Communiqué

... quarterly e-Bulletin of State Surveillance Unit, IDSP

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Knowledge booster: Some important facts regarding Dengue
Message

I am very glad to know that State Surveillance Unit of IDSP (Integrated Disease Surveillance Programme) under the Public Health Branch of Health Services Directorate is going to publish a bulletin on communicable diseases under the caption ‘communique’ which will focus on recognition and achievements of people in IDSP in the field of disease control mechanism in times of its outbreak. I would like to convey my thanks to all associated.

I would like to convey my thanks and best wishes also to them for publishing the first issue.

Chandrimala Bhattacharya
Minister of State
Law and Judicial Departments (Independent Charge)
and
Health and Family Welfare Department
Government of West Bengal

129/MOS/H&FW/13
20-08-2013
“It’s my great pleasure to see the State Surveillance Unit, IDSP, West Bengal bring out its quarterly e-bulletin, Communiqué, documenting the programme activities and knowledge updates on disease surveillance.

I express my best wishes for the newborn bulletin.

I hope the publication will gain a wide readership and will be of help to the Public Health community.”

(S shri Satish Tewary, IAS)

Principal Secretary
Dept. of Health & Family Welfare
Govt. of W.B.
“Public health is a dynamic science. Hence documentation and communication are of immense importance in order to keep pace with it. The e–Bulletin, Communiqué, is not just an official bulletin reflecting disease surveillance across the state but its role in dissemination of updated public health information carries much deeper connotation.

First issue of this quarterly e–Bulletin looks well organised, illustrative and also relevant to the need of the potential reader.

Hope this bulletin will enrich more and more in coming days and will go on providing quality food for thought for the Public health professionals as well as the Medical fraternity.”

(Dr. B.R. Satpathi)
Director of Health Services & E.O. Secretary
Dept. of Health & Family Welfare
Govt. of W.B.)
From the Editor’s Desk

Communiqué, a quarterly e-Bulletin of State Surveillance Unit, West Bengal is going to be published for the first time. This initiative is a matter of great enthusiasm and is promising to create an impact in the near future. The need of such a Bulletin was felt much earlier amongst us in State HQ which will reflect the highlights of works done in Disease Surveillance. This issue not only spans insightful analysis of Surveillance Data and Outbreak Investigations but also delves in drawing specific inferences through Data Management and taking evidence based action against Outbreaks. Recent Outbreaks occurred in last 4 months have been mirrored. We have also added a section on Good Practices which shows some innovative methods in action. The Knowledge Booster section will feed readers with some valuable facts/tips in every issue.

Hope that the inaugural issue will be accepted by the readers and they will thoroughly enjoy by picking up the concepts, methods and messages embedded in this issue. The satisfaction and knowledge gain of the readers will justify the name of this e-Bulletin.

Jt. Director of Health Services (PH & CD) & State Surveillance Officer, IDSP, SSU, WB
Weekly Surveillance Reports (Form P & Form S) reflect the occurrence of Hepatitis outbreaks in Nadia & Purulia

Weekly surveillance reports show, once more, their potentiality to signal outbreak events in the district of Nadia & Purulia recently. Nadia registered high peak in Form-S on week-26 & 27 (fig-1) whereas Form-P records the high in the same weeks (fig-2). The hepatitis outbreaks in Nadia practically occurred in a span of week-25 to week-28 in different blocks.

A total of 3 outbreaks have occurred at Nadia in Tehatta II & Ranaghat block. It registered a total case count of 1611. No death was reported.

In the meantime Purulia District also reported a high trend of hepatitis in P & L form respectively. The rise in cases was reported from week-16 onwards in case of Form-P (fig-3) while it shows a high peak in Form-S in week-18 (fig-4). However, it must be mentioned that the hepatitis outbreaks which occurred in Purulia was in between week-15 to week-30. In case of Purulia too, it reported 3 outbreaks of Hepatitis like Nadia in the above mentioned period. Here a total case count of 637 was recorded with 1 death. Area affected were Purulia Municipality and Manbazar-I Block.
Improved performance by Burdwan, Uttar Dinajpur & Paschim Medinipur in Portal consistency brings a positive effect to State consistency

In comparison to previous year Burdwan, Paschim Medinipur & Uttar Dinajpur has strengthened their Portal reporting in case of P forms this year i.e. 2013. They have taken the matter seriously and made progress by leaps and bounds this year. All the above mentioned three districts were lagging behind other districts of West Bengal earlier in Portal P reporting. The table-1 justifies the progress made. Here we can see that commendable performance has been done by Burdwan, Paschim Medinipur & Uttar Dinajpur to pull up from their earlier poor status. Having said that there is a scope of improvement for all the above districts to maintain a consistency level of >80% throughout in the near future.

<table>
<thead>
<tr>
<th>District/State</th>
<th>Consistency of P-PHC (wk-1 to wk-30)</th>
<th>Consistency of P-Govt Hosp. (wk-1 to wk-30)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012(%)</td>
<td>2013(%)</td>
</tr>
<tr>
<td>Burdwan</td>
<td>55</td>
<td>98</td>
</tr>
<tr>
<td>Paschim Medinipur</td>
<td>37</td>
<td>86</td>
</tr>
<tr>
<td>Uttar Dinajpur</td>
<td>31</td>
<td>85</td>
</tr>
<tr>
<td>State</td>
<td>77</td>
<td>80</td>
</tr>
</tbody>
</table>

Diseased animal causing life-threatening health-hazard in Bhatar, Burdwan

A suspected Anthrax outbreak was reported on 29.5.2013 from Line Danga & Kanthal Danga village, GP-Sahebganj-II, Block- Bhatar, Burdwan (WB.BWN.2013.008/N). Four skin smears (skin ulcer with central Blackening) were collected and examined at Burdwan Medical College. Total ten cases (out of 249 exposed persons) were found with attack rate of 4%. One of them had the history of cut in his finger. He developed septicaemia and died. The case fatality rate was 10% (1 out of 10). All the affected persons were male and had the history of participating in butchering a dead diseased cow on 22nd May, 2013. All test results were negative for Bacillus anthracis probably due to quick administration of antibiotics after onset of symptoms.

Control measures:
1. House to House survey was done to find out any undetected cases and as well as handlers of the diseased cow/carcass. Passive surveillance was done at adjacent hospitals in the affected areas. Health Camp was established in the community. Prophylactic treatment was given to all handlers. Disinfection was
done in the potentially contaminated premises with bleaching powder and lime.

2. Intensive IEC was done on handling of potentially contaminated articles and their proper disposals. Deep burial of remaining body parts of the dead animal was done with bleaching powder and lime in presence of Health personnel.

3. State RRT visited the affected village to strengthen the control measures.

4. Animal Resource Department was informed quickly and all cattle vaccination was undertaken by them within one day (30.5.2013). Intersectoral meeting was organized in Bhatar BDO Office for effective coordination with the stake holders.

**Hepatitis E outbreak in Purulia: Poor hygiene & sanitation prolonged the transmission**

A classical instance of hepatitis outbreak was recently experienced in Purulia. Earlier in mid-January 2013 a cholera outbreak was reported from the municipality area. The investigation and interaction with the local people revealed that contamination of the old pipe lines of water was the key factor responsible for the outbreak.

Just after one month (14th February) an outbreak of jaundice (hepatitis) was reported from Ward No 19. Within next two months (March- April) the number of cases rose to around 200 and some more wards were also affected. The spread of the cases suggested that pipe water supply was the source of transmission. Poor condition of the pipe line was so widespread, it was not possible for the municipal authority to undertake adequate repair work.

Lab result confirmed infection with Hepatitis E virus. Open defaecation, use of the same pond after toilet and again for bathing, washing of clothes and utensils etc. are common practice in the slums. These, coupled with poor hygiene, caused lots of secondary cases, total case count reaching the tune of 500.
Apart from chlorination of pipe water and disinfection of other water sources, emphasis was given on health education. Public meetings were organized carefully in the slum neighbourhoods in presence of Medical Officers. These were successful to percolate the message of personal hygiene and importance of boiling of water. Thus the outbreak was ultimately controlled in the middle of May, 2013.

**Control of Viral hepatitis in Nadia : an example of intersectoral coordination**

An outbreak of viral hepatitis occurred in Mira-I & Mira-II Gram Panchayats (near Plassey, the place of history) of Kaliaganj Block. It came into the notice of the block health managers on 19 June, 2013. Initially the Block RRT responded to the outbreak. The District RRT started investigation on 24 June. The affected areas are served by a project of PHE (an arsenic-free water supply scheme) drawing water from the Ganges and supplying it in pipe lines after treatment. The outbreak was evidently due to contaminated pipe water and hence the case count soon shot up to the tune of hundreds.

Serology confirmed the infection as hepatitis A. The DSO coordinated with the Engineers of PHE on 24 June. They too reciprocated from their end. On 26th and 27th June at night PHE flushed the whole pipe line with 6 times the normal strength of chlorine and thereafter continued double strength of chlorine in the supplied water.

The visit of the State Surveillance Officer further encouraged the control activities. Incidence of new cases (already in incubation period) gradually came down after the chlorine treatment and there were no more new cases after 15th July. The total case tally was 1546 over a period of about 4 weeks.

![Day-wise distribution of VH cases in Kaliganj Block](chart.png)
### Outbreaks at a glance of last 4 months of 2013 (week-14 to week-31)

#### Biological Sample Results

<table>
<thead>
<tr>
<th>Sl. NO.</th>
<th>District</th>
<th>Outbreaks where biological samples collected</th>
<th>Results found +ve</th>
<th>Results found -ve</th>
<th>Results awaited</th>
<th>Outbreaks where food samples collected</th>
<th>Diseases causing outbreak</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>North 24 PGS</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>ADD, Cholera, Fever, Dengue, Food Poisoning</td>
</tr>
<tr>
<td>2</td>
<td>Nadia</td>
<td>15</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>ADD, Anthrax, Rubella, Food Poisoning, Viral Hepatitis</td>
</tr>
<tr>
<td>3</td>
<td>Bankura</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>ADD, Rubella, Fever</td>
</tr>
<tr>
<td>4</td>
<td>Birbhum</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>Cholera, Food Poisoning, Dengue, ADD</td>
</tr>
<tr>
<td>5</td>
<td>Hooghly</td>
<td>11</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>ADD, Cholera</td>
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<tr>
<td>6</td>
<td>Murshidabad</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Anthrax</td>
</tr>
<tr>
<td>7</td>
<td>Darjeeling</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Measles, Food Poisoning, AGE</td>
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<tr>
<td>8</td>
<td>Jalpaiguri</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>ADD, PUO, Viral Hepatitis, JE</td>
</tr>
<tr>
<td>9</td>
<td>Purulia</td>
<td>11</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>ADD, Cholera, Rubella, Hepatitis A, E</td>
</tr>
</tbody>
</table>
### Biological sample results

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Districts</th>
<th>Outbreaks where biological samples collected</th>
<th>Result found +ve</th>
<th>Result found -ve</th>
<th>Result awaited</th>
<th>Outbreaks where food samples collected</th>
<th>Disease causing outbreak</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>South 24 Pgs</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>Acute Alcohol Poisoning(?) , ADD, Food Poisoning, Cholera</td>
</tr>
<tr>
<td>11</td>
<td>Paschim Medinipur</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Food Poisoning, ADD, AGE</td>
</tr>
<tr>
<td>12</td>
<td>Purba Medinipur</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>ADD</td>
</tr>
<tr>
<td>13</td>
<td>D. Dinajpur</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>14</td>
<td>Burdwan</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>Food Poisoning, Chicken Pox, ADD, Anthrax, Dengue</td>
</tr>
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<td>Howrah</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>ADD, Food Poisoning</td>
</tr>
<tr>
<td>16</td>
<td>Malda</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>Chickenpox, Measles, ADD</td>
</tr>
<tr>
<td>17</td>
<td>Cooch Behar</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Uttar Dinajpur</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Measles</td>
</tr>
<tr>
<td>19</td>
<td>Kolkata</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>91</strong></td>
<td><strong>38</strong></td>
<td><strong>31</strong></td>
<td><strong>22</strong></td>
<td><strong>7</strong></td>
<td></td>
</tr>
</tbody>
</table>

- **No. of outbreaks reported**
- **Outbreaks investigated within 48 hrs of notification**
- **Outbreaks where biological samples collected**
- **Outbreaks where bio sample collected within 4 days of outbreak**
Exemplary action taken on outbreak observations by the District Magistrate, Hooghly

There was an Executive Committee meeting (of District Health & FW Samiti) going on at Chinsurah on a July day of this year. This meeting was a bit different from other meetings of its kind. DSU-Hooghly was asked to make a presentation on the diarrhoeal outbreaks faced in the year till that day.

The problem areas or in other words the major deficiencies in sanitation & water supply that were come across during investigating those outbreaks were discussed. The members noted those points as the contributing factors behind the diarrhoeal outbreaks. And the District Magistrate took the interest to order specific corrective actions on those. She pulled different departments like Health, Fisheries etc. including the General Administration to chip in.

A few excerpts of the meeting resolution are given below. We hope this will give a great boost to public health activities in the district.

<table>
<thead>
<tr>
<th>Name of Block</th>
<th>Address</th>
<th>Problem Area/Source of Outbreak</th>
<th>Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chanditala-1</td>
<td>Vill- Paschim Tajpur (Katgora), SC- Seakhaya, GP-Seakhaya</td>
<td>No Tubewell available, only one Tap water source available. One pond is there but it is contaminated due to the wastage material of New Life Nursing home.</td>
<td>Installation of new Tubewell. ACMOH Serampore will submit the enquiry report regarding Contamination of the pond due to dumping of waste material of New Life Nursing home.</td>
</tr>
<tr>
<td>Arambagh</td>
<td>Vill-Mandara, G.P-Tirol</td>
<td>Less no. of Tubewell available &amp; the platforms of the existing tubewell is badly damaged.</td>
<td>Installation of new Tubewell &amp; repair of platforms of the existing tubewells.</td>
</tr>
<tr>
<td>Balaghat</td>
<td>Vill-Adibasipara, Hattala, Itagarh 5/C, Mohipalpur GP</td>
<td>Poor sanitation system, only 3-4 latrines are there among 65-70 house holds. All the water sources are contaminated(11 nos of water samples were sent to NICED, Kol for testing,10 nos of samples are contaminated). One pond is there (Hattala) but it is contaminated due to the wastage material of one Poltry firm.</td>
<td>Improvement of the sanitation system/disinfection of all water sources. Investigation required regarding Contamination of the pond due to the wastage material of Poltry firm with the help of Fishery Deptt.</td>
</tr>
</tbody>
</table>
Grass-root workers detected an early dengue outbreak in Kamarhati Municipality: an example of good practice

Monthly rounds of house-to-house survey are held in Kamarhati Municipality (as in other 27 urban areas) for generation of dengue awareness. During the July round of survey, the Honorary Health Workers observed an increased number of fever cases in Ward No. 11. On receipt of this information from the health officer of the said Municipality a team from State NVBDCP and IDSP cell as well as N24 Pgs District Surveillance Unit visited the place on the very next working day.

Through active fever surveillance 11 fever cases were found in different stage of illness. The fever was associated with other constitutional symptoms such as mild body ache, head ache, cough and cold, etc. Blood samples were collected by the DSU from all the fever cases and sent for dengue screening by NS1 &/ or IgM ELISA method at Sagar Dutta MCH.

The entomological survey report revealed: HI- 41.8%, CI- 52.50%, BI- 76.30 indicating the area is at high risk of dengue transmission.

The lab result confirmed 7 out of 11 blood samples as positive for dengue. However sign and symptoms of all the patients were not very classical for dengue. As most of the samples were confirmed for dengue, the outbreak was considered as undifferentiated fever of dengue. Larva control measures were immediately strengthened and the outbreak could be quickly contained.

Analysis of P-report of a PHC led to detection of a hepatitis outbreak, Nadia District

When the P-report of Nawpara PHC of Ranaghat-I Block for Week 24 was being entered into the portal by the DSU (Nadia), it was noted that there were 5 cases of Viral hepatitis recorded in it. This PHC usually reports nil or 1 case of hepatitis in a week. So it stuck the eye of the Data Manager. He called up the MO of the PHC and got the data confirmed.

The next day the Epidemiologist moved to the PHC. The MO was talking of a good no. of hepatitis cases having attended in his OPD. By enquiry the Epidemiologist identified an outbreak at Panpara Village near the PHC.

The outbreak was investigated and could be controlled within a short time.
Some important facts regarding dengue

**Introduction:** The dengue viruses, a group of four closely related viruses, are transmitted to humans through the bite of an infected mosquito (*Aedes aegypti*, the primary vector). Once infected the mosquito remains infected for life, transmitting the virus to susceptible individuals during feeding. They cause a disease known as dengue fever, but they can also cause a more severe form of illness known as dengue hemorrhagic fever, which potentially can be fatal. The incidence of both forms of the disease has been increasing dramatically in recent years.

**Symptoms:** Dengue fever is characterized by high fever (duration: 2-7 day), severe headache, pain behind the eyes (Retro-orbital pain), joint & bone pain, rash, myalgia, leucopenia and mild bleeding. In addition to these symptoms, the more severe form of the disease can lead to breathing difficulty, severe bleeding, shock, and possibly death.

**Dengue virus pathogenesis:** Dengue viruses belong to the genus flavivirus within the *Flaviviridae* family, having four serotypes DENV-1, 2, 3 & 4. The virion comprises a spherical particle, 40–50 nm in diameter, with a lipo-polysaccharide envelope. The positive single-strand RNA genome, which is approximately 11 kb in length, has a single open reading frame that encodes three structural proteins — the capsid (C), membrane (M) and envelope (E) glycoprotein — and seven non-structural proteins (NS1, NS2A, NS2B, NS3, NS4A, NS4B and NS5). Important biological properties of dengue viruses, including receptor binding, haemagglutination of erythrocytes & the induction of neutralizing antibodies & the protective immune response, are associated with the E glycoprotein.

**Laboratory diagnosis of Dengue by ELISA:** Enzyme-linked Immuno-sorbent Assay (ELISA) combine the specificity of antibodies with the sensitivity of simple enzyme assays, by using antibodies or antigens coupled to an easily-assayed enzyme. ELISAs can provide a useful measurement of antigen or antibody concentration. There are two main variations on this method: The ELISA can be used to detect the presence of antigens that are recognized by an antibody or it can be used to test for antibodies that recognize an antigen. A general ELISA for antibody detection is a five-step procedure: 1) coat the micro-titre plate wells with antigen; 2) block all unbound sites to prevent false positive results; 3) add primary antibody to the wells; 4) add secondary antibody conjugated to an enzyme; 5) reaction of a
substrate with the enzyme to produce a coloured product, thus indicating a positive reaction. For early detection of Dengue two ELISA tools are commonly being used and they are as follows:

a) IgM Antibody Captured (MAC) ELISA: Dengue-specific IgM in the test serum is detected by first capturing all IgM using human-specific IgM bound to a solid phase. The assay uses a mixture of four dengue antigens (usually derived from dengue virus-infected cell culture supernatants or infected suckling mouse brain preparations). Compared to the haemagglutination inhibition assay as the gold standard, MAC-ELISA shows a sensitivity and specificity of 90% and 98%, respectively, in samples collected after 5 days of fever. False-positive results due to dengue-specific IgG and cross-reactivity with other Flaviviruses is a limitation of the MAC-ELISA.

b) NS1-ELISA: NS1 is a glycoprotein produced by all Flaviviruses and is essential for viral replication and viability. Because this protein is secreted into the bloodstream, many tests have been developed to diagnose DENV infections using NS1. These tests include NS1-antigen-capture ELISA, can be found in the samples collected before 5 days of fever. As NS1 antigen are produced by all Flaviviruses, this diagnosis process sometime gives non-specific result for all the Flaviviruses that is why sensitivity and specificity of NS1 ELISA for Dengue detection have shown variable results in different studies. However NVBDCP has declared this test as an acceptable diagnostic for dengue.
Communiqué

...Quarterly e-Bulletin of
State Surveillance Unit, IDSP

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