2011.

The team visited Community Health Centre Govardhan and interviewed Medical officers, pharmacist, staff nurses, health supervisors, who attended ADD cases admitted in the CHC from 31st October to 11th November 2016. The team also interviewed private practitioners of Radhakund and district food inspector. They were informed that between 23-31 October 2016 many important religious dates fell and there was a mass gathering of tourists with as many as 2 lacs tourists per day in Radhakund on peak day.

ADD cases started on 31st October, 2016, peaked on 3rd and 5th of November and started declining after 7th November 2016. No case was reported after 11th November 2016. Clustering of cases was reported from Meera Manoranjan Ashram and Radhanagar colony areas of Radhakund. Control measures taken were conduct of outreach treatment camps on 03 and 05 November 2016, public announcements regarding “Do not drink water from pipeline”, consumption of water after boiling and distribution of chlorine tablets.

A line list of 339 cases of ADD was prepared including cases admitted in CHC Govardhan , cases reported at outreach camps held on 3rd and 5th November and cases searched by active house to house survey. Of all cases 68.7% were females. The median age of cases was 60 years (range 1-80 years) (Table-1). 34.5% were hospitalized for treatment and two deaths were reported with a case fatality rate of 0.6%. All cases presented with profuse watery diarrhea (100%), nausea and vomiting was seen in 62(94%), 15 cases (23%) had abdominal cramps and fever was present in only 2 (3%) cases.

Figure-1: Distribution of ADD cases by date of reporting/ onset, Radhakund, Uttar Pradesh, 2016 (N 339)
After reviewing the descriptive epidemiology we generated a hypothesis “the cases of acute diarrhoeal disease had occurred due to consumption of water from the tap water supplied by suspected pipeline (tankiwali pipeline)”

Case-control study was conducted to test hypothesis with 49 cases and 101 controls. The test results showed drinking water from tap water supplied by tankiwali pipeline was strongly associated with diarrhoea, OR 13.6 (95% CI 5.5-33.5). No significant association between diarrhoea and eating in bhandara or any food item was found. Multivariate analysis was performed for factors showing significant association with diarrhoea, which indicated a significant positive association with drinking tap water from tankiwali pipeline (adjusted OR=14.8, 95% CI 5.0-33.9) along with illiteracy (adjusted OR=4.2, 95% CI 1.4-11.7). All other risk factors were statistically non-significant (Table-2).

Thorough environmental survey was done to understand water supply and sewage disposal system. Water supply to Radhakund is drawn from five tubewells and is distributed without any treatment from source to consumer end. There is no central sewerage line in the town. Sewage from many of the household septic tanks were observed overflowing into community drains alongside roads.

There is one large community toilet complexes, sewage from which also overflows to open ground one of which in close proximity to Bhola colony tubewell, the pipeline from which forms tankiwali line with the pipeline of Bambewala tubewell. Although no case was laboratory confirmed but clinical symptoms suggestive of cholera with supportive isolation of vibrio cholerae from two water samples drawn from tankiwali pipeline with supporting epidemiological results, environmental survey findings and termination of outbreak after drinking water treatment point towards the possibility of cholera outbreak due to contaminated drinking water supplied by tankiwali pipeline.

(Contributed by Drs. R Sahu, & S Chaudhary-EIS Officers, T Dikid, CS Aggarwal, S Venkatesh, P Khasnobis- NCDC, R Yadav, E Saroha, S Sodha- CDC India)
Numbers of reported outbreaks have increased from 2014 to 2016.

Approximately 40% of total outbreaks were reported from 5 states, namely Bihar, Uttar Pradesh, Karnataka, Maharashtra, and West Bengal.

A marked increase in reported outbreaks of chickenpox, measles, dengue, cholera, rubella, anthrax, diphtheria and leptospirosis has been observed over the period from 2014 to 2016.

### Disease & Year Wise no. of Outbreaks reported under IDSP during 2014-2016

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<th>2014</th>
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<td>Dysentery</td>
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<td>Enteric Fever</td>
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<td>14</td>
<td>49</td>
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<tr>
<td>Fever with Rash</td>
<td>29</td>
<td>58</td>
<td>87</td>
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<tr>
<td>Food Poisoning</td>
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<td>328</td>
<td>395</td>
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<tr>
<td>Influenza A H1N1</td>
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<td>Influenza A H3N2</td>
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<tr>
<td>Influenza B</td>
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<td>3</td>
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<tr>
<td>Jaundice</td>
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<tr>
<td>Kala-azar</td>
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<tr>
<td>Leptospirosis</td>
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<td>Malaria</td>
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<td>Pertussis</td>
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<td>Viral Fever/PUO</td>
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<td>92</td>
<td>80</td>
<td>322</td>
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<tr>
<td>Viral Hepatitis</td>
<td>81</td>
<td>88</td>
<td>98</td>
<td>267</td>
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<tr>
<td>Others</td>
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<td>20</td>
<td>21</td>
<td>50</td>
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<tr>
<td>Total</td>
<td>1562</td>
<td>1935</td>
<td>2679</td>
<td>6176</td>
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</table>

Others: KFD, Alcohol Poisoning, Trichinellosis, Viral Exanthemas, Epidemic Dropsy, Hand Mouth & Foot Disease, Brucellosis, Castor Seed Poisoning, AFP, Visceral Leishmaniasis, Shigellosis, PAM, PDFRB

### State & year wise no. of outbreaks reported under IDSP during 2014-2016

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<th>State / UTs</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Total</th>
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<td>53</td>
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<tr>
<td>Arunachal Pradesh</td>
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<td>21</td>
<td>28</td>
<td>57</td>
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<tr>
<td>Assam</td>
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<td>103</td>
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<td>Bihar</td>
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<td>121</td>
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<tr>
<td>Chhattisgarh</td>
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<td>50</td>
<td>120</td>
<td>220</td>
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<tr>
<td>Dadra and Nagar Haveli</td>
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<td>17</td>
<td>17</td>
<td>37</td>
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<tr>
<td>Daman &amp; Diu</td>
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<td>5</td>
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<td>Delhi</td>
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<td>Goa</td>
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<td>Jammu &amp; Kashmir</td>
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<td>Jharkhand</td>
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<td>Odisha</td>
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<td>Puducherry</td>
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<td>Tripura</td>
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<td>Uttar Pradesh</td>
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<td>394</td>
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<tr>
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<td>56</td>
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<tr>
<td>West Bengal</td>
<td>148</td>
<td>146</td>
<td>206</td>
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<tr>
<td>Grand Total</td>
<td>1562</td>
<td>1935</td>
<td>2679</td>
<td>6176</td>
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</table>

* No report sent by State/UTs.
Entomological investigations of outbreak of febrile illness in Pratapgarh district, Rajasthan, November 2016

In the month September 2016 Chief Medical and Health Officer (CMHO) Pratapgarh, Rajasthan, reported outbreak of malaria at 8 villages of sub-centre Pal under PHC Gyaspur. These villages are located in Sita mata forest area. In this connection, Centre for Medical Entomology & Vector Management (NCDC) conducted an entomological investigation of febrile illness in Pratapgarh district of Rajasthan. The team visited the village – Balalia of sub-centre Pal in November, 2016. Pratapgarh is located at 24.03° N 74.78° E with an average elevation of 580 meters (1610 feet above mean sea level). It is said to be the second highest place in Rajasthan after Mount Abu.

Pratapgarh is one of the greenest districts of Rajasthan. Major crops are wheat, Maize, Soya bean and Opium. Agriculture is practiced both in the valleys and on the tableland on the hilltops. Common lands account for 40% of the total geographical area, nearly 30% of the common lands fall in the forest land category. The area is a predominantly inhabited by the tribal communities. The investigation was conducted with the objective to assess possible entomological cause of febrile illness in different villages of Pratapgarh district.

Methodology: To assess the density and prevalence of mosquito in the area two method were used to collect mosquito:

(1) Total Catch Method (by pyrethrum space spray) - Pyrethrum spray catch was carried out in two houses during each mosquito collection in each village. White sheets were laid on the entire floor and over the furniture in the selected rooms of each house. The doors and windows of the houses were shut then the rooms sprayed with pyrethrum. The houses were then closed for 10-15 minutes. The white sheets were removed from the rooms of the houses and the knocked down mosquitoes were collected using forceps. Collected mosquitoes were recorded for Per Room Density (PRD) and transported to the laboratory for further identification.

(2) Hand Catch Method (using aspirator and torch): Mosquito collections were made in 24 selected houses around cattle shed and human dwelling. A person spent 10 minutes in house to collect mosquito. Mosquito were identified and their density was calculated. Attempt was made to collect mosquitoes resting on outdoor vegetations around houses but could not be collected. We did not find any mosquito larval breeding in the area.

Results: In the present investigation, using hand catch method, Per Man Hour Density (PMHD) for three species of mosquito viz. An. culicifacies (PMHD-2.25), An. subpictus (PMHD-0.13) and An. maculatus (PMHD-0.25) were recorded.

Results of Hand Catch Method

(House visited = 24)

<table>
<thead>
<tr>
<th>Species</th>
<th>Female</th>
<th>Total</th>
<th>PMHD</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>An. culicifacies</td>
<td>18</td>
<td>18</td>
<td>2.25</td>
<td>85.7</td>
</tr>
<tr>
<td>An. subpictus</td>
<td>2</td>
<td>2</td>
<td>0.13</td>
<td>9.5</td>
</tr>
<tr>
<td>An. maculatus</td>
<td>1</td>
<td>1</td>
<td>0.25</td>
<td>4.7</td>
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</table>

Results of Total Catch Method

<table>
<thead>
<tr>
<th>Species collected</th>
<th>Female</th>
<th>Total</th>
<th>PRD</th>
</tr>
</thead>
<tbody>
<tr>
<td>An. culicifacies</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>An. culicifacies</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>28</td>
<td>14</td>
</tr>
</tbody>
</table>

An. culicifacies was the dominant species mosquito with 85.7 per cent of total collection.
An. culicifacies is an established vector of malaria in rural areas. The prevalence of this vector mosquito in the Pratapgarh district of Rajasthan is having the relationship as the heavy rainfall in this area created numerous breeding places for Anopheles mosquito and enhanced the transmission of malaria parasite.

Conclusion:

High density of An. culicifacies in the village indicates that the reported outbreak of febrile illness may be due to malaria. Further epidemiological study should be carried out to confirm the findings of entomological study.

(Contribute by Abhay Kumar Sharma & Dr. LJ Kanhekar, NCDC)

NCDC News

NCDC participates in the meeting of Principal Secretaries of South Zonal Council States

The Ministry of Home Affairs has grouped States of India into five zones having an advisory council 'to develop the habit of cooperative working” among these States. The zonal councils provide an excellent forum where irritants between Centre and States and amongst States can be resolved through free and frank discussions and consultations.

As a followup of 9th meeting of the Standing Committee of the southern Zonal Council held in October 2016 at Thiruvananthapuram, a meeting of Principal Secretaries of South Zonal Council States (Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana and the Union Territory of Puducherry) was held under the Chairmanship of Shri C K Mishra, Secretary Health & Family Welfare, on 5 December, 2016 to discuss the agenda “Prevention and Control of Communicable Diseases. Dr S Venkatesh, Director NCDC and Dr Pradeep Khasnois, NPO IDSP participated in the meeting.

Presentations were made by the States of Karnataka, Kerala, Tamil Nadu, Telangana & Puducherry on respective mechanism for communicable disease surveillance and interstate information sharing. It was
informed that under Integrated Disease Surveillance Programme (IDSP), there is a mechanism of entering weekly data on epidemic prone diseases and outbreaks on SOS basis on portal which can be viewed by different Districts and States. The programme supports communication in between States/Districts and national level by video conferencing facility. 
During the meeting, it was decided that existing disease surveillance system will be further strengthened by mapping of adjoining districts between States so that the data can be readily available and shared between the State Surveillance Officers as and when required.

(Contributed by: Dr. Pradeep Khasnobis, CSU IDSP)

NCDC participates in United Nations Framework Convention on Climate change

The twenty second session of the UNFCC’s Conference of Parties (COP 22) was held in Marrakech, Morocco from 7-18 November, 2016. NCDC hosted the side event titled ‘Climate Change and its Impacts on Health’ in India Pavilion on 12th November 2017. Other partners in the event were from Indian council of Medical research and Department of science and technology.

Officials from division presented the strategies in National Action Plan for Climate Change & Human Health (NAPCCHH). The NAPCCHH looks forward to strengthen/ develop and coordinate for early warning and surveillance systems. The emphasis was given to identify ecological determinants of health and development of feedback mechanisms and development of risk maps for climate sensitive diseases. DST highlighted the national initiatives being taken up under National Action Plan on Climate Change under the National mission on Strategic knowledge on climate change (NMSKCC). ICMR presented an overview of work undertaken on addressing the Vector Borne Diseases in India and briefed the linkage between the climate change and non-communicable diseases predominantly cardio vascular and respiratory diseases, for mortality and morbidity. ICMR also shared the early warning tools developed for outbreaks and risk maps using climatic and ecological parameters.

(Contributed by: Drs. Pranil M Kamble, Shikha Vardhan & CS Aggarwal, NCDC)

Workshop on Building the Bridge between Air Quality, Weather and Health in India

Centre for Environmental and Occupational Health, NCDC in collaboration with Centers for Disease Control and Prevention, USA organized a two days’ workshop on Building the Bridge between Air Quality, Weather and Health in India on 7th and 8th November 2016 at Juniper Hall, India Habitat Centre, New Delhi. The overall goal of the workshop was knowledge sharing and feasibility for establishment of public health surveillance system by linkage of health data with air pollution and weather data. The deliberations recommended that it is a priority need to link air quality, meteorology and relevant health data together as part of a surveillance system. MoHFW needs to maintain continuous high quality data for health with respect to air quality and...
meteorology of the country. It is essential to strengthen the public health system’s ability to respond to future air pollution events and extreme weather events. First step can be forming a multidisciplinary group of experts from diverse ministries (MoHFW, CPCB, SPCB and IMD) to ensure interagency coordination and assign them the responsibility of providing relevant data on air pollution, weather and health. It will help in development of Early Warning Systems (EWSs) for health in relation to extreme weather events and severe air quality.

(Contributed by: Drs. Pranil M Kamble, Shikha Vardhan & CS Aggarwal, NCDC)

Multi Country Workshop on Influenza Surveillance Data Management

Data management is the design and implementation of procedures to manage data from the beginning to the end including data collection, data flow, Integration of data, transfer of data, data analysis and reporting. Good data management is crucial for a well-functioning surveillance system & for straightforward analysis. Surveillance data should be clean, easy to access, and easy to communicate to interested parties in a simple, straightforward format.

WHO SEARO and the US CDC in collaboration with the National Institute of Virology, Pune, India organized a 5 day training workshop on Influenza Surveillance data Management from 16th to 20th January 2017 in Pune, India. This training workshop had participation of 6 South East Asian countries. Dr. Sanjim Chadha, Assistant Director, Biotechnology and Microbiology Division; and Dr. Suhas Dhandore, Assistant Director and Dr. Ranjeet Prasad, Epidemiologist from the Integrated Disease Surveillance Unit, NCDC, Delhi attended this training workshop.

The objectives of this training were to establish, maintain, and improve influenza surveillance systems in south east Asian countries, understand the importance of “how good data management leads to good, efficient, and complete epidemiologic data analysis”, teach Influenza epidemiologists and data managers to apply good data management and analysis techniques, to design a database for participants’ own surveillance system based on case report forms and to design a report template for participants’ national needs. The topics covered in this workshop were minimum data requirements for influenza surveillance; Data Quality assurance and quality control; standardized data entry; methods for checking accuracy and consistency of data; basic data analysis; Data interpretation and Data Reporting. The format of this workshop was lectures which covered concepts behind the processes and on-screen demonstration of the processes and this was followed by application in small groups, using a standard dataset provided for this purpose.

This workshop laid the foundation for understanding the reasons for good, standardized data management and of basic concepts of data management which the participants would be able to apply to the existing Influenza surveillance systems in their own countries and standardize reporting templates for producing regular and timely surveillance reports.

(Contributed by: Drs. Sanjim Chaddha & Sunil Gupta, NCDC)

Hands on Training of State Data Managers on IDSP Data management & ICT

Hands on Training of State Data Managers on IDSP Data management & ICT was held from 20-23 Sept.2016 at Central Surveillance Unit (CSU) at National Centre for Disease Control (NCDC), Delhi. It was arranged in two batches with 18 States/UTs in each batch. Participants were state data mangers, state epidemiologists and state/district data entry operators.
Programme Director (IDSP) & Director, NCDC Dr S Venkatesh and National Programme Officer (IDSP) Dr Pradeep Khasnobis addressed the participants and guided on key points in context to effective implementation of IDSP in the states/UTs. Assistant Directors (IDSP), Consultants (IT), Statistics cum Programmer, CSU Data Manager, Training manager were the key trainers for the training. Joint Director (Micro) also addressed on various issues on L form data and reporting as well as lab component under IDSP. Finance consultant addressed the participants on financial issues.

Presentations on IDSP Programme, Meta Data & Data Standards (MDDS) Coding, Block level data entry, Strategic Health Operation Centre (SHOC), Lab data management were given along with live online demonstrations on Human Resource module on IDSP portal, MDDS code updation, RU type change etc. Subsequently hands on trainings were conducted in order to explore the skills of the participants and also to resolve various issues pertaining to master data cleaning. Pre test & post test proformas were filled & collected from the participants to assess the knowledge gained after the training. Subsequently feedback forms were also collected from the participants to assess the overall effect of training and also to get several ideas on various innovations that need to be incorporated under IT enabled reporting system of IDSP.

(Contributed by: Drs. Suhas Dhandore & Pradeep Khasnobis, CUS IDSP)

Integrated Disease Surveillance Programme (IDSP), Reprioritisation of Diseases Workshop

A two day workshop on reprioritization of diseases under IDSP was organized by NCDC in collaboration of WHO on 6-7 December 2016 in New Delhi. The reprioritization exercise was one of the key
recommendations of the Joint Monitoring Mission (JMM) of IDSP. JMM for Mid-term appraisal of IDSP by WHO, was carried out from 26 Nov - 08 Dec 2015 in 9 states. Overall recommendations of JMM was to review and redesign the IDSP surveillance system, assessing the need for collecting more epidemiological data for action, especially on priority diseases; and redefining the required surveillance deliverables.

JMM recommended the redesign of IDSP surveillance system with reprioritization of diseases/disease groups. The objective of the reprioritization exercise were to review the relevance of list of priority diseases for surveillance under IDSP; to strengthen IDSP in its resource allocation from disease surveillance and response; and review data collection methods and IT tools for IDSP.

Over 80 subject matter experts representing States, Academia, WHO, CDC, and other health and development partners participated in the workshop. The reprioritization workshop identified conditions in a rank order of importance. The list of disease that were prioritized in workshop is being further validated and will be shared shortly.

(Contributed by Drs. Nishant & Pradeep Khasnobis, CSU IDSP)

National Workshop on Development of National Action Plan on Antimicrobial Resistance

National Centre for Disease Control (NCDC) in collaboration with the WHO Country Office for India organised a two-day National Workshop on Development of National Action Plan on Antimicrobial Resistance (NAP-AMR), at New Delhi on 8-9 December 2016. Reflecting the government’s strong commitment to combat the rise in antibiotic resistance, Dr Jagdish Prasad, Director General Health Services, MoHFW called for strengthening of regulatory components for antimicrobial availability, use and dispensing. In addition, he suggested four other areas for prioritization in the NAP-AMR: education, awareness and training; infection prevention; effective use of antimicrobial therapy, including formulation of antibiotic policy, and sustainable financing.

The consultation focused on the review of draft National Action Plan on Antimicrobial Resistance (NAP-AMR) and developing the roadmap, with responsible institutions and tentative timelines.

Speaking on the occasion, Dr Soumya Swaminathan, Secretary, Department of Health Research & Director General-Indian Council of Medical Research (ICMR), highlighted that governance and financing are pre-requisites for the success of NAP. She also outlined the scope of development of newer antimicrobials agents from traditional medicines.
In his address, Dr B.D. Athani, Special DGHS, expressed concern about the misuse of antibiotics, especially as prophylactics. He urged that improvements are needed in sterilization and disinfection of equipment, devices and instruments to prevent healthcare associated infections, which are predominantly caused by multi-drug resistant organisms.

In his address, Dr Henk Bekedam, WHO Representative to India, emphasized that strong intersectoral collaborations are critical for making an impact. “AMR is a complex issue, for which it is important to work with other sectors – especially agriculture, environment, water and sanitation, education, department of pharmaceuticals, industries, etc. – to ensure that we are able to effectively combat AMR,” he said.

He also urged for awareness among prescribers and general public for use of antibiotics; surveillance through standardized data collection; infection prevention through promotion of hand hygiene; integration of Swachh Bharat Abhiyan with infection prevention and control, safe use of medical devices and food safety.

Taking cognizance of AMR as a national priority, the government established three governance mechanisms on AMR in September 2016: i) Intersectoral Coordination Committee on AMR; ii) Technical Advisory Group on AMR; and the iii) Core Working Group on AMR

Approximately 80-100 AMR stakeholders from health, agriculture, food, and other sectors attended the workshop. Also present on the occasion were Mr Lav Agarwal, Joint Secretary, MoHFW and Dr S Venkatesh, Director, National Centre of Disease Control. The workshop had international representation from the Tripartite; Food and Agriculture Organization (FAO), World Organization for Animal Health (OIE) and World Health Organization (WHO).

(Contributed by Drs. Sarika Jain & Sunil Gupta, NCDC)

**NCDC marks World Heart Day with a symposium**

World Heart Day is part of an international campaign to spread awareness about heart disease and stroke prevention. According to World Heart Federation, heart diseases and strokes are the world’s leading cause of death, killing 17.3 million people every year –contributing to 31% of all global deaths. In India a quarter of all mortality is attributable to CVD. Ischemic heart disease and stroke are the predominant causes and are responsible for >80% of CVD deaths. This year theme for World Heart Day 2016 was “Power your life” aiming to make people understand what they can do to fuel their hearts and power their lives.

Centre for NCD, NCDC celebrated WHD on 24th Nov. 2016 with a purpose to raise the awareness among the faculty and staff on this specific issue. On the occasion a seminar was organised which included the presentations by the renowned faculty from Safdarjung Hospital and AIIMS, Delhi. Dr. Sandeep Bansal Head, Cardiology, VMMC & Safdarjung Hospital, Delhi delivered a talk on “Preventing and reducing the risk of cardiovascular diseases through public health approaches” and Mrs. Swapna Chaturvedi, senior Dietician AIIMS, Delhi focused on “Healthy Eating for control of hyperglycemia and hypercholesterolemia in general and CVD and/or diabetic patients”. At the end of their presentations both the speakers cleared the queries of each participant in detail. To reinforce the concept of healthy diet among the participants an exhibition was also held, elaborating the concept on the proportion of various proximate principles in a healthy diet, healthy & unhealthy food, and daily calories requirement by a moderate worker, healthy Indian male and female etc.
On the occasion of World Heart Day (WHD) 2015, the screening for NCD risk factor was done among the NCDC faculty and staff members, by the Centre for NCD, NCDC. As an apart of awareness generation activity on WHD 2016, CVD risk scores were calculated among the screened individuals, using WHO/ISH, CVD risk prediction charts. Those were found to have > 10 % risk for occurrence of cardiovascular event in next 10 years were counselled interpersonally by the faculties of Centre for NCD, NCDC for reducing their risk by adopting the healthy life style, and the same was dealt in detail by experts during the seminar in question answer session.

(Contributed by Drs. Rinku Sharma & Sonia Gupta, NCDC)

**Joint orientation training course to build capacity for prevention and management of Zoonotic Diseases for Medical and Veterinary professionals**

Zoonosis Division, NCDC coordinated a joint NCDC and Indian Veterinary Research Institute (IVRI) orientation training courses for medical and veterinary professionals to develop pool of core trainers at National Level in NCDC Delhi from 28 November - 2 December, 2016. The training course was inaugurated by Dr NS Dharamshaktu, Principal Advisor, MoHFW and Dr S Venkatesh, Director NCDC on 28 November, 2016. It was stressed in the inaugural ceremony that as there is diminishing boundaries between human and animal interface due to urbanization, deforestation and agriculture practice there is a need for strengthening of intersectoral coordination for prevention and control of zoonotic diseases.

Resource persons for the training were from NCDC Delhi, IVRI Bareilly, Central Military Veterinary Laboratory Meerut UP, WHO India and National Vector Borne Disease Control Programme.

Topics on emerging and re-emerging zoonosis, joint outbreak investigation, intersectoral coordination, zoonosis-bioterrorism, biosafety & biosecurity covered were covered along with specific disease epidemiology (JE/AES, plague, leptospirosis, rickettsial infections, anthrax, brucellosis, glanders, parasitic zoonoses, food borne zoonoses).

Seventeen participants (Veterinary officer and Medical officer) of State Health Directorates from eight states (Assam, Chattisgarh, Karnataka, Daman & Diu, Delhi, Kerala, Meghalaya, Nagaland, Puducherry and West Bengal) and three participants of State Animal Husbandry (Kerala, Chattisgarh and Daman and Diu) participated in the five day workshop.

The valedictory function on 2 December, 2016 was presided by Dr AK Gadpayle, Addl. DG & MS Dr RML PGIMER Hospital and Dr S Venkatesh, Director NCDC. The experts emphasized on the importance of global initiative of One Health to enhance coordination of Health and Veterinary Sectors to meet the growing challenges of Zoonotic Diseases in the present day.

(Contributed by: Drs. Naveen Gupta Monil Singhai & Simmi Tiwari NCDC)
Seventh meeting of the Standing Committee on Zoonoses

The 7th meeting of the Standing Committee on Zoonoses was held at Resource Centre, DGHS Nirman Bhawan, New Delhi on 20th December, 2016 under the Chairmanship of Prof (Dr.) Jagdish Prasad, Director General of Health Services Govt of India. The Committee has members from Ministry of Agriculture, ICMR, IVRI, CRI Kasauli, Wildlife Institute of India, Pasteur Institute of India, Haffkine Institute, Director Health Services Govt. of Gujarat, Director Health Services Govt. of Madhya Pradesh, Director Health Services Govt. of Kerala, Director Health Services Govt. of Uttar Pradesh, Director Health Services Govt. of Tamil Nadu, Director, Animal Husbandry & Veterinary services, Govt. of Haryana, Director, Animal Husbandry & Veterinary services, Govt. of West Bengal, Deputy Director General (Planning), GB University & Technology, Pant Nagar, Joint Director & Head, Zoonosis Division, NCDC.

The discussions were held among the stakeholders regarding importance of establishing inter-sectoral coordination of various sectors viz. Health, Animal Husbandry, Wild Life for prevention and control of zoonotic diseases. The Chairperson SCZ, emphasized that prevention and control of outbreak of zoonotic disease is a multi-sectoral concern and hence “One health” involving multi-sectoral disciplines is a very important comprehensive approach to attain better health for humans, animals and environmental health. The representatives from Ministry of Agriculture briefed about the recent outbreak of Avian Influenza in India and strategies adopted to contain the outbreak. In the meeting ICMR and ICAR representative apprised the house about their joint collaboration in the area zoonoses, antimicrobial resistance, nutrition and food safety & pesticide residues. All the members raised a serious concern about increased population and existing unhygienic condition in the Country which is a significant cause of increasing threat due to zoonotic disease in the country. In the meeting the country preparedness about Yellow Fever and Zika virus disease, the emerging zoonotic threat for India was discussed. The division of zoonosis presented the current status of implementation of National Rabies Control Programme and programme for prevention and control of Leptospirosis.

The priority zoonotic disease of public health importance were identified viz anthrax, plague, brucellosis, CCHF, Nipah virus disease and rabies and the committee recommended to strengthen the intersectoral coordination & surveillance mechanism of these zoonotic diseases in the country and to explore the modalities for data sharing between health and veterinary sector.

(Contributed by: Drs. Naveen Gupta, Simmi Tiwari, & Monil Singhai, NCDC)

NCDC attends National AES Technical Advisory Group of ICMR Meeting at Patna, Nov 2016

The AES Technical Advisory Group of ICMR meeting was held at Rajendra Memorial Institute of Medical Sciences (RMRIMS), Patna on 29th Nov 2016. Dr. Soumya Swaminathan, Secretary DHR & DG, ICMR chaired the meeting. Mr RK Mahajan, Principal Secretary Health and Mr Shashi Bhushan Kumar, MD, NHM, Government of Bihar participated along with his other senior officials. Officials of DHGS, ICMR Institutions, Child Health Foundation, NCDC, NVBDCP, NIMHANS, CDC, WHO, UNICEF, BMGF, PATH, KGMC Lucknow, Medical Colleges and health institutions of Bihar were present. Dr S Venkatesh, the Director NCDC, Dr P Khasnobis, the NPO IDSP and Dr A. Shrivastava, Joint Director NCDC attended this meeting from NCDC, Delhi.

The meeting addressed challenges in investigating and controlling encephalitis/encephalopathy outbreaks in regions of Bihar. Dr P Khasnobis, the NPO IDSP and Dr MP Sharma, the SPO, VBD Bihar presented
available surveillance and programme data on AES in Bihar for recent years. Dr. Pradeep Das, Director, RMRIMS, Patna shared available information from their viral diagnostics laboratory on etiological agents identified in AES cases of Bihar. Dr. Amita Jain, HoD, Microbiology, KGMU, Lucknow presented the etiological contribution of agents to AES cases in Bihar based on year 2015-2016 data available through ICMR-CDC supported laboratory network based AES surveillance. Dr. A. Shrivastava, Joint Director NCDC presented the findings from NCDC-CDC-NVBDCP-ICMR (NIOH) investigations on Acute Encephalopathy outbreaks in Muzaffarpur and bordering districts of Bihar.

He underlined that the hypoglycaemic encephalopathy presentation in this northern region of Bihar was not of infectious etiology, and on the contrary associated with presence of MCPG/Hypoglycin A compounds in Litchi. On the other hand, patient specimens from southern districts around Gaya region had repeatedly been confirmed by RMRIMS, Patna and others for infectious etiological agents, inclusive of JE virus. Presentation by KGMU, Lucknow highlighted the emerging relevance of other pathogens – such as Scrub Typhus, in AES like presentation. Scrub Typhus was positive in 25% of the 540 specimens from all over Bihar tested by KGMU, Lucknow.

The meeting concluded with agreement on certain crucial recommendations, inclusive of the following - Need to maintain continuous funding for AES related activities, improve health facilities and diagnostic infrastructure, strengthen human resources and referral transportation services, improve reporting of AES cases – specially with AES now being a notifiable entity, improve case management using established guidelines, continue JE immunization with appropriate coverage for 2 doses, intensive IEC on preventive measures and intersectoral coordination.

(Contributed by Dr. Aakash Shrivastava, NCDC)
Trend of Outbreaks reported to IDSP, 2008-16

Integrated Disease Surveillance Programme was launched in November 2004 to strengthen/maintain decentralized laboratory based IT enabled disease surveillance system for epidemic prone diseases to monitor disease trends and to detect and respond to outbreaks in early rising phase through trained Rapid Response Team (RRTs).

A Central Surveillance Unit (CSU) at Delhi, State Surveillance Units (SSU) at all State/UT headquarters and District Surveillance Units (DSU) at all districts in the country have been established. Under IDSP data is collected on epidemic prone diseases on weekly basis (Monday–Sunday). The information is collected on three specified reporting formats, namely “S” (suspected cases), “P” (presumptive cases) and “L” (laboratory confirmed cases) filled by Health Workers, Clinicians and Laboratory staff respectively. The weekly data gives information on the disease trends and seasonality of diseases. Over the years, there has been increase in reporting of epidemic prone diseases. As shown in the figure, in year 2016 more than 2600 outbreaks were reported under the IDSP network.

(Contributed by: Prasoon Sharma, Drs. Ruchi Jain & Pradeep Khasnobis, CSU IDSP)