Climate change has a critical impact on human health. It is well known that a combined effect of climate change, demographic changes, social factors such as poor hygiene, lack of sanitation along with overstretched health services has led to rise in many vector-borne, water-borne and emergence of new diseases. Heat exhaustion and heat stroke are also directly related to commonly occurring heat waves and freak weather conditions due to climate change globally. Our lead story in this issue of newsletter focuses on impact of heat related illness and its preventive measures.

Elimination of tuberculosis by 2025 is one of the key goals of the policy. Monitoring disease trends section focuses on trend of annual TB notification rate by RNTCP. The outbreak section has a report of measles outbreak investigation in Meghalaya.

This issue also carries a report on preparedness regarding Ebola detection at International Airport, Delhi. Surveillance readiness at our airports, sea ports and international land crossings is important for protecting our population from global health threats. Many other activities carried out by NCDC are also featured. I hope you enjoy going through the newsletter.

Climate Change and Heat Related Illness: Impact on Human Health

As per fourth Assessment Report of Intergovernmental Panel on Climate change (IPCC-AR4), the term ‘climate change’ refers to a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity.

IPCC Special Report on Extreme Events (IPCC-SREX) concludes that there has been an overall decrease in number of cold days and nights and overall increase in warm days and nights, at the global scale. The probability of a particular heat wave can be attributed to climate change is 75% or more, and on this basis it is likely the excess mortality attributed to heat wave was caused by anthropogenic climate change. In India the heat wave occurs during the dry season, which typically lasts from March to July with peak temperatures in April and May. Although the weather typically remains hot until late October, some respite from heat is seen due to Indian monsoons.
Every year India experiences severe heat waves in summer, causing abnormally high casualties.

**Criteria for Heat Wave**
Heat wave is considered when maximum temperature of a station reaches ≥40°C for Plains and ≥30°C for Hilly regions (Source: Indian Meteorological Department).

A healthy human body maintains a temperature of about 37°C (98.6°F). When body temperature rises, increased sweating and blood flow to the skin lowers down the temperature. Heat related illnesses results due to inability of body to cool down after gaining heat. This depends on the exposure to factors like high temperature along with humidity termed as **Heat Index** (Temperature + Humidity). The condition worsens in cases of over exposure to heat as in strenuous physical activity or outdoor occupational activities. As the temperature and relative humidity increase, they combine to create a heat index that feels hotter than the actual temperature. For example, when the temperature is 36°C with 65 percent humidity, it actually feels like 51 degree C.
As per the basic processes of human thermoregulation, if the body temperature rises above 38°C (heat exhaustion), physical and cognitive functions are impaired; above 40.6°C (heat stroke), risks of organ damage, loss of consciousness, and death increase sharply. The factors which interplay in occurrence of these morbidity and mortality majorly are vulnerable population and vulnerable regions.

The vulnerable population implies the demography (extremes of age, sex, population density, and pregnant women), Health Status (proportion of malnourished, population with infectious and chronic diseases, mentally or physically disabled people), socio-economic status (poor/marginalised- more vulnerable), type of occupation or socio-cultural practices.

The vulnerable regions implies unplanned urban housing, proportion of slums, drought risk zones, water-stressed zones, food-insecure zones and remote rural areas.

### Risk Factors and its Mechanism to Cause Heat Related Illnesses

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual (demographic)</strong></td>
<td></td>
</tr>
<tr>
<td>Elderly and very elderly</td>
<td>Changes in thermoregulation, renal function and health status, reduced water intake and reduced physical ability</td>
</tr>
<tr>
<td>Female and elderly or very elderly</td>
<td>Differences in thermo-physiological functioning + above</td>
</tr>
<tr>
<td>Single and elderly or very elderly</td>
<td>Social isolation + above</td>
</tr>
<tr>
<td>Infants</td>
<td>Thermoregulation immature, smaller body mass and blood volume, high dependency level, dehydration risk in case of diarrhea</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td></td>
</tr>
<tr>
<td>Acute health conditions</td>
<td>Conditions such as acute renal failure, cerebro-vascular disease, heart failure, pneumonia and infectious diseases impair thermoregulatory responses during heat-waves</td>
</tr>
<tr>
<td>Chronic health conditions</td>
<td>Reduced thermoregulatory ability, high risk of acute events, exacerbations of disease, reduced ability to care for oneself, and take appropriate protective action and/or seek assistance Cardiovascular and respiratory diseases and their treatment are of highest priority (see information sheets on health conditions and adverse effects of</td>
</tr>
</tbody>
</table>
### Medication use
Interaction with physiological response to heat and hydration status, concurrent chronic diseases

### Being confined to bed
Poor health status, reduced mobility and high dependency level

### Being hospitalized
Poor health status, lack of air conditioning

### Living in institution (e.g., nursing home)
High care dependency and poor health status; potentially too hot rooms and spaces

### Socioeconomic

| Low economic status (poverty; low income), low educational level | Poor people tend to have a higher underlying prevalence of chronic diseases, lower housing quality and less well-heated and -cooled homes |
| Being homeless | Lack of shelter, concomitant chronic diseases (physical and psychiatric diseases) |

### Social isolation
Delay in receiving help and medical care

### Not leaving home daily
Lack of social interaction

### Lack of access to air conditioning at home
Prolonged exposures to high temperatures don’t allow the body’s physiological mechanisms to recover

### Lack of access to health care
Lack of advice on and treatment of existing health conditions, and delay in care for heat-related conditions

### Environmental conditions

| Air pollution | Combined effect of high temperature and air pollution (particulate matter (PM) and ozone) |
| Poor housing conditions | Risk factors include living on the top floor, or in poorly ventilated or crowded accommodation; not having air conditioning; poorly insulated buildings; windows exposed to sun, etc. |
| Occupational exposures (especially for males) | High exposure levels that reduce thermoregulatory ability, risk of dehydration |
| Urban areas | Cities tend to become hotter than surrounding areas due to the heat island effect. This increases the severe heat stress experienced during the day and further impairs the body tolerance of heat combined with the absence of relief at night |

(Source: WHO Heat_information_sheet.pdf)

### Other things that may increase your risk of heat-related illness include:
- Increased body mass;
- Drinking too much alcohol or caffeine;
- Chronic illnesses such as uncontrolled diabetes or hypertension, heart failure, emphysema, kidney failure, colitis, mental health issues, and cystic fibrosis;
- Previous heat stroke;
- Certain medications such as diuretics or water pills, and certain psychiatric medications;
- Exercising or working in hot weather;
- Being unable to find a place to cool down; and
- Not drinking enough water/fluids during hot weather.
# Management of Heat Related Illnesses

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Symptoms/ signs/ mechanism</th>
<th>Management</th>
</tr>
</thead>
</table>
| **Heat rash**     | Small red itchy papules on face, neck, upper chest, under breast, groin and scrotum areas. All are prone especially young children. Infection with Staphylococcus can occur. It is attributed to heavy sweating during hot and humid weather. | ➢ Shift the person to a shady cool place  
➢ Loosen or remove tight clothing/s  
➢ Keep the skin cool and dry  
➢ Avoid using creams, lotions, ointments unless directed by physician |
| **Heat oedema**   | Oedema of the lower limbs, usually ankles, appears at the start of the hot season. This is attributed to heat-induced peripheral vasodilatation and retention of water and salt. | ➢ Treatment is not required as oedema usually subsides following acclimatization.  
➢ Diuretics are not advised. |
| **Heat syncope**  | This involves brief loss of consciousness or orthostatic dizziness. It is common in patients with cardiovascular diseases or taking diuretics, before acclimatization takes place. It is attributed to dehydration, peripheral vasodilatation and decreased venous return resulting in reduced cardiac output. | ➢ The patient should rest in a cool place and be placed in a supine position with legs and hips elevated to increase venous return.  
➢ Other serious causes of syncope need to be ruled out. |
| **Heat cramps**   | Painful muscular spasms occur, most often in the legs, arms or abdomen, usually at the end of sustained exercise. This can be attributed to dehydration, loss of electrolytes through heavy sweating and muscle fatigue. | ➢ Shift the person to a shady cool place  
➢ Carefully stretch muscles and massage gently the cramping muscle.  
➢ Oral rehydration may be needed, like water, fruit juice, coconut water, buttermilk, lemonade or sports drink, but avoid sugary drinks and alcohol or caffeine.  
➢ Exercise or heavy work should be withheld for a few hours or till person recovers as further exertion may lead to more serious illness like heat exhaustion or heat stroke.  
➢ Get medical help if cramps do not get better after an hour, or if there are other medical problems. |
| **Heat exhaustion** | Symptoms include intense thirst, weakness, discomfort, anxiety, dizziness, fainting and headache. Core temperature may be normal, subnormal or slightly elevated. | ➢ Shift the person to a shady cool place  
➢ Make the person lie down, after loosen or removal of tight clothing and raise his or her legs and hips to increase venous return.  
➢ Oral rehydration may be needed, like water, fruit juice, coconut water, buttermilk, lemonade or sports drink, but avoid sugary drinks and alcohol or caffeine.  
➢ Exercise or heavy work should be withheld for a few hours or till person recovers as further exertion may lead to more serious illness like heat exhaustion or heat stroke.  
➢ Get medical help if cramps do not get better after an hour, or if there are other medical problems. |
elevated (less than 40 °C). Pulse is thread with postural hypotension and rapid shallow breathing. There is no alteration of mental status. This can be attributed to water and/or salt depletion resulting from exposure to high environmental heat or strenuous physical exercise.

| Heat stroke (life threatening condition) | Hot, dry, red skin; lack of sweating; rapid pulse; headache; high body temperature (≥40°C); rapid and shallow breathing; confusion; unconsciousness or coma. | Increase venous return.  
- Sprinkle cool water or soak clothing with water or if possible give shower or bath  
- Give cool fluids like water, fruit juice, coconut water, buttermilk, lemonade or sports drink, but avoid sugary drinks and alcohol or caffeine.  
- Monitor the person carefully. If they get worse, or do not get any better within 30 minutes, get medical help.  
- If the person has vomited, and continues to vomit after you have taken the above steps to cool them off, get medical help right away. |

### Humidity Temperature chart

![Humidity Temperature chart](chart.png)
• Don’t drink liquids that contain alcohol, soft drinks like cola or drinks with large amounts of sugar—as these actually lead to loss of more body-fluid or may cause stomach cramps.
• Stay indoors and, if at all possible, stay in a cool or air-conditioned place.
• Electric fans may provide comfort, but when the temperature is high take a cool shower.
• Keep windows and curtains closed during the day, especially on the sunny side of your house. Open them up at night to let cooler air in.
• Wear lightweight, light-colored, loose-fitting preferably cotton clothing.
• NEVER leave anyone in a closed, parked vehicle, as temperature inside the vehicle is usually higher than outside.
• Although any one at any time can suffer from heat-related illness, some people are at greater risk than others. Check regularly on:
  o Infants and young children
  o People aged 65 years or older
  o People working outdoors
  o People who have a mental illness
  o Those who are physically ill, especially with heart disease or high blood pressure

If you must be out in the heat:
  o Limit your outdoor activity to morning and evening hours.
  o Cut down on exercise. If you must exercise, drink two to four glasses of non-alcoholoc drinks. A sports beverage can replace the salt and minerals you lose in sweat.
  o Try to rest frequently in shady & cool areas.
  o Take regular breaks from any physical activity – at least every hour.
  o Avoid strenuous activity during the hottest part of the day.
  o Protect yourself from the sun by wearing protective clothing.

(Contributed by: Drs Shikha Vardhan, CS Aggarwal, NCDC)
Outbreak investigation of measles in community with low vaccination coverage, in East and West Jaintia Hills Districts, Meghalaya, India – January 2017

Background: Measles is a leading cause of childhood mortality among vaccine preventable diseases in India. Although WHO South East Asia Region countries have resolved to eliminate measles by 2020, India has still reported around 297 measles outbreaks in 2016. We investigated measles outbreak at East and West Jaintia Hills districts in Meghalaya to describe epidemiology, determine risk factors, and recommend preventive measures.

Methods: We defined case as fever and maculo-papular rash with cough, coryza, or conjunctivitis in East and West Jaintia Hills from August 28, 2016 – January 9, 2017. We searched for cases by passive surveillance from health facilities and by house-to-house survey in most affected villages. Numerical Global Positioning System (GPS) coordinates expressed by latitudes and longitudes was used to locate the cases in Byrwai village. We conducted retrospective cohort study to assess vaccination coverage, vaccine efficacy, and risk factors among children ≤ 15 years in Byrwai village in East Jaintia Hills. Data were collected by house to house survey using semi-structured questionnaires comprising of basic socio-demographic, clinical information, complications, vaccination status, and exposures / travel history.

We collected five serum samples for measles IgM testing and two urine samples for measles RNA by reverse transcription polymerase chain reaction.

Results: We identified 325 cases (51% female) including three deaths from various parts of East (191) and West (134) Jaintia Hills districts; median age was 4 years (range: 3 months–50 years). All the cases were presented with fever and rashes. About 104 (32%) cases of measles were reported in August, 63 (19%) cases in November, 51 (16%) cases in December and about 64% of the cases were less than five years of age.

In Byrwai village, we identified 192 cases (figure1) with population attack of 8%. Complications were seen in 29% of cases and among them diarrhoea (15%), pneumonia (9%), croup (2%), death (0.5%) and others (2%). Only 16% have received vitamin A. The outbreak started from August 31, 2016 to January 18, 2017 (figure 2).
Immunization coverage of the entire cohort was 29% for MCV1, 19% for MCV2, and 26% for vitamin A. Vaccine efficacy was 92%.

The relative risk (RR) of unvaccinated children to vaccinated children for MCV1 was 5.3 {95% confidence interval (CI), 3.2-8.9}. The relative risk for not being vaccinated are unawareness of mother about vaccination (RR, 1.9; CI, 1.4-2.6), lack of time of parents for taking their children to vaccinate (RR, 1.7; CI, 1.2-2.3) and fear of injection (RR, 1.5; CI, 1.2–1.8).

All serum and urine samples were positive for measles IgM and RNA, respectively.

Limitations: There was expected recalls bias of the interviewee regarding the vaccinations status for older children and the child’s who were ill more than a month before the interview.

Conclusions: This was large measles outbreak in low vaccination coverage area with illness associated with unawareness of vaccination, fear of injection, and lack of time.

We recommended organising immunization awareness camp in the villages. To strengthen routine immunization programme by preparing complete and comprehensive microplan with head counts of the beneficiaries by ASHA/ ANM of Jaintia Hills districts. We also recommended planning outreach vaccination on Sundays for labourer populations.


* EIS Officer, ** NCDC Delhi, *** CDC India, ‡ Meghalaya Health Services

---

Evaluation of Ebola Virus Disease Surveillance at Indira Gandhi International Airport, Delhi 2016

Background: Ebola virus disease (EVD) also known as Ebola haemorrhagic fever, is an acute severe, often fatal illness in humans if untreated. EVD first appeared in 1976 in two simultaneous outbreaks, one in Nzara, Sudan and the other in a village Yambuk near the Ebola River in the Democratic Republic of Congo (DRC), from which the disease takes its name. Ebola virus causes viral haemorrhagic fever with case fatality rate 25% - 90%. The virus is transmitted to human from wild animals and spreads in the human population through human to human transmission. An outbreak of Ebola virus disease (EVD) in 2014-2016 in Guinea, Liberia, and Sierra Leone was the largest ever with 28,637 illnesses and 11,315 deaths. It has also spread between countries starting in Guinea then spreading across land borders to Sierra Leone and Liberia, by air (1 traveller) to Nigeria and USA (1 traveller), and by land to Senegal (1 traveller) and Mali (2 travellers). The most severely affected countries are Guinea, Liberia and Sierra Leone. In August 2014, WHO declared EVD a public health emergency of international concern.

To mitigate the import of EVD to India through people visiting from affected countries, Government of India planned a strategy incorporating WHO recommended guidelines for EVD and decided to screen all passengers from EVD affected countries at various points of entries (Airports, sea ports and International land crossings). Primary strategy was to identify suspects by setting up fever surveillance as an alert mechanism at points of entries. Rapid response team (RRT) was constituted and suspects were referred to designated hospital linked to each international airport for proper management.

At international airports, the health staff was trained for identification of EVD case.

A suspect case of EVD was defined as: A person who has both consistent signs or symptoms and risk factors:
• Elevated body temperature or subjective fever or symptoms, including severe headache, fatigue, muscle pain, vomiting, diarrhoea, abdominal pain or unexplained hemorrhage;

AND

• An epidemiological risk factor within 21 days before the onset of symptom

Travel advisory was issued and IEC material was displayed at the airports. Screening of passengers was done through self-declaration form (in English) which was to be filled on voluntary basis. All self-declaration forms were checked by the immigration officers at the arrival section and the passengers were screened by thermal cameras for fever. Suspected cases of fever were further examined by doctors and admitted at airport health office (APHO) wards for further tests. Samples for sent testing were sent to National Centre for Disease Control (NCDC) Delhi & National Institute of Virology (NIV) Pune, the two national reference laboratories identified for Ebola virus testing.

We conducted the evaluation of the surveillance system established for EVD at Indira Gandhi International Airport, Delhi to describe the surveillance for detecting a suspected case of EVD, to assess the attributes of the surveillance system, and to recommend measures to strengthen the surveillance system.

Methods: We interviewed key informants involved and various stakeholders (DDG IH, APHO, Immigration officers, staff at APHO and department of microbiology at NCDC) and reviewed protocols to describe the surveillance system. We evaluated the surveillance system based on the following attributes: usefulness, simplicity, flexibility, data quality, acceptability, sensitivity, timeliness, and stability. Desk review of records and reports from August 2014 to October 2015 was also carried out.

Results: Usefulness – Out of 798756 passengers screened at IGI Airport Delhi, 18518 were identified as at risk passengers (Low - 18480, Medium - 5, High - 83). Eighty three suspects and one positive case were identified by the system.

![At Risk passengers identified](image_url)

Figure 1: At Risk Patients identified during screening at IGI Airport, July 2014- October 2015

The surveillance system was simple as reported by all the informants who were interviewed except difficulty faced by few passengers in filling the form in English language. Maximum passengers were screened in the month of December 2015 and gradually declined after April 2015.
Regarding flexibility, the system was flexible as at the beginning 12 Airlines were identified for screening passengers coming from affected countries via Gulf at 18 international airports which was later limited to seven airports in India. Airlines list identified for screening was also revised twice during the process and reporting pattern revised once.

Data quality was good as daily and weekly reports reviewed were found to be 100% complete. Acceptability of system was good as 98% of the self-declaration forms were found complete and 100% reports prepared at APHO were sent to higher office.

Timeliness and completeness for daily and weekly reports was found to be 100%. Average time taken by laboratories to send report to Airport health office (APHO) was <24 hours. The system was sensitive enough to identify even one positive case among 18518 at risk cases screened by the system. Down time for the computers and thermal camera was 0% which shows that the system was stable.

Conclusion: Surveillance at IGI Airport was sensitive, simple and flexible and well supported by laboratory at National centre of Disease control (NCDC). Immigration department supported the staff from APHO in carrying out high quality surveillance. Self-declaration form printed in English posed problem for few passengers.

(Contributed by: Drs CS Moghe- EIS Officer, Meera Dhuria, CS Aggarwal, NCDC)

**Figure 2: Suspected cases identified during screening at IGI Airport, July 2014- October 2015**

Upcoming Conferences/ Workshops

The 12th Joint National Conference of Indian Society for Malaria and Other Communicable Diseases & Indian Association of Epidemiology, **ISONCD 2017** will be held from 1-3 September 2017, Pune, India

**Conference website:** [https://www.ismocd2017.com](https://www.ismocd2017.com)  **Venue:** Armed Forces Medical College (AFMC), Pune, India

The 9th **TEPHINET Global Scientific Conference** will be held from August 7-11 in Chiang Mai, Thailand. Pre-conference workshops will be held on August 6. On August 5, TEPHINET will host an FETP Program Directors Meeting.

**Conference website:** [http://tephinetglobal.cvent.com](http://tephinetglobal.cvent.com)  **Venue:** Empress Hotel and Convention Center, Chiang Mai, Thailand
Regional Consultation for National Action Plan on Climate Change and Human Health: South Zone

Ministry of Health & Family Welfare (MoHFW) constituted a National Expert Group on Climate Change and Health (NEGCCH) under the chairmanship of Dr. Vishwa Mohan Katoch, Former Secretary (Health Research), Government of India and Former DG, ICMR. National Centre for Diseases Control (NCDC) was identified by MoHFW as the nodal agency to coordinate working of the Expert Group and to draft strategies for Health Mission. The Expert Group after detailed deliberation has prepared the strategies for National Action Plan on Climate Change and Human Health.

Four regional and one national stakeholder consultations have been planned to review and update strategies of NAPCCHH. Centre for Environmental and Occupational Health, NCDC is organizing these consultations. The first regional consultation concluded on 2nd and 3rd March 2017 at Health & Family Welfare Training Centre, Chennai, Tamil Nadu. The consultation was inaugurated by Dr Darez Ahamed, Mission Director, NHM, Tamil Nadu. Dr Darez stressed the importance of health adaptation for Climate Change. It was attended by representatives from Tamil Nadu, Puducherry and Telangana. Participants represented the different departments such as Public Health, IMD, Disaster Management, Science-Technology and Environment.

The strategies in the National Action Plan for Climate Change and Human Health were discussed in detail with the State representatives. Participants brainstormed and deliberated on the state specific issues related to climate sensitive illnesses. As the outcome of the consultation, participant states came up with priority areas in climate change and health, the outline and steps for drafting state action plans for climate change and human health.

(Contributed by: Drs Pranil Kamble, CS Aggarwal, NCDC)

Training conducted for State Finance Consultants of IDSP

A meeting of State Finance Consultants of IDSP was organized in NCDC, Delhi on 3rd February’ 2017. The primary goal of organizing this meeting was to train the participants about financial Management under IDSP & to and make them aware of the proposed changes in PIP process for 2017-18. Central Surveillance Unit(CSU) IDSP had organized presentations from Ms. Mona Gupta from TSA and Mr. Rajeev Prasad from Office of Ms. Kavita Singh, Director (Finance), MoHFW. Finance Consultants from 20 States participated in this meeting.

In his Welcome Address Dr. Sunil Gupta, Acting Director highlighted the importance of sound financial management in running of IDSP. Ms. Mona Gupta, in her presentation, described the complete PIP process and gave an overview of NHM priorities in the coming financial year. She also clarified the doubts many of the participants had regarding PIP preparation. In his presentation, Mr. Rajeev Prasad gave an overview of different Budget Pools under NHM and how funds are allocated & utilized from Communicable Diseases FlexiPool. He also replied to many of the queries especially on facilitating fund release from State treasury.

CSU, IDSP team led by Dr. Pradeep Khasnobis, NPO then had a one to one discussion with State Finance Consultants where outstanding issues were raised from central team and any State specific queries were answered. Central team also highlighted the importance of submission of financial documents on time and in proper format. Participants were asked to take the message to SSO to brief them about recent developments on finance side in NHM.

(Contributed by: Drs Pranay & Pradeep Khasnobis, CSU-IDSP, NCDC)
One day orientation training workshop of Senior Regional Directors of Health & Family Welfare, Govt of India and State Surveillance Officers (SSOs) for preparedness and response to Emerging Infectious Disease

One day training workshop on Emerging Infectious Disease was organized under the Chairmanship of Dr. (Prof.) Jagdish Prasad, DGHS (India) on 30.01.2017 at Nirman Bhawan, Delhi, where in State Surveillance Officers/Representative of SSOs of 22 States/UTs (Andhra, Assam, Bihar, Chandigarh, Chhattisgarh, Delhi, Goa, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Manipur, Mizoram, Odisha, Punjab, Puducherry, Rajasthan, Tamil Nadu, Telangana, UP and West Bengal) AND 15 Senior Regional Directors of Health & Family Welfare, Govt of India participated.

Workshop had following sessions delivered by subject matter experts from the MoHFW, WHO, department of Animal Husbandry, ICMR

- Emerging Arboviral Diseases – Perspectives and issues
- Epidemiology and actions on Zika Virus Disease at Points of Entry
- Laboratory Diagnosis including sample collection & transport for Zika Virus Disease
- Entomological Surveillance for Zika Virus Disease,
- Action plan for managing Zika Virus Disease Epidemiology and international scenario of influenza
- Contingency plan for management of human cases of avian influenza
- Action plan on Preparedness
- Control and Containment of Avian Influenza (Revised,2015)
- Laboratory Diagnosis including sample collection & transport for Influenza

Prof. Dr Jagdish Prasad, Director General of Health Services, MoHFW , addressed the participants and emphasised on the preparedness as per the action plan for Zika Virus Disease and other emerging infectious Diseases. Ad Shri.Navdeep Rinwa, Joint Secretary, MoHFW Government of India and Shri Lav Aggarwal, Joint Secretary, MoHFW Government of India also addressed the participants and assured all the support from MoHFW Government of India.

(Contributed by: Drs Ranjeet, Pradeep Khasnobis, CSU IDSP, NCDC)

NCDC conducts stakeholder meeting for AMR

Antimicrobial resistance is well recognized as a growing threat to public health globally including our country. India has given due cognizance to the problem of Antimicrobial resistance (AMR). Government of India has launched “National Programme on Containment of Antimicrobial Resistance” under the 12th five year plan (2012-2017)on pilot basis. WHA resolution adopted global action plan (GAP) for AMR containment and had all member countries committed to develop National action plan (NAP) for containment of AMR by May 2017.

In this regard, three committees for AMR Containment were constituted by MoHFW for discussions that are required to lead to development of National action plan (NAP) for containment of AMR and also to take forward the programme activities viz; Intersectoral coordination committee, chaired by Secretary Health, MoHFW; Technical advisory group, chaired jointly by Secretary DHR/DG-ICMR& DGHS, MoHFW; and Core working group, chaired by Director National Centre for Disease Control.

The second meeting of Core Working Group-AMR was held on 2nd February 2017 in NCDC under the chairmanship of Director, NCDC. All the 6 sub groups formed in the 1st meeting came up with their inputs. The inputs were extensively deliberated and the meeting ended with a consensus on the inputs to be included in the
Drafting of National Action Plan for AMR (NAP-AMR).
The first meeting of Technical Advisory Group-AMR was held on 28th February 2017 in the Resource Centre, DGHS, Nirman Bhawan under the co-chairmanship of DGHS and Secretary (DHR) & DG (ICMR), with members of the group for reviewing the draft strategic National Action Plan on Containment of antimicrobial Resistance.

Dr Jagdish Prasad, DGHS, addressed the group by highlighting the global problem of AMR in all the sectors- human, animal and food and therefore is the requirement for other Ministries as well besides MoHFW, to contribute in containment of AMR. Dr Soumya Swaminathan, Secretary (DHR) & DG (ICMR) suggested for identifying the lead actions for each ministries involved in AMR also to comeup with plan for budgeting of operational plan for AMR. WHO Representative to India also emphasized the need for collective action by all stakeholders and also the need to expand AMR Surveillance to district level.

Dr Sunil Gupta, Additional Director & Head Microbiology gave a detailed presentation on the draft NAP-AMR and invited comments from the members on each strategic priority and objectives and activities under it simultaneously. All the members of the group had extensive discussion upon the inputs provided by the Core working group. The meeting ended with consensus on the inputs for the drafting of the NAP-AMR.

(Contributed by: Drs Mahesh Waghmare & Sunil Gupta, NCDC)

In-depth Review of IDSP in States of Orissa and Meghalaya

For maintaining effective and efficient surveillance system and to monitor optimum utilisation of the resources, monitoring & evaluation is an important component of any programme. Moreover, in IDSP, there is a dire need to scale up this component for preparing the system to deal with newer emerging and re-emerging disease threats. Till now, the monitoring & evaluation of the programme was being done by following ways:

i Field visits by IDSP/NCDC Officers.
ii National Review Meetings.
iii Annual review of Programme by the Common Review Mission of NRHM.
iv Independent appraisals of the programme by external agencies (WHO, World Bank).

In year 2016, State level IDSP reviews were conducted in 20 States by IDSP Officials. During those reviews, it was felt that there is a pressing need to intensify the monitoring of the States by conducting a regular joint evaluation by IDSP.

Hence, in this regards, IDSP decided to conduct regular quarterly IDSP internal evaluation from year 2017 in which 2 States will be randomly chosen in a quarter for in-depth evaluation. States with elections/ internal conflict (where visit might be difficult) and Union Territories will be excluded from the list. For quarter January – March 2017, in depth review of Odisha (28.02.17 – 03.03.17) and Meghalaya (20.03.17 – 25.03.17) was conducted.

The exercise focussed on strengthening IDSP activity at State and District as well as hand holding of the health staff rather than fault finding. Further, two districts and their health facilities and Lab (District Hospital, Sub-District Hospital, CHC, PHC and Sub-Centres) was visited in each State. On the last day of review, debriefing meeting was done with Senior State Officials by NPO, IDSP or any other senior official designated by NPO.

Team Composition:

1. Two Assistant Directors or Epidemiologist from NCDC – One of them will be Team lead, preferably looking after the implementation of IDSP in the selected State.
2. Two Consultant IT from IDSP
3. One Finance Consultant, IDSP
4. One Data Manager, IDSP
5. One Consultant Microbiologist, IDSP
Evaluation of Long Lasting Insecticidal Net (LLIN) DuraNet

Expert group of NVBDCP recommended to conduct field trial of LLIN DuraNet against malaria vector mosquitoes by National Centre for Disease Control (NCDC), Delhi. LLIN DuraNets are manufactured by Shobikaa Impex Private Limited, Karur (Tamil Nadu), are made from high-density polyethylene (HDPE) and incorporated a safe and effective insecticide called alphacypermethrin. Protocol has been prepared to carry out field trial of LLIN DuraNet in accordance to “Revised Common Protocol for Uniform Evaluation of Public Health Pesticides including Bio-Larvicides for use in Vector Control 2014”. Centre for Medical Entomology & Vector Management (CME&VM), NCDC initiated the study to evaluate LLIN DuraNet at three eco-epidemiological places i. e. NCDC branches at Alwar (Rajasthan), Jagdalpur (Chhattisgarh) and Rajahmundry (Andhra Pradesh). At each sites 10-12 study villages were selected and demographic survey has been completed. Preparatory work before the distribution of LLIN DuraNets is to be completed very shortly.

Long lasting insecticidal nets (LLINs) are nets treated in the factory with an insecticide incorporated within or bound around the fibers which makes the insecticide last at least 20 washes in standard laboratory testing and three years of recommended use under field conditions. Use of LLINs ensures long-term protection against mosquitoes and is a cost effective and sustainable method for protection against malaria. LLINs act as physical barrier by preventing man-mosquito contact and also as chemical barrier by repelling or killing the mosquitoes when they come into contact with fibers, thus LLINs have twofold effect. It improves the efficacy of the malaria programme with greater control.

(Contributed by: Dr LJ Kanhekar, NCDC)
**WHO Training on Antimicrobial Consumption methodology on 13th –14th February 2017 at Geneva, Switzerland**

Shri Lav Agarwal, Joint Secretary, Dr S.Venkatesh, Director NCDC, Dr Arti Bahl and Dr Sarika Jain attended the two day WHO Training on Antimicrobial Consumption methodology which included introduction to WHO activities on antimicrobial consumption and use; the anatomical therapeutic chemical classification & defined daily dose (ATC/DDD) methodology, classification, concept of DDD and uses. WHO methodology for monitoring antimicrobial consumption was discussed; an overview of the WHO Template given and the Eastern and Western European experiences were shared.

The country implementation of monitoring antimicrobial consumption at national level, the requirements and the integration of the methodology with national action plans on antimicrobial resistance and the long term sustainability of monitoring antimicrobial consumption was also discussed. “One Health” and monitoring antimicrobial consumption in human and animal sectors including the European experience were also discussed.

*(Contributed by: Dr Arti Bahl, NCDC)*

**Fresh batch of training started for India EIS Programme**

The fifth cohort of India EIS began their training in NCDC, Delhi with a five week inception course. A total of 13 EIS Officers have been selected in this batch through a two tiered open competitive process. These EIS Officers are a heterogeneous group from different states of India and varied age profile. Six of these thirteen EIS Officers are state sponsored and represent the Central Health Services Govt of India, UP State, Indian Navy.

During the six weeks inception course, concepts of epidemiology, surveillance, outbreak investigation, biostatistics were taught to EIS officers through a mix of lectures, case studies and hands on exercises. At the end of the inception course, these EIS Officers were assigned to a placement site in central health programmes and state health departments with an identified placement supervisor and a mentor where they will be undergoing training for the rest of the two year period. At the end of the training, these EIS Officers will develop competencies in surveillance evaluation, systematic outbreak investigation, setting up surveillance for epidemic prone diseases, design and conduct of analytical study and scientific communication. The India EIS programme emphasizes on a health systems approach.

*(Contributed by: Drs Girish Makhija, Tanzin Dikid & CS Aggarwal, NCDC)*

**NCDC prepares a training modules for Medical Officer under NPCDCS**

A meeting of experts was convened by Centre for NCD, NCDC on 16 January 2017 at NCDC under the chairmanship of Dr M. Shaukat (Advisor NCD, DGHS) and co-chairmanship of
Dr Damodar Bachani (Deputy Commissioner, NCD, MoHFW). The experts from MoHFW, DGHS, AIIMS, UCMS & GTB Hospital, VMMC & Safdarjung Hospital, PGI Chandigarh, and State and District Program Officers of NPCDCS attended the meeting.

The meeting was convened to revise and standardize the current Medical Officer module under NPCDCS. Currently NPCDCS intervention spectrum includes four diseases including Cancer, Diabetes, Cardio-vascular Disease and Stroke. Chronic Obstructive Pulmonary Diseases (COPD) and Chronic Kidney disease are now being included under the programme. It was decided that the revised module will include algorithms/flow-charts to manage the diseases under the programme to ensure standardized management across the country. The content and curriculum of the Module for Medical officers was finalized to role out Population based screening for NCDs under NPCDCS.

For universal health coverage, population based screening (PBS) for common Non-communicable Diseases including Diabetes, Hypertension and cancer (oral, breast, cervix), is to be launched for all individuals 30 years and above. All suspected NCD cases will then be reporting to the medical officer at the level of PHC. Therefore the experts finalized the content and curriculum of the training module for Medical Officers to roll out population based screening.

(Contributed by Drs Sonia Gupta, Rinku Sharma, Hema Gogia, NCDC)

NCDC has been identified as the National Nodal Centre for prevention & control of STH in the year 2015. Prevalence mapping of STH has been initiated by the institute in the entire country.

Govt. of India has been observing National Deworming Day (NDD) based on WHO recommended mass deworming strategy and tablet albendazole is given to millions of children during annual/biannual NDD rounds since 2015. The prevalence level estimations resulted in one additional round of NDD being conducted in 26 states in Aug 2016. The third STH expert group meeting was held in the month of March 2017 wherein members from MoHFW, WHO, Medical Colleges as well as non-governmental agencies participated. The recommendations included:

1. Need for constitution of coverage supervisory teams for mop-up and evaluation surveys.
   - Implementation of M&E tools for NTDs.

2. Capturing Age-wise, institution-wise coverage assessment data

3. Constituting a STH task force with few experts working full time to examine the data in detail. In this regard WHO/Evidence Action may be requested to provide necessary support

4. Planning the road ahead.
   - Defining the control & elimination targets for STH.

5. Extending STH control efforts to other target population

Implementation of guidelines for inclusion of deworming during pregnancy through supportive data

(Contributed by Drs Vinay Garg, SK Jain, NCDC)
Case Notification trends in RNTCP

The Revised National TB Control Programme (RNTCP) was launched in 1997 and expanded across the country in a phased manner with full nation-wide coverage achieved in March 2006. The programme is being implemented under the aegis of the National Health Mission. The programme has successfully achieved the Millennium Development Goal for Incidence and Prevalence of Tuberculosis.

- The Incidence of Tuberculosis has come down from 300/lakh population in 1990 to 217/lakh (28%) population in 2015
- The Mortality from Tuberculosis has reduced from 76 in 1990 to 36 per lakh pop (53%) in 2015

The programme is maintaining a network of more than 14,000 Designated Microscopy Centers and more than 4,00,000 DOTS Centers.

Diagnosis of Drug Resistant TB is being undertaken at 65 Culture & drug susceptibility testing (CDST) laboratories, including 29 for second line DST. In addition 628 Cartridge Based Nucleic Acid Amplification (CBNAAT) Test machines have been installed across the country.

The RNTCP has achieved a significant increase in the overall TB notification rate from 114 / lac population in 2013 to 135 / lac population in 2016. In the private sector, the TB notification rate increased from 3 / lac population in 2013 to about 25 / lac population in 2016.

(Contributed by Drs Raghuram Rao, Sunil Khaparde, RNTCP)