



## मासिक आई डी एस पी निगरानी विवरणी

## Monthly IDSP Surveillance Report

A monthly Surveillance Report from Integrated Disease Surveillance Programme  
National Health Mission

May 2017

### Inside

1. Outbreak Investigation of Acute Gastroenteritis Outbreak at Nongkya, Ri-Bhoi District, Meghalaya..... Page 1
2. Surveillance data of Enteric Fever, ADD, Viral Hepatitis A & E, Dengue, Leptospirosis and Chikungunya.....Page 7
3. Action from Field..... Page 19
4. Glossary.....Page 20

### *Outbreak Investigation of Acute Gastroenteritis Outbreak at Nongkya, Ri-Bhoi District, Meghalaya*

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#### Background

The Church of God, Shathie unit of Ri Bhoi District had organized a district level gathering on the 28<sup>th</sup> May 2017 at Nongkya village which is located about 6 KM from Umsning. The Shathie unit comprises of five circles Nongkya, Nongtraw, Umiam-Khwan, Mawhati and Umsning. Around 1200 faithful from all these circles had attended the morning service on Sunday 28<sup>th</sup> May, 2017. Lunch was subsequently provided to everyone after the service ended around 12:30 PM in pre-packed leaf packets which consisted of either Pork with Jaliéh (White Rice), Pork with Jadoh (Yellow Rice), Chicken with Jaliéh (White Rice) and Tea. Some people who had consumed the food started showing symptoms of Acute Gastroenteritis later during the evening of 28<sup>th</sup> May, 2017 while some in the morning and afternoon hours of 29<sup>th</sup> May 2017.

The major symptoms that most cases exhibited were diarrhea, vomiting, fever, chills, headache and abdominal pain.

#### Methods

On being intimated by the Departmental District Head and the Directorate about the outbreak of gastroenteritis at Nongkya village, the RRT (Rapid response team) from DSU Ri Bhoi visited the CHC and the village on the 29<sup>th</sup> May and the RRT from DSU East Khasi Hills after discussion with SSU and MO IC of CHC Umsning visited on the 30<sup>th</sup> May

**Case Definition**

Person with at least three loose stools in the last 24 hours and who had consumed the food packets served at Nongkya on the 28th May

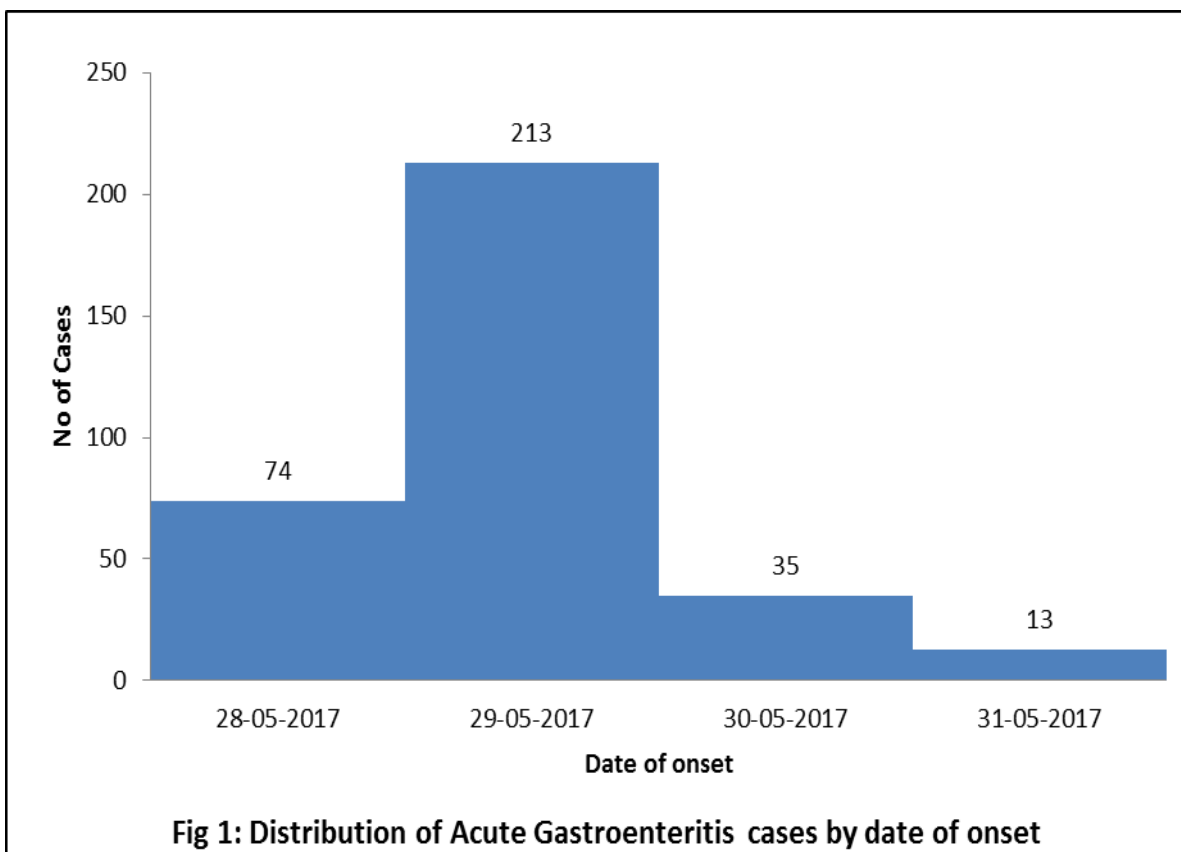
The active search was undertaken in all the Govt. and Pvt. hospitals of Shillong and Nongpoh. Line listing of cases admitted to different hospitals of Shillong and Nongpoh was done. 6 Stool samples and 2 food samples were collected and sent to RMRC Dibrugarh. Also, 1 water sample was collected and sent to Food testing Centre, Shillong under cold chain for analysis to ascertain the probable cause of the gastroenteritis outbreak.

Information like demographics, food items consumed, major symptoms, food preparation and handling and the environmental condition were collected. Qualitatively in depth interviews with village elders, headman, church elders and food supervisors were done.

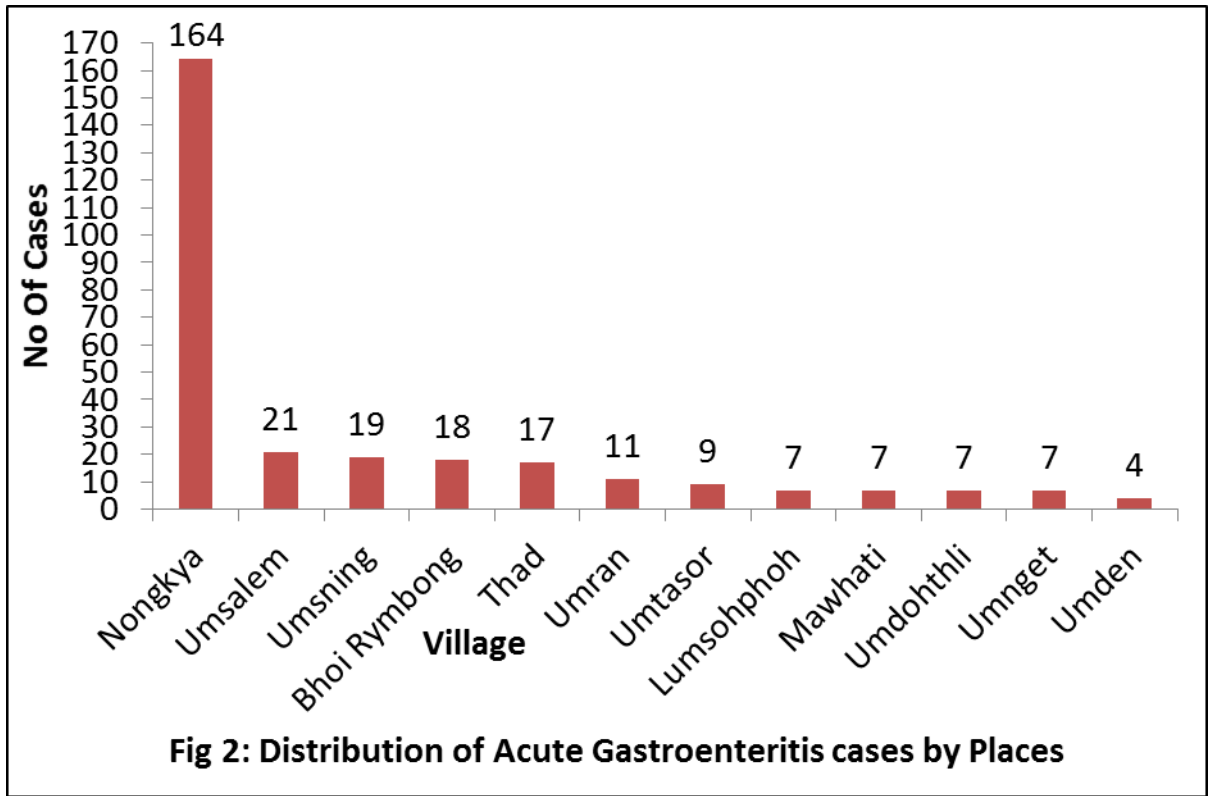
**Findings**

Important and relevant findings of our investigation are summarized below:

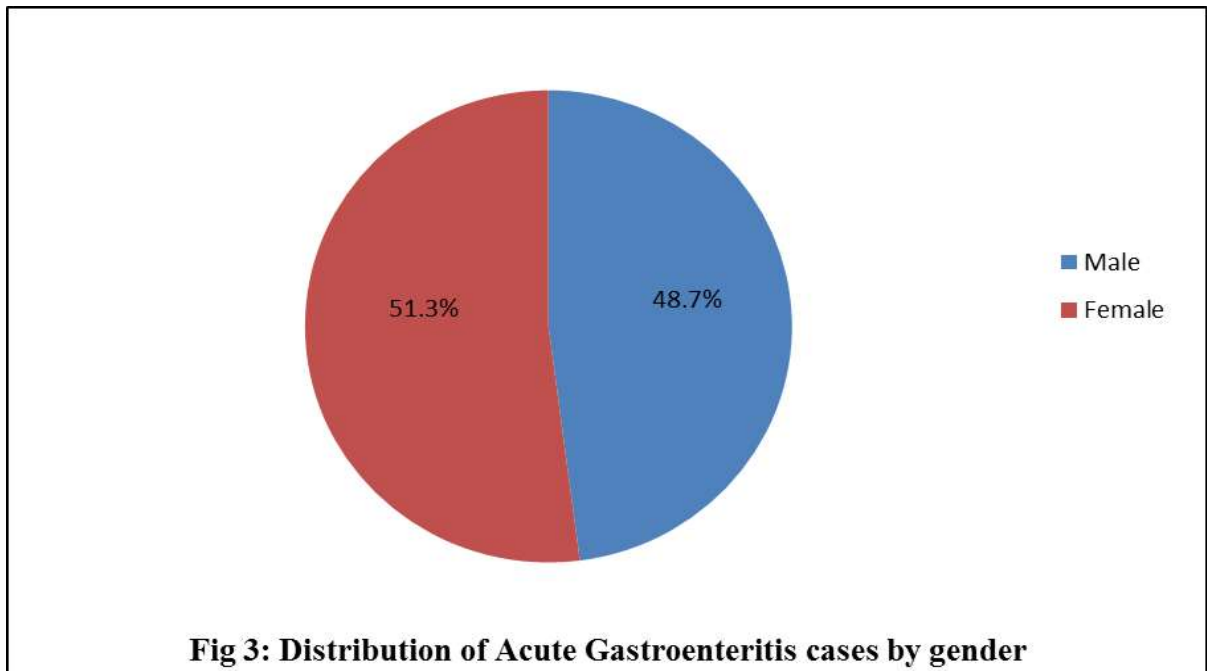
- The first person started showing symptoms around 4:00 PM on 28<sup>th</sup> May. Majority of the cases reported on 29<sup>th</sup> May (Fig 1). The total number of cases that were admitted into different health institution of Ri Bhoi and Shillong were 335.

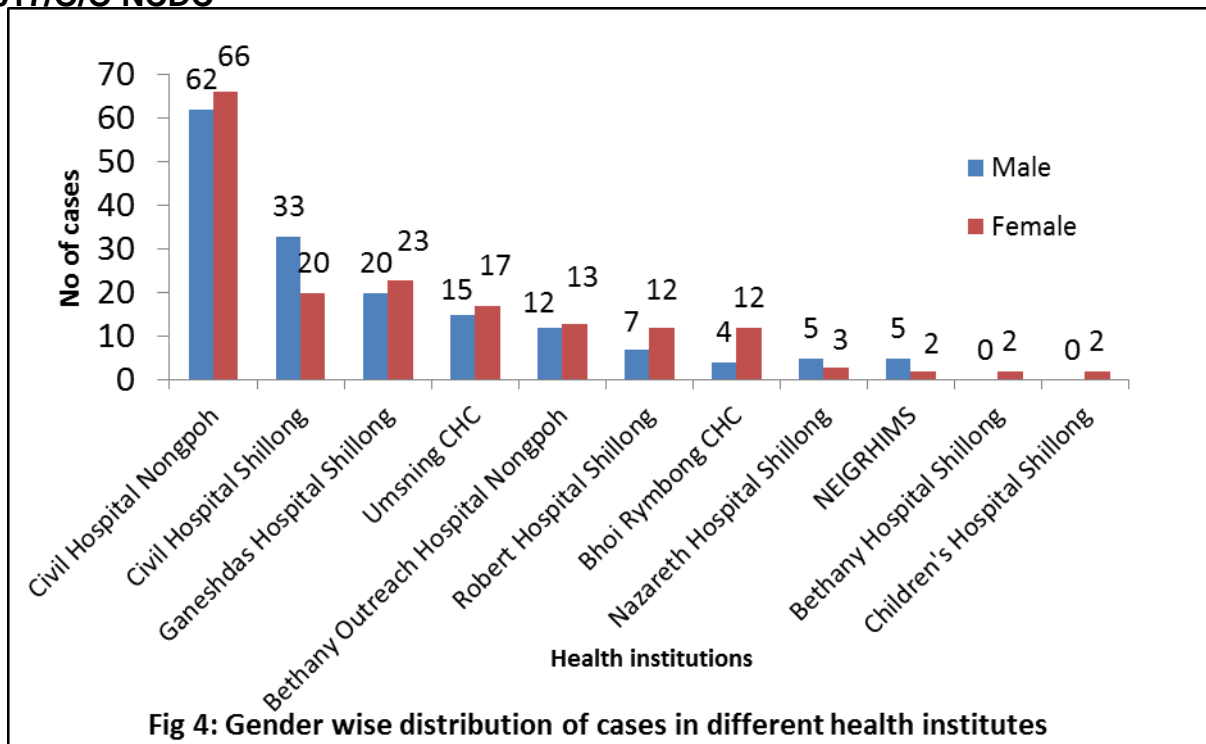


As shown in Fig 2, 49% of the cases (164) were from Nongkya village



- Almost equal proportion of males and females were affected during the outbreak





- The symptoms presented by the patients were diarrhea, nausea, vomiting, chills, fever, headache, bodyache and abdominal pain.
- Nine deaths due to acute gastroenteritis were confirmed

**Table 1: Age and Sex Wise Distribution of the Deaths**

<u>Age group/Sex</u>	<u>Male</u>	<u>Female</u>
0 – 5 years	1	0
5 – 10 years	4	1
10 – 15 years	1	0
15 – 20 years	1	1
<b><u>Total</u></b>	<b><u>7</u></b>	<b><u>2</u></b>

### Lab results

- Out of 6 stool samples tested, 5 found positive for Enteroinvasive E Coli/Shigella spp at RMRC Dibrugarh (real time PCR & culture).
- Food samples (White rice & Pork) detected presence of Entero invasive Escherichia coli/Shigella Spp (real time PCR & culture).
- Water sample from PHE water supply showed presence of coliforms (>180 MPN/100ml) which gives a general indication of the sanitary condition of water supply.
- Food sample tested negative for neutral poisons (pesticides etc.), metallic poisons, non-metallic poisons, acidic and basic poisons

Qualitative analysis

**Food Preparation**

- According to the food supervisor mostly men were involved in cooking.
- The pigs were slaughtered at 12 PM and 4:00 PM on the 27th May i.e. one day before the gathering.
- The mesenteric fat of the pigs that was used for cooking Jadoh (Yellow rice) was stored at room temperature prior to cooking.
- The pig meat was half fried (Shetlieh) and then dried over a bamboo pole beside the fireplace.
- Volunteers cooked all the food items between 2:00 AM - 4:00AM on 28th May.
- Dried pork was cooked without oil (ShetSyrwa), chicken was dry cooked and jadoh (Yellow rice) was prepared simultaneously by using the mesenteric fats from the slaughtered pig.
- The pigs and the chickens that were slaughtered were from the village itself.

**Food Packing and Storage**

- Around 2000 packets of food were packed during the early hours of the 28th May.
- According to the information gathered through interview with the food supervisor and some of the food handlers, around 17 women were involved in packing the cooked food items from the dishes into leaf packets.
- The packets were packed in leaves called Sla Lamet between 3:00AM – 10:00AM into three type of food packets; Jadoh with dohsniang (Yellow rice with Pork), Jalieh with dohsniang (White Rice with Pork) and Jalieh with dohsyiar (White rice with Chicken).
- Simultaneously as the packets were packed, they were transferred to a room about 10m away from the cooking spot.
- The store room (10X8 ft) as per description was a closed bamboo room with tin roof and cement floor.
- Plastic was used to cover the floor of the room on which the food packets were kept.
- Our probable hypothesis is that food contamination must have occurred during the process of food packing, as most of the food handlers were not aware of the different modes of food contamination during the interview and although all of them had washed their hands before touching the food items and used a spoon for scooping out the food into the leaves, the possibility of contaminating the food during scooping and packing cannot be ruled out. The weather was also hot and humid which might have helped in the multiplication of the organisms in the closed storage room

**Source of water**

- The water used for cooking and drinking purpose for that day was untreated water connected directly from the pipeline leading to the treatment and filtration tank and not from the treatment tank.
- The water source is a natural stream located about 3 KM from the village.
- As per the narrative by the person in charge of water, bleaching at the source was done four days prior to the event.

**Control Measures**

- RRT from Ri Bhoi and East Khasi Hills District visited Nongkya village and Umsning CHC on 29<sup>th</sup> and 30<sup>th</sup> May 2017.
- A mobile medical unit was stationed by the DMHO Ri Bhoi in Nongkya village on the 29<sup>th</sup> May 2017 in the church premises. On 31<sup>st</sup> May 2017 the Mobile Medical Unit from Ri Bhoi District was stationed in Nongkya village.
- Medical assistance was also provided by the DMHO East Khasi Hills. Cases were given symptomatic treatment with Intravenous fluids, Oral Rehydration Salts and anti- diarrheal drugs. Serious cases were referred to

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higher institutions via 108 ambulance, ambulances from DM&HO office, Civil Hospital Nongpoh, CHCs and PHCs of Ri Bhoi District and DHS office, Shillong and other private vehicles.

- Symptomatic treatment of cases was administered.
- Information, Education and Communication (IEC) activities were carried out by the paramedical staff of Umsning CHC along with the Officials from Ri Bhoi district on the importance of personal hygiene and safe food handling practices.

### **Conclusion/Discussion**

With respect to the presenting symptoms and the findings of our investigation, the reason for the gastroenteritis outbreak is more in favor of contamination and the causative agent as identified by the stool and food sample microbiological tests is Entero invasive Escherichia coli/Shigella. The most customary mode of transmission of these agents is through contaminated food and water.

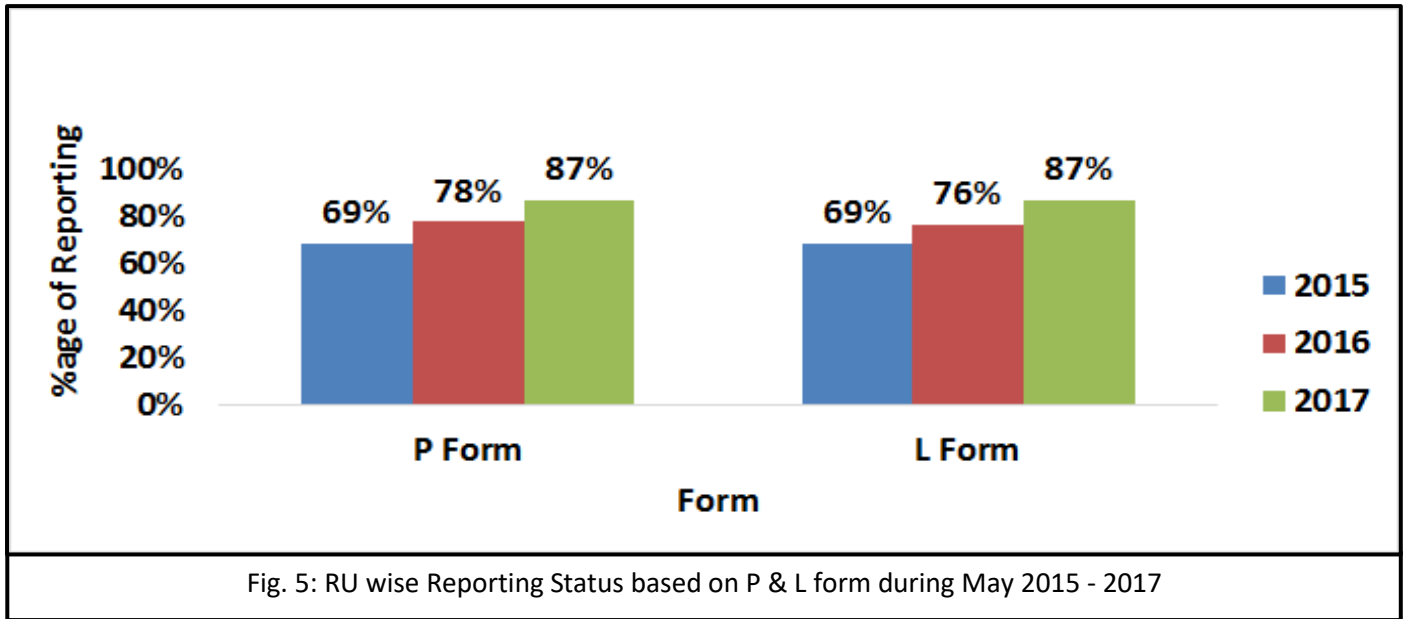
### **Recommendations**

Apart from food contamination, transmission of infection occurs by direct contact, favored by the habits and customs of people. Improper storage and handling of cooked food is equally responsible for food-borne illnesses. Additional efforts to enhance inter-sectoral public health approaches will be essential to further strengthen food safety

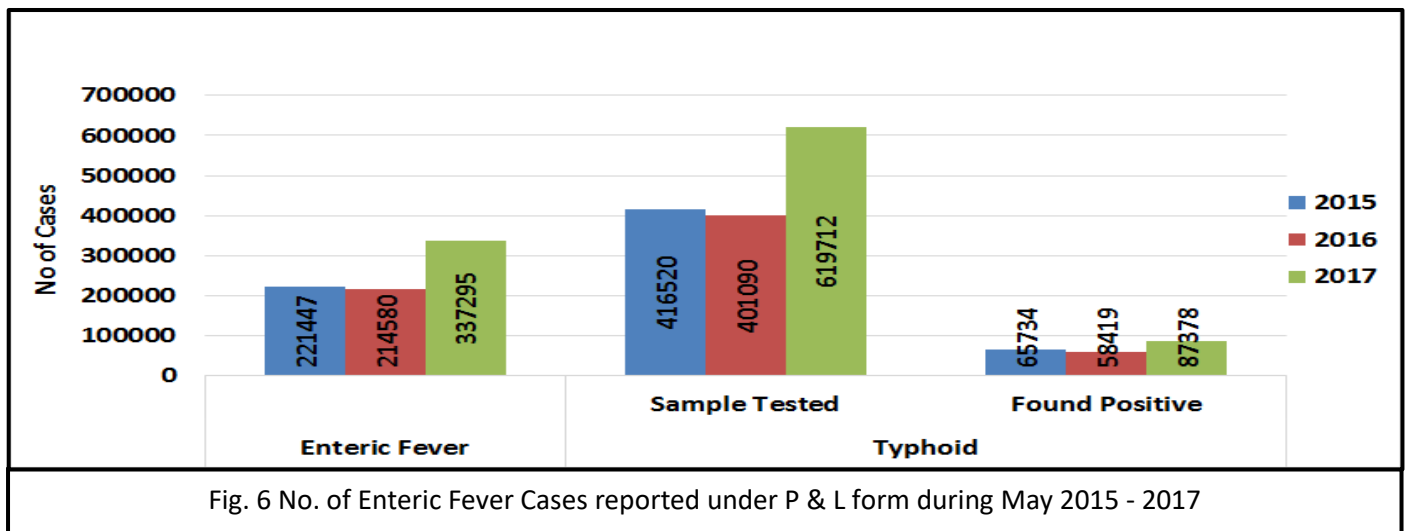
- Food safety education is a critical pre-requisite to prevent further food-borne outbreaks by educating food-handlers and the community about proper practices in cooking and storage of food, and personal hygiene.
- Hand washing is one of the key interventions to be followed, not just by the food handlers, but also by the community at large.
- A properly functioning water supply system with adequate chlorine levels should be ensured for protection against bacterial contamination.
- There is a need to make different church bodies realize and follow strict sanitary and hygienic measures before and during such events. Inter departmental collaboration between Church bodies, Health and the Food safety department can be done before organizing such events.
- Regular treatment of water at least twice a year and periodic testing of water should be carried out by the PHE department before such gatherings

**Surveillance data of Enteric Fever, Acute Diarrhoeal Disease, Viral Hepatitis A & E, Dengue  
Leptospirosis and Chikungunya During May 2015-2017\***

\* Data extracted from IDSP Portal ([www.idsp.nic.in](http://www.idsp.nic.in)) as on 18 August, 2017.



As shown in fig 5, in May 2015, 2016 and 2017, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 69 %, 78% and 87% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 69%, 76% and 87% respectively across India for all disease conditions, during the same month for all disease conditions reported under IDSP in L form. The completeness of reporting has significantly increased over the years in both P and L form, thereby improving the quality of surveillance data.

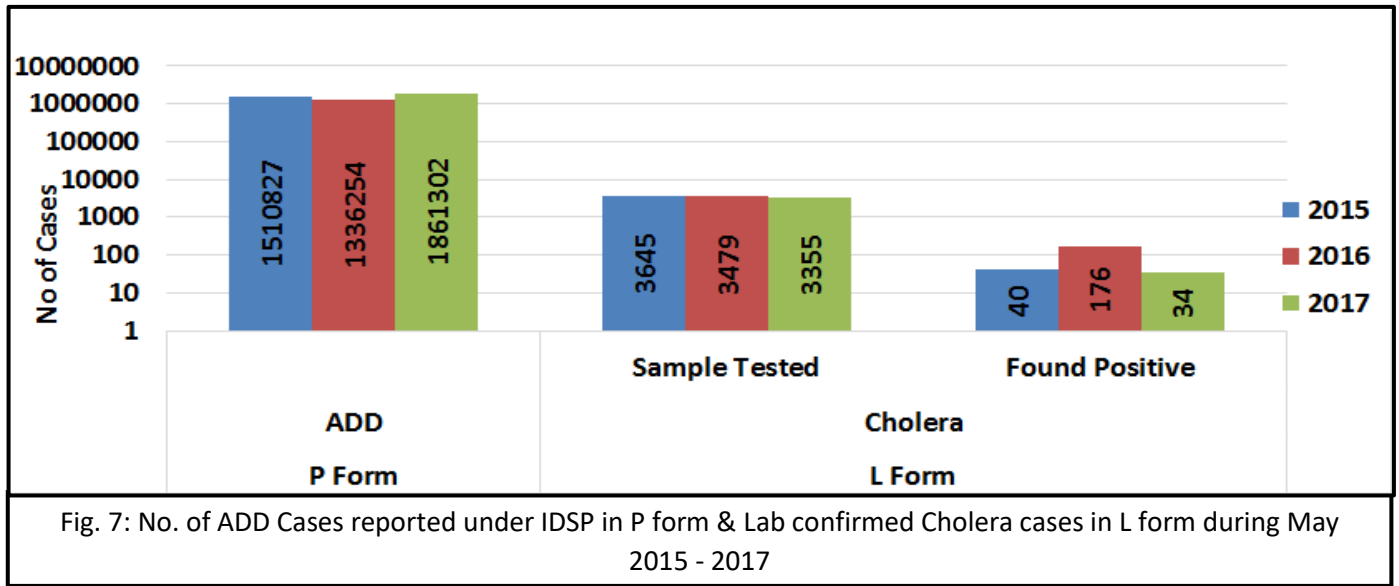


As shown in fig 6, number of presumptive enteric fever cases, as reported by States/UTs in 'P' form was 221447 in May 2015; 214580 in May 2016 and 337295 in May 2017. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2015; 416520 samples were tested for Enteric fever, out of which 65734 were found positive. In May 2016; out of 401090 samples, 58419 were found to be positive and in May 2017, out of 619712 samples, 87378 were found to be positive.

Sample positivity has been 15.8%, 14.6% and 14.1% in May month of 2015, 2016 & 2017 respectively.

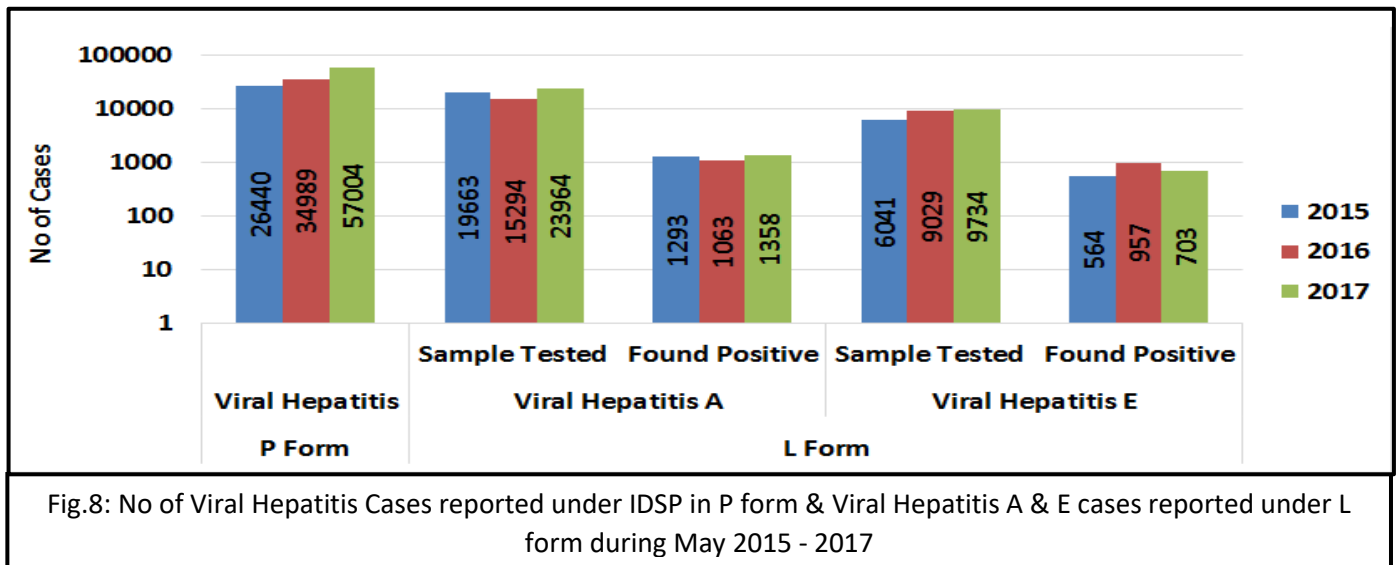
**Limitation:** The test by which above mentioned samples were tested could not be ascertained, as currently there is no such provision in L form.



As shown in fig 7, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in ‘P’ form was 1510827 in May 2015; 1336254 in May 2016 and 1861302 in May 2017. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2015, 3645 samples were tested for Cholera out of which 40 tested positive; in May 2016, out of 3479 samples, 176 tested positive for Cholera and in May 2017, out of 3355 samples, 34 tested positive.

Sample positivity of samples tested for Cholera has been 1.1%, 5.1% and 1.0% in May month of 2015, 2016 & 2017 respectively.



As shown in fig 8, the number of presumptive Viral Hepatitis cases was 26440 in May 2015, 34989 in May 2016 and 57004 in May 2017. These presumptive cases were diagnosed on the basis of case definitions provided under IDSP.

As reported in L form for Viral Hepatitis A, in May 2015; 19663 samples were tested out of which 1293 were found positive. In May 2016 out of 15294 samples, 1063 were found to be positive and in May 2017, out of 23964 samples, 1358 were found to be positive.

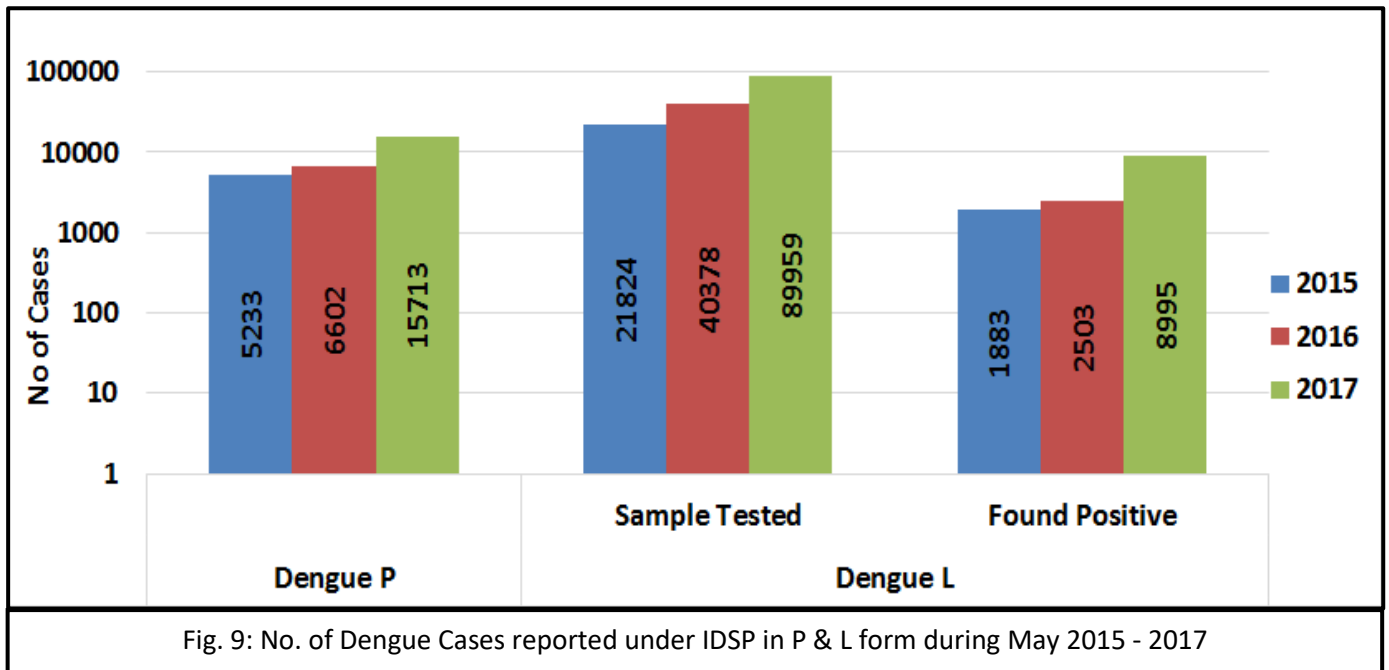
Sample positivity of samples tested for Hepatitis A has been 6.6%, 7.0% and 5.7% in May month of 2015, 2016 & 2017 respectively.



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As reported in L form for Viral Hepatitis E, in May 2015; 6041 samples were tested out of which 564 were found positive. In May 2016; out of 9029 samples, 957 were found to be positive and in May 2017, out of 9734 samples, 703 were found to be positive.

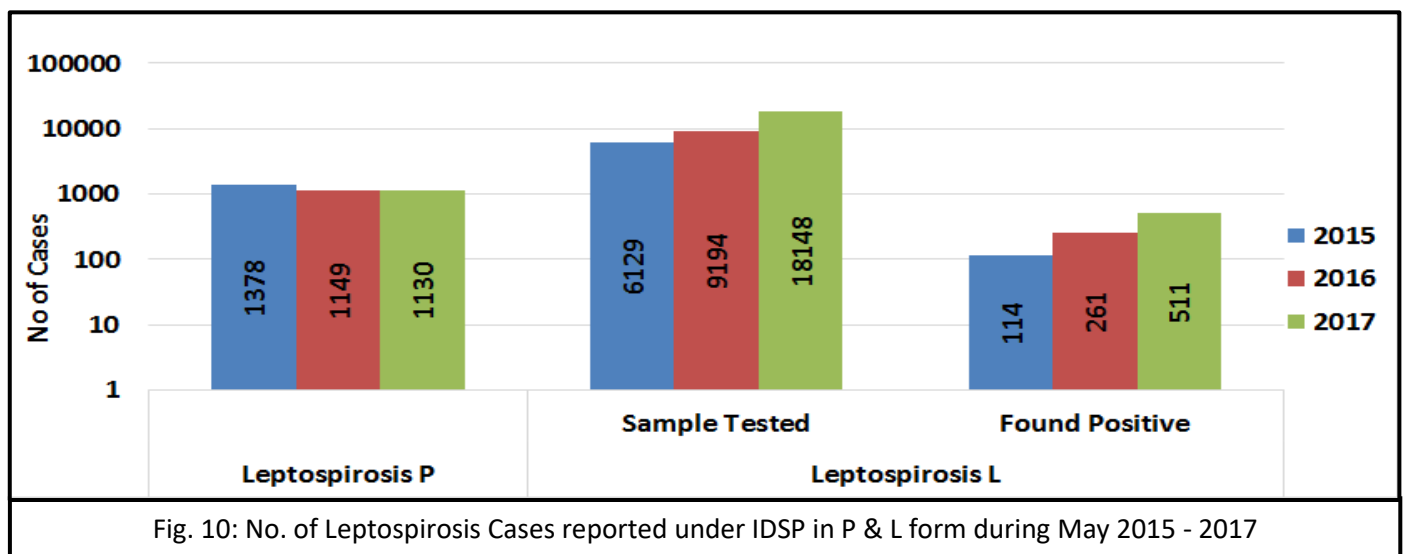
Sample positivity of samples tested for Hepatitis E has been 9.3 %, 10.6% and 7.2% in May month of 2015, 2016 & 2017 respectively.



As shown in fig 9, number of presumptive Dengue cases, as reported by States/UTs in 'P' form was 5233 in May 2015; 6602 in May 2016 and 15713 in May 2017. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2015; 21824 samples were tested for Dengue, out of which 1883 were found positive. In May 2016; out of 40378 samples, 2503 were found to be positive and in May 2017, out of 89959 samples, 8995 were found to be positive.

Sample positivity of samples tested for Dengue has been 8.6%, 6.2% and 10.0% in May month of 2015, 2016 & 2017 respectively.

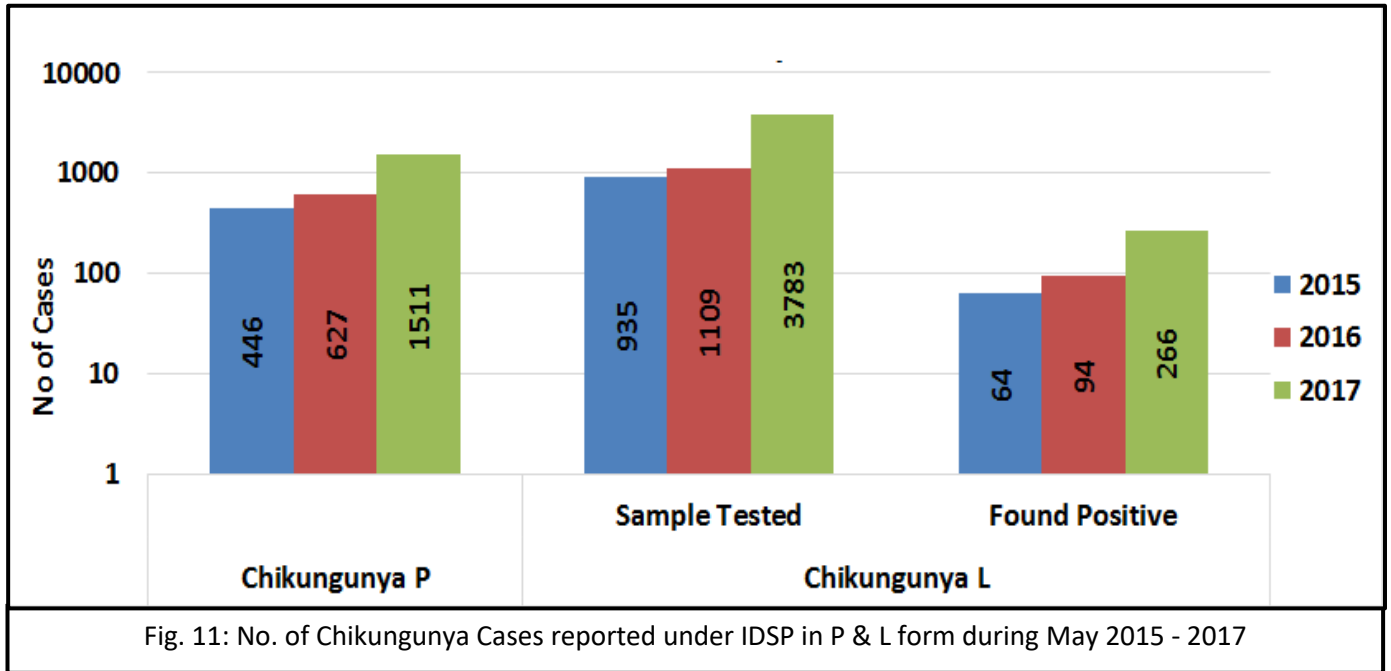


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As shown in fig 10, number of presumptive Leptospirosis cases, as reported by States/UTs in 'P' form was 1378 in May 2015; 1149 in May 2016 and 1130 in May 2017. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2015; 6129 samples were tested for Leptospirosis, out of which 114 were found positive. In May 2016; out of 9194 samples, 261 were found to be positive and in May 2017, out of 18148 samples, 511 were found to be positive.

Sample positivity of samples tested for Dengue has been 1.9%, 2.8% and 2.8% in May month of 2015, 2016 & 2017 respectively.



As shown in fig 11, number of presumptive Chikungunya cases, as reported by States/UTs in 'P' form was 446 in May 2015; 627 in May 2016 and 1511 in May 2017. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2015; 935 samples were tested for Chikungunya, out of which 64 were found positive. In May 2016; out of 1109 samples, 94 were found to be positive and in May 2017, out of 3783 samples, 266 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 6.8%, 8.5% and 7.0 % in May month of 2015, 2016 & 2017 respectively.

Fig 12: State/UT wise P form completeness % for May 2017

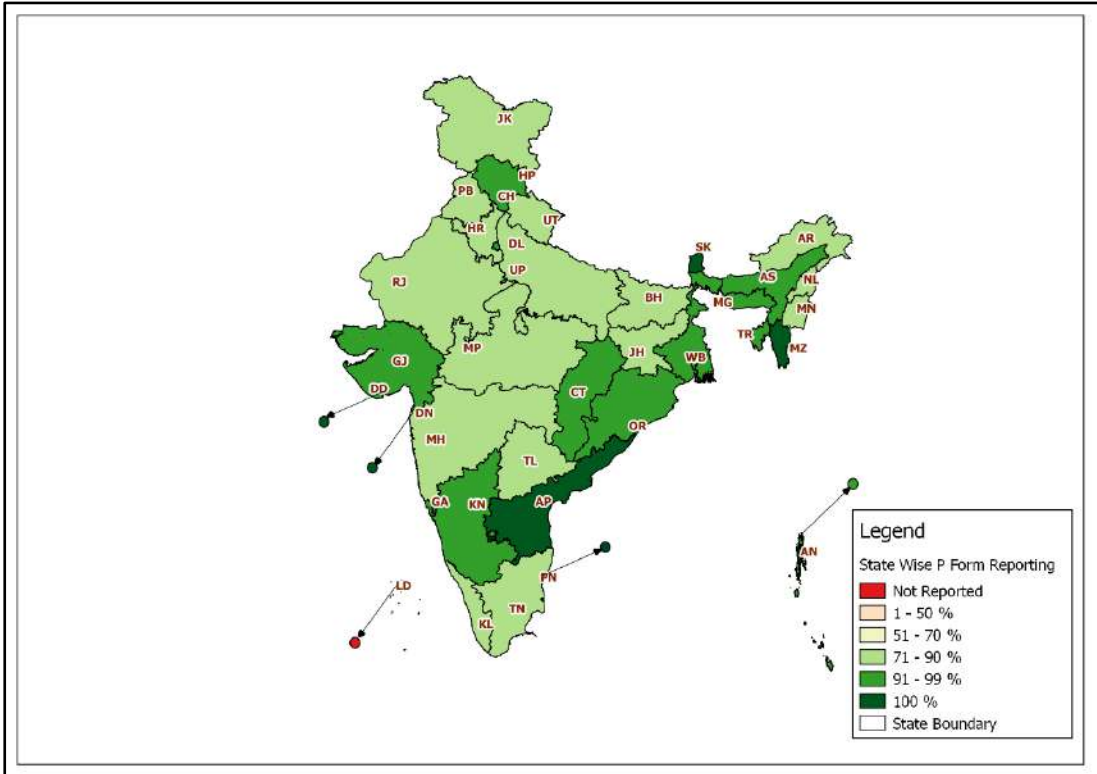
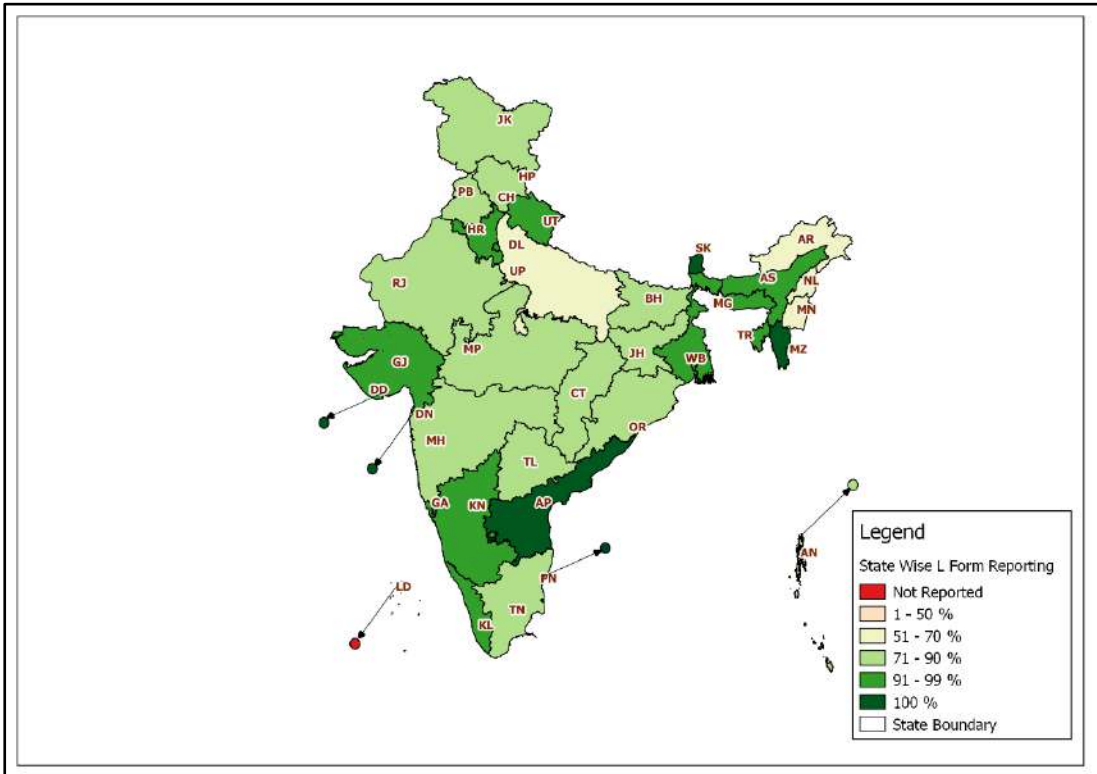
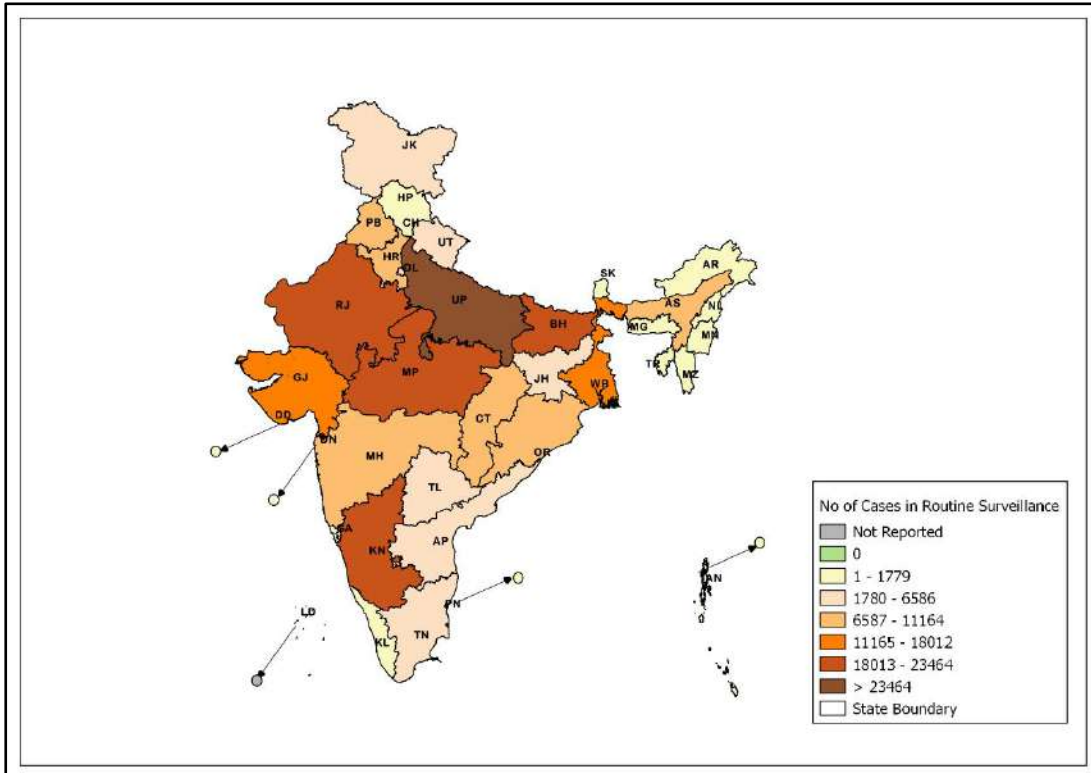


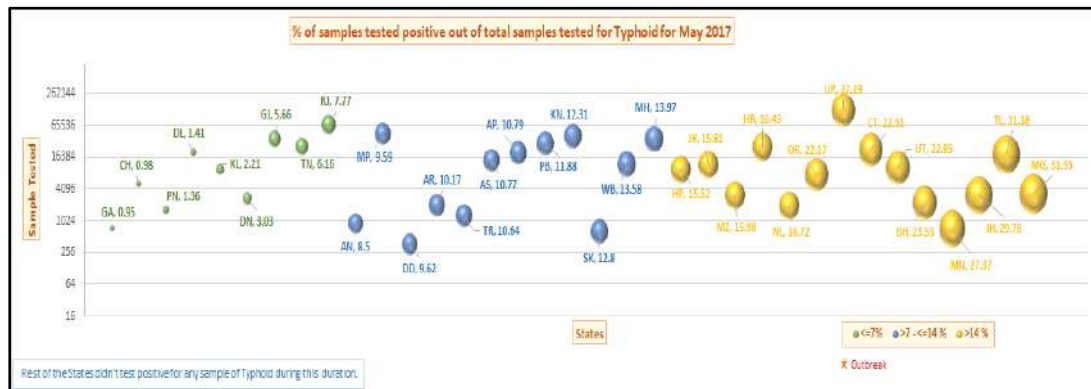
Fig 13: State/UT wise L form completeness % for May 2017



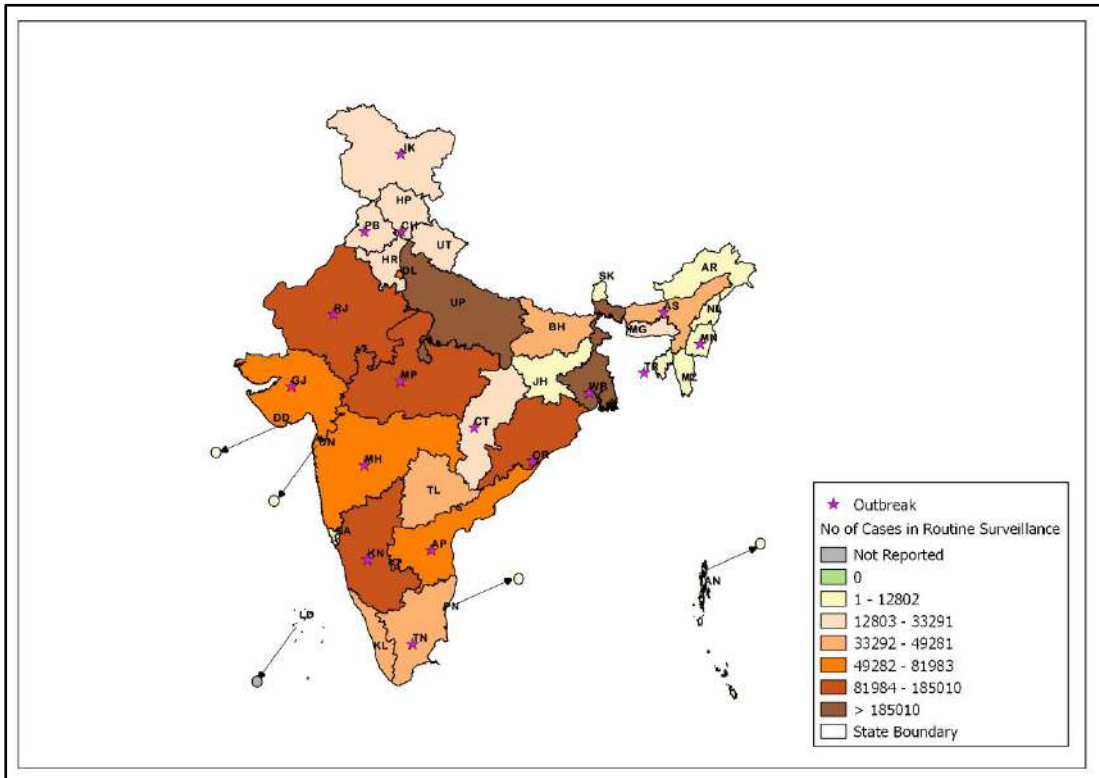
**Fig 14: State/UT wise Presumptive Enteric fever cases and outbreaks for May 2017**



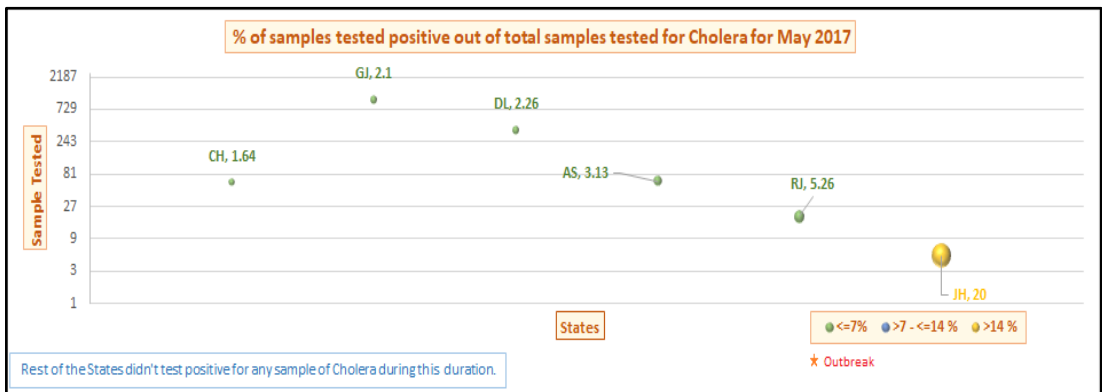
**Fig 15: State/UT wise Lab Confirmed Enteric Fever cases and outbreaks for May 2017**



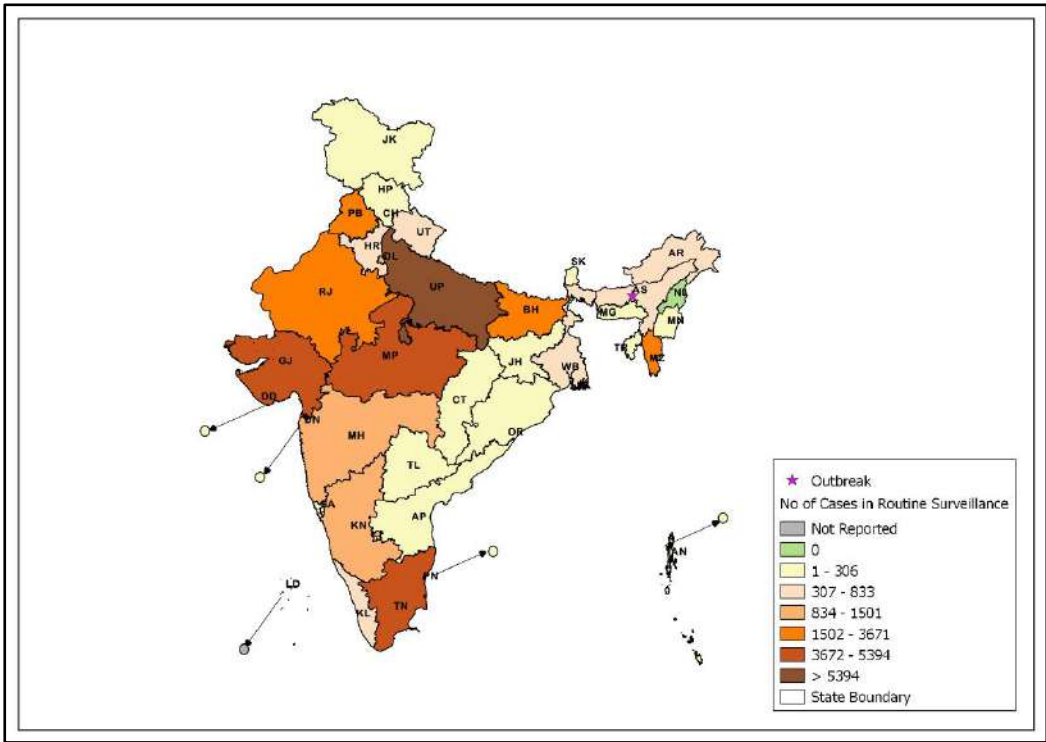
**Fig 16: State/UT wise Presumptive ADD cases and outbreaks for May 2017**



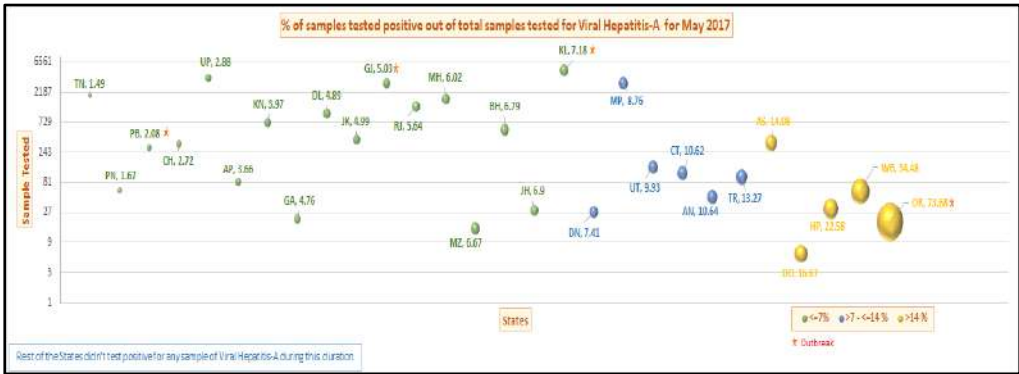
**Fig 17: State/UT wise Lab Confirmed Cholera cases and outbreaks for May 2017**



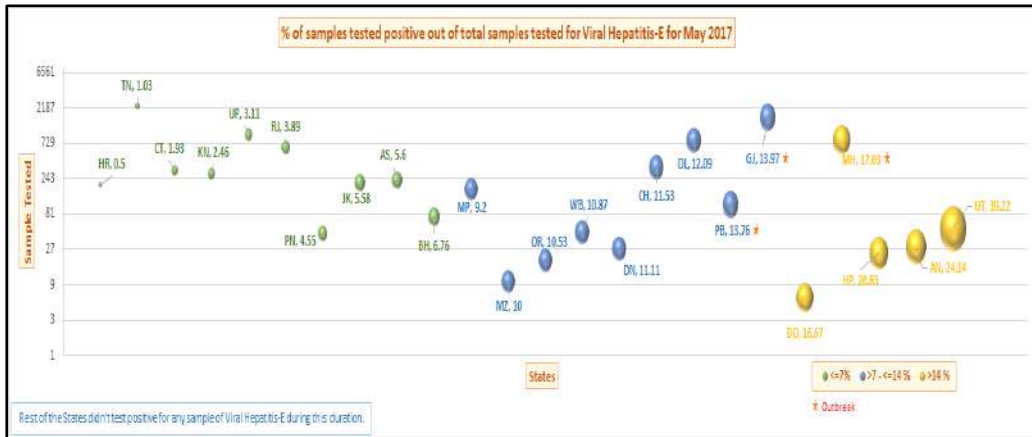
**Fig 18: State/UT wise Presumptive Viral Hepatitis cases and outbreaks for May 2017**



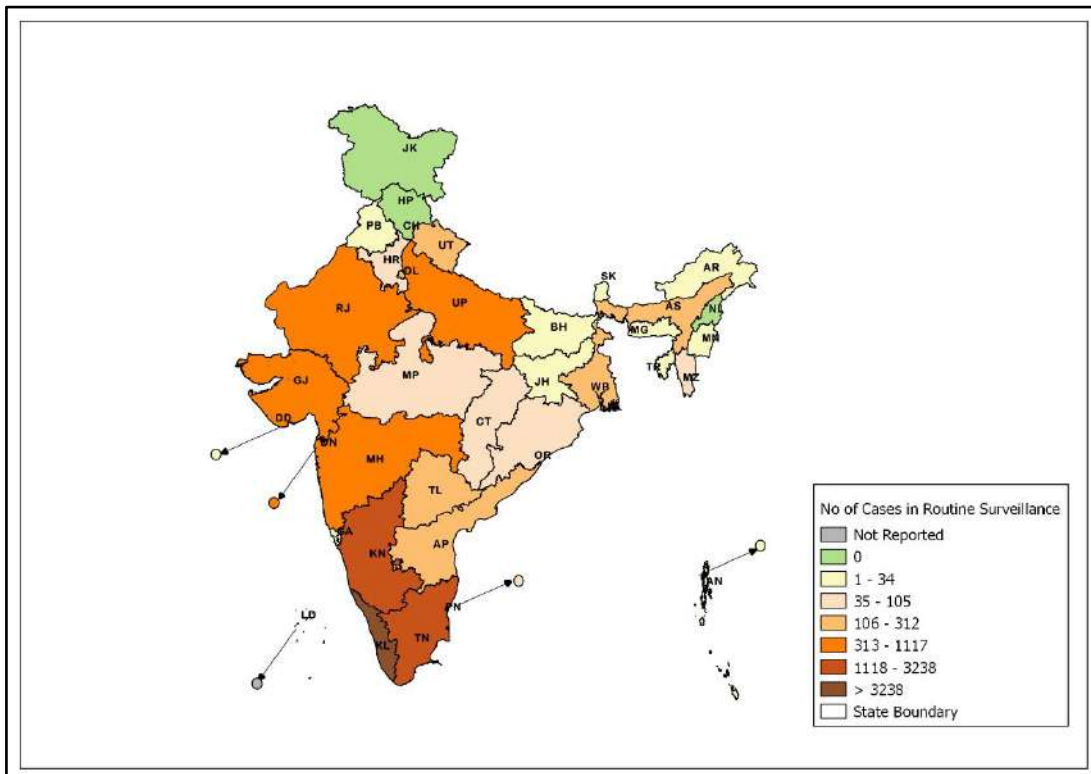
**Fig 19: State/UT wise Lab confirmed Viral Hepatitis A cases and outbreaks for May 2017**



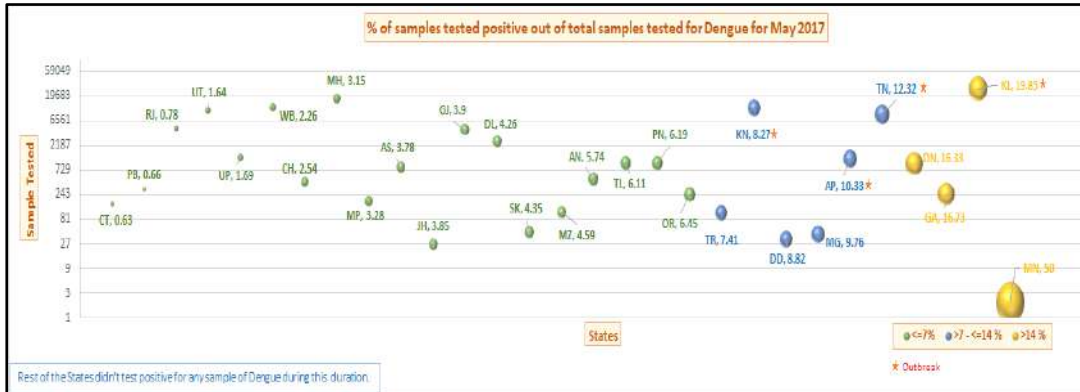
**Fig 20: State/UT wise Lab confirmed Viral Hepatitis E cases for May 2017**



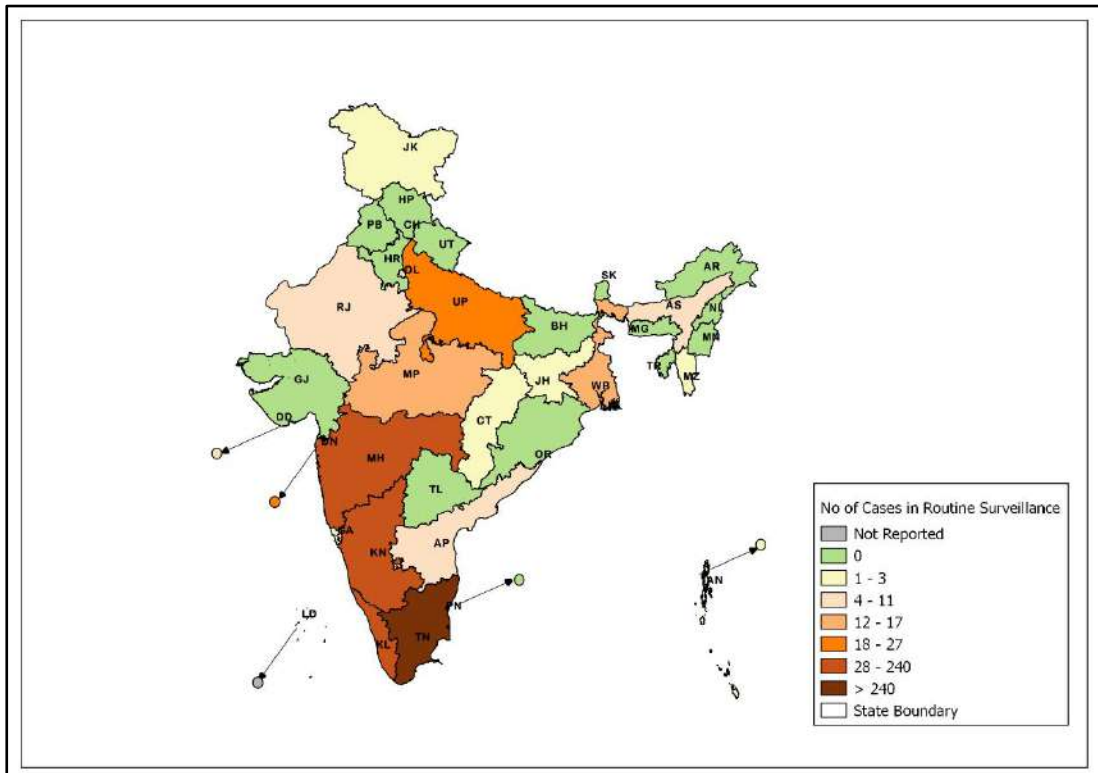
**Fig 21: State/UT wise Presumptive Dengue cases & outbreaks for May 2017**



**Fig 22: State/UT wise Lab confirmed Dengue cases & outbreaks for May 2017**

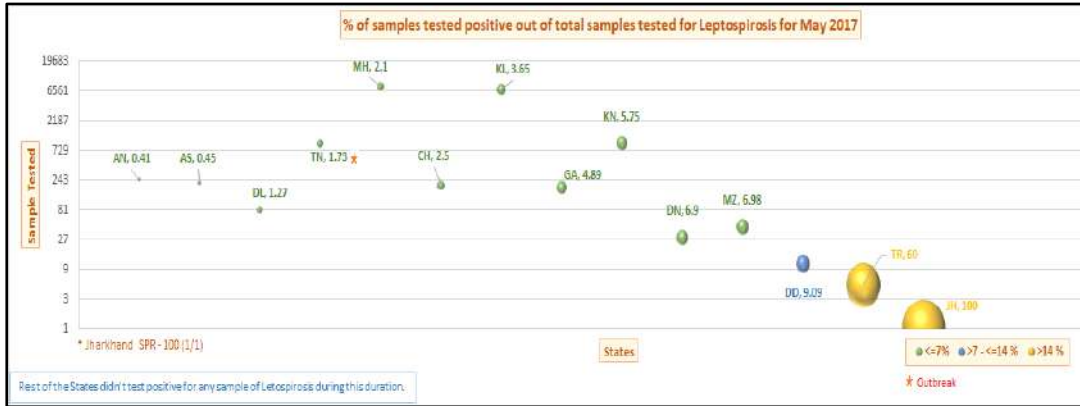


**Fig 23: State/UT wise Presumptive Leptospirosis cases for May 2017**

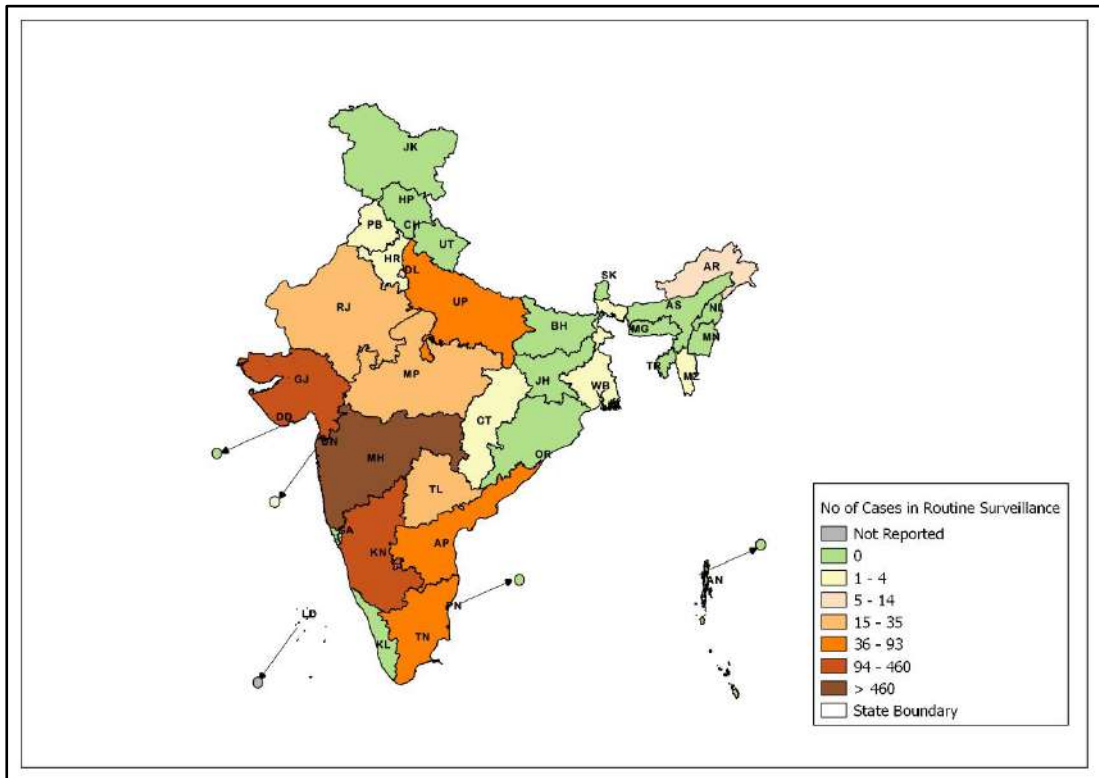




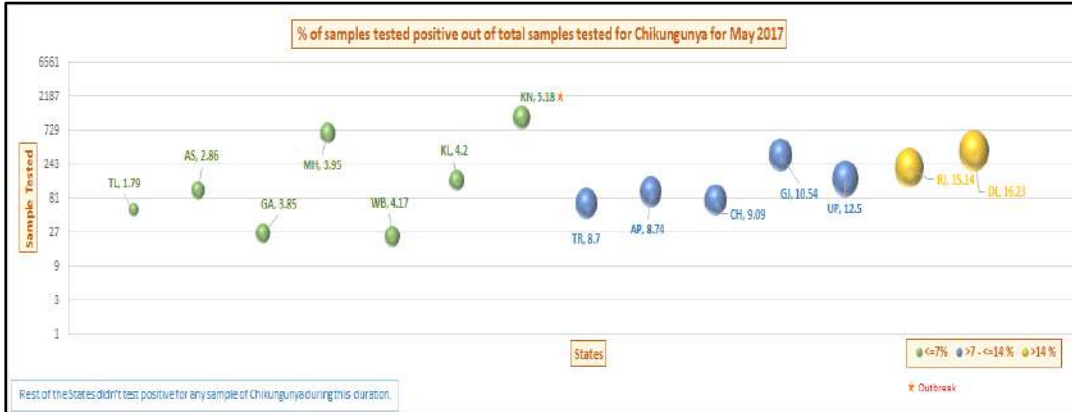
**Fig 24: State/UT wise Lab Confirmed Leptospirosis cases & outbreaks for May 2017**



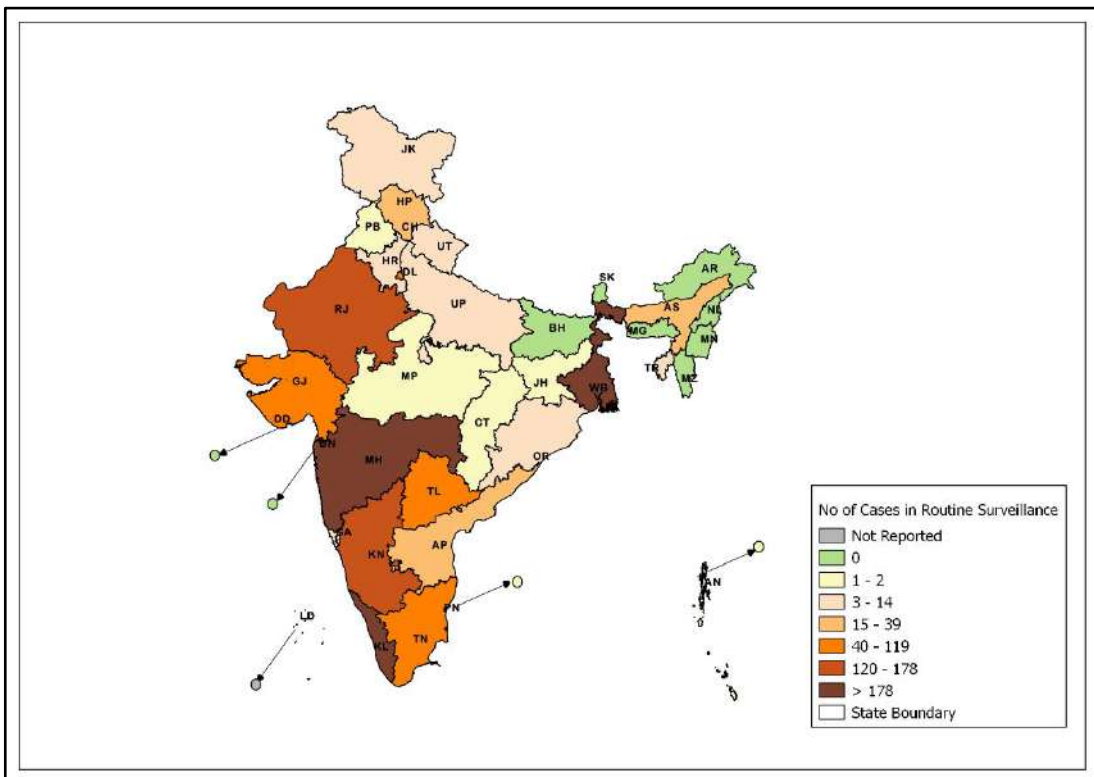
**Fig 25: State/UT wise Presumptive Chikungunya cases & outbreaks for May 2017**



**Fig 26: State/UT wise Lab Confirmed Chikungunya cases & outbreak for May 2017**



**Fig 27: State/UT wise Influenza A (H1N1) cases & outbreak for May 2017**



## Action from the field

- National Consultative workshop on revised reporting Formats under IDSP was held on 2<sup>nd</sup> May 2017 at Hotel Claridges, New Delhi.



- National Workshop on strengthening the surveillance system of Infectious Disease hospitals (IDH) including visit to IDH Hospital Hyderabad held from 15-16 May 2017 at Hyderabad, jointly organized by IDSP, NCDC and WHO Country Office, India.



- A central team consisting of Dr Pradeep Khasnobis NPO IDSP, Dr Jyoti & Dr Nishant Kumar Deputy Director, Dr. Ranjeet Prasad, Consultant Epidemiologist, Dr. Uma Gupta Consultant Microbiologist, Ms. Pallavi Luthra & Ms Stakshi Taryon Consultant IT, Mr. Amit Mittal Consultant finance and Mr. Prasun Sharma, Statistician & Programmer conducted an in-depth evaluation of IDSP implementation in State of Bihar and its Districts Darbhanga and Nalanda from 22 - 25 May 2017 by CSU team.



**Glossary:**

- **P form:** Presumptive cases form, in which cases are diagnosed and reported based on typical history and clinical examination by Medical Officers.
- **Reporting units under P form:** Additional PHC/ New PHC, CHC/ Rural Hospitals, Infectious Disease Hospital (IDH), Govt. Hospital / Medical College\*, Private Health Centre/ Private Practitioners, Private Hospitals\*
- **L form:** Lab confirmed form, in which clinical diagnosis is confirmed by an appropriate laboratory tests.
- **Reporting units under L form:** Private Labs, Government Laboratories, Private Hospitals(Lab.), CHC/Rural Hospitals(Lab.),
- HC/ Additional PHC/ New PHC(Lab.), Infectious Disease Hospital (IDH)(Lab.), Govt. Hospital/Medical College(Lab.), Private Health Centre/ Private Practitioners(Lab.)
- **Completeness %:** Completeness of reporting sites refers to the proportion of reporting sites that submitted the surveillance report (P & L Form) irrespective of the time when the report was submitted.

**Case definitions:**

- **Enteric Fever: Presumptive:** Any patient with fever for more than one week and with any two of the following: Toxic look, Coated tongue, Relative bradycardia, Splenomegaly, Exposure to confirmed case, Clinical presentation with complications e.g. GI bleeding, perforation, etc. AND/OR Positive serodiagnosis (Widal test)

**Confirmed:** A case compatible with the clinical description of typhoid fever with confirmed positive culture (blood, bone marrow, stool, urine) of *S. typhi*/ *S. paratyphi*.

ARI/ ILI:-An acute respiratory infection with fever of more than or equal to 38° C and cough; with onset within the last 10 days.

- **Acute Diarrheal Disease: Presumptive Acute Diarrheal Disease (Including Acute Gastroenteritis):** Passage of 3 or more loose watery stools in the past 24 hours. (With or without vomiting).
- **Confirmed Cholera:** A case of acute diarrhoea with isolation and identification of *Vibrio cholera* serogroup O1 or O139 by culture of a stool specimen.
- **Viral Hepatitis: Presumptive:** Acute illness typically including acute jaundice, dark urine, anorexia, malaise, extreme fatigue, and right upper quadrant tenderness.

**Confirmed:** Hepatitis A: A case compatible with the clinical description of acute hepatitis with demonstration of anti-HAV IgM in serum sample.

**Confirmed:** Hepatitis E: A case compatible with the clinical description of acute hepatitis with demonstration of anti-HEV IgM in serum sample.

- **Dengue: Presumptive:** An acute febrile illness of 2-7 days duration with two or more of the mentioned manifestations:
  - Headache, Retro-orbital pain, Myalgia, Arthralgia, Rash, haemorrhagic manifestations, leukopenia, or Non-ELISA based NS1 antigen/IgM positive. (A positive test by RDT will be considered as probable due to poor sensitivity and specificity of currently available RDTs.)

**Confirmed:** A case compatible with the clinical description of dengue fever with at least one of the following:

- Demonstration of dengue virus NS-1 antigen in serum sample by ELISA.
- Demonstration of IgM antibodies by IgM antibody capture ELISA in single serum sample.
- IgG seroconversion in paired sera after 2 weeks with fourfold increase of IgG titre.
- Detection of viral nucleic acid by polymerase Chain reaction (PCR).
- Isolation of the dengue virus (virus culture +ve) from serum, plasma, leucocytes.  
(Source – Dengue National guidelines, NVBDCP 2014)

- **Leptospirosis Case Definition: Presumptive Leptospirosis:** Acute febrile illness with headache, myalgia and prostration associated with a history of exposure to infected animals or an environment contaminated with animal urine With one or more of the following:

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- Calf muscle tenderness
  - Conjunctival suffusion
  - Oliguria or anuria and/or proteinuria
  - Jaundice
  - Haemorrhagic manifestations (intestines, lung)
  - Meningeal irritation
  - GI symptoms ( Nausea/ Vomiting/ Abdominal pain/Diarrhoea)
- And/or one of the following:-
    - A positive result in IgM based immune- assays, slide agglutination test or latex agglutination test or immunochromatographic test.
    - A Microscopic Agglutination Test (MAT) titre of 100/200/400 or above in single sample based on endemicity.
    - Demonstration of leptospire directly or by staining methods

**Lab Confirmed Leptospirosis:** A case compatible with the clinical description of leptospirosis with at least one of the following:

- Isolation of leptospire from clinical specimen.
  - Four fold or greater rise in the MAT titre between acute and convalescent phase serum specimens run in parallel. (Source: -National Guidelines on Diagnosis, Case Management Prevention and Control of Leptospirosis NCDC 2015).
- **Chikungunya case definition: Presumptive Case Definition:** An acute illness characterised by sudden onset of fever with any of the following symptoms: headache, backache, photophobia, severe arthralgia and rash.
    - Lab confirmed: A case compatible with the clinical description of chikungunya fever with at least one of the following: Demonstration of IgM antibodies by IgM antibody capture ELISA in a single serum sample.
    - Detection of viral nucleic acid by PCR.
    - Isolation of chikungunya virus from clinical specimen. (Source – Mid Term Plan Guidelines, NVBDCP 2013.

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Data shown in this bulletin are provisional, based on weekly reports to IDSP by State Surveillance Unit. Inquiries, comments and feedback regarding the IDSP Surveillance Report, including material to be considered for publication, should be directed to: Director, NCDC 22, Sham Nath Marg, Delhi 110054. Email: [dirnicd@nic.in](mailto:dirnicd@nic.in) & [idsp-npo@nic.in](mailto:idsp-npo@nic.in)

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