



Disease Alert

प्रकोप चेतावनी

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

October 2018

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Investigation of Scrub typhus in districts Ratlam & Mandsaur, Madhya Pradesh in September 2018

Background

IDSP, Ratlam unit received a report that a 38 Year old female from Village Barkhedhi, SC Chiklana, Block Piploda is tested positive for Scrub typhus by IgM ELISA on 31st August at RNT Medical College, Udaipur Rajasthan. However, the patient had already expired a day earlier during course of treatment.

Further preliminary investigations revealed that about 10 Scrub typhus EISA positive cases had been reported in block Piploda and adjoining areas of Jaora, and Alot. Further, during the month of August and September 2018, a major outbreak were reported in different four blocks: Dhundharka, Malhargarh, Shamgarh, Suwasara in Mandsaur district.

In this scenario, Joint Director of Health services, Govt. of Madhya Pradesh ordered a major entomological investigation to be carried out in these areas. The team was headed by Shri Shailendra Kumar Singh, State Entomologist IDSP, a designated State RRT team member.

Aim and Objectives

The aim & objectives of the State team, were:

1. Determine the source of transmission of scrub typhus disease in this area.
2. Provide important information for the control of this disease

Methodology Adopted

The State Rapid Response team member Shri Shailendra Kumar Singh State Entomologist IDSP reached Ratlam district on 24th September 2018 and constituted an investigation team on district headquarter with Dr. Pramod Prajapati district epidemiologist and health staff on behalf of Chief Medical health officer Ratlam district. The team reached the affected area and start investigation on the same day.



Fig. 1: Interview of patients of Scrub typhus positive at Barkhedhi village.



Fig. 2: Interview of patients of Scrub typhus positive at Barkhedhi village.

Rodent were collected using live traps (wire traps/domestic traps). The rodent traps were set at the patient home in human dwelling and cattle shed at night 24th and 25th September 2018. All the traps were checked in the next morning. Rodent present in which traps collected were transported to laboratory at district head quarter and were anaesthetized and identified after recording.

Dissection of all rodent were done to collect organs (Heart, Lung, Liver and spleen). They were sent for culture in Cary Blair medium for bacteriology studies. Also rodent pinna, mite and chigger larva collected which were than preserved with 70 % alcohol. The bacteriology studies were carried out at NIRTH, Jabalpur, Madhya Pradesh



Fig. 3: Collection of Mite/Chigger larva from Rodent Pinna



Fig. 4: Discussions & meeting with Health Officials & Health Personals

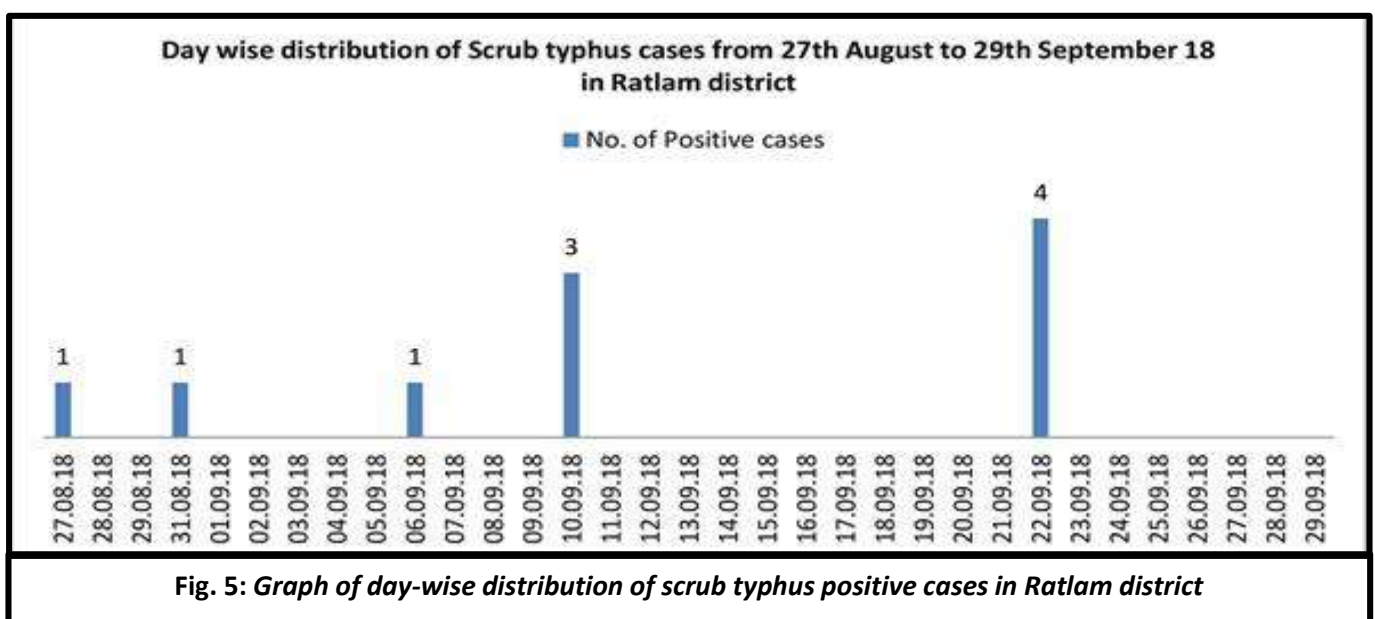
- Discussion and meeting was organized with health officer and health staff for prevention and control of scrub typhus disease.
- Discussion and meeting with health personal.
- IEC activity were done for awareness and education on scrub typhus diseases among villagers and panchayet member.
- Epidemiological and environmental study was conducted at the village by RRT.

Observations

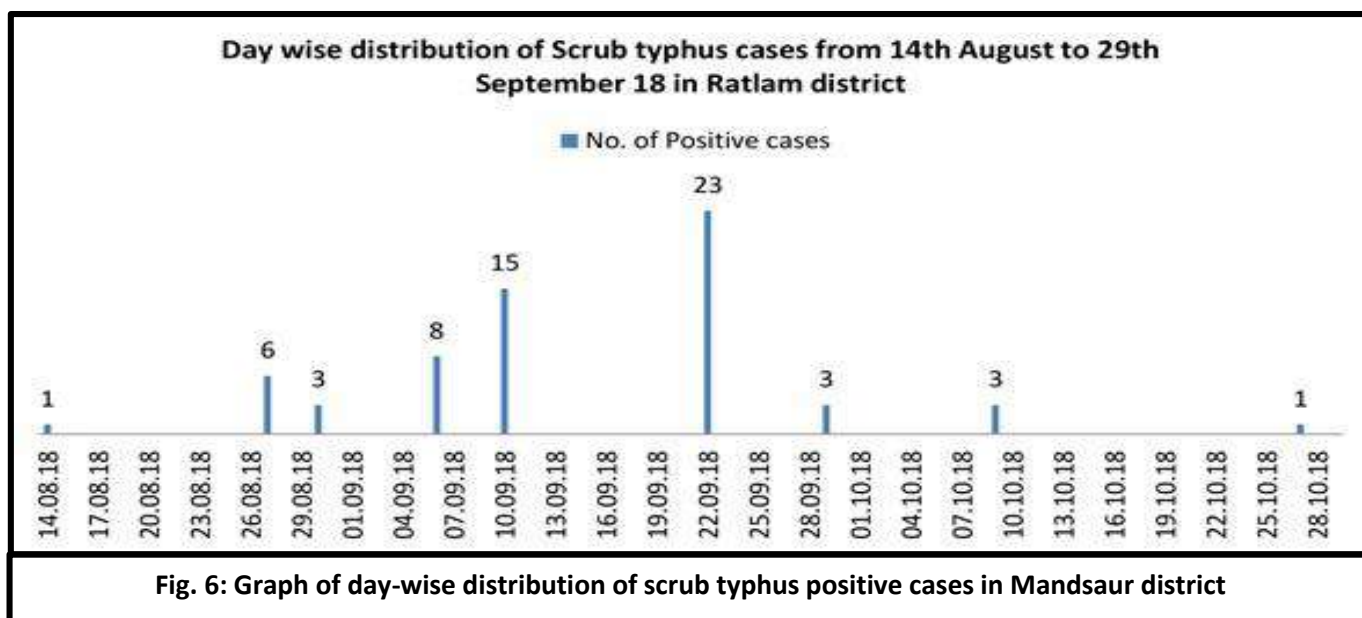
- Ratlam and Mandsour district in the northwestern part of the Malwa region in Madhya Pradesh of central India. Ratlam district is bounded by Mandsour, Agar, Ujjain, Dhar, Jhabua district and it is also close to the borders of Rajasthan. Mandsour district is bounded by Neemuch, Ratlam and Rajasthan state to the east and west. Ratlam and Mandsour like most of Madhya Pradesh has humid subtropical climate zone. The average annual rainfall in the district is 786.6 mm. Ratlam and Mandsour is basically an agricultural district the major crop plant of sugar cane, paddy, maize, wheat, pulse, etc. These environment has been fully support for growing rodent in agri- field and inside the village, Rodent are the natural reservoirs of the diseases and carrier of the vector (mite) of the diseases.
- In Ratlam district out of 38 traps, 13 traps [Bandicota bengalesis (4), Rattus rattus (5), Tatera indica (2), Mus musculus (2)] were caught. A total 95 larva trombiculid mite chigger (*L. deliense*) was vector of scrub typhus collected from the rodent giving an overall chigger index as 7.30, which was above the critical index of 0.69 per rodent. Chigger infestation rate was found to be 2.3 and Flea index was 0.46 reported. In Mandsaur district out of 27 traps, 7 traps [Rattus norvegicus (2), Rattus rattus (2), Tatera indica(1), Mus musculus (2)] were caught. A total 75 larva trombiculid mite chigger (*L. deliense*) was vector of scrub typhus collected from the rodent giving an overall chigger index as 10.71, which was above the critical index of 0.69 per rodent. Chigger infestation rate was found to be 1.83 and Flea index was 0.71 reported.

Epidemiological Analysis

According to district Ratlam IDSP data from 27th August to 29th September was analyzed. Total 10 IgM ELISA positive cases were reported during this period in four blocks (Piploda, Jaora, Ratlam and Alot) . There had been reported all cases sporadic in four blocks. On date 22nd September has been reported high number of cases



In Mandsaur district date from 14th August to 28th October total 63 IgM ELISA positive sporadic cases were reported in five block (Mandsaur, Malhargarh, Sitamau, Shamgarh, and Garoth). On date 22nd September has been reported high number of cases. RRT team arrived in affected area on date 24th September to 29th September. Because control measures immediately taken, subsequently there had been a decline in days



Lab Results

A. In District Ratlam

1. Total 55 serum samples were tested IgM ELISA from AIIMS Bhopal and RNT Medical College Udaipur Rajasthan, Out of 55 sample 10 sample were found positive scrub typhus.
2. Out of 13 rodents, total 6 rodent *Bandicota bengalensis* (2), *Rattus rattus* (3), *Tatera indica* (1) were found positive *Orientia tsusugamshi* (Scrub typhus) form National Institute of Research in Tribal Health (ICMR) Jabalpur (MP).

B. In District Mandsaur

1. Total 180 serum samples were tested IgM ELISA from AIIMS Bhopal and RNT Medical College Udaipur Rajasthan, Out of 230 sample 63 sample were found positive scrub typhus.
2. Out of 7 rodents, total 4 rodent *Rattus norvegicus* (1), *Rattus rattus* (1), *Mus musculus* (2) were found positive *Orientia tsusugamshi* (Scrub typhus) form National Institute of Research in Tribal Health (ICMR) Jabalpur (MP).
3. Over all out of 20 rodents, total 10 rodents were found positive *Orientia tsusugamshi* (Scrub typhus).

Recommendations

1. Apply insects repellents [Benzyl benzoate, Dimethyl phathoate (DMP), Dibutyl pathalate (DBP), Diethyl – m tolumide (DEET), Dimethyl carbamate Ethyl hexanediol] to hands , wrists , face (avoid eyes) ankles, inside trouser legs , socks and waist line , before going to the field .
2. To avoid sitting and sleeping on shrubs affected area. Cut and burns the scrubs and shrubs.
3. Scrub entire body with soap and rough cloth on return to agri- field.
4. Do fever survey for screening suspected scrub typhus cases in affected area. Organize health camp and awareness activity in affected area.
5. Do awareness activity for private practitioner and clinician.
6. Prompt institution of effective antibiotics like doxycycline or tetracycline for managing the condition.
7. Reducing rodent populations with coordination of Veterinary department.

Surveillance data of Enteric Fever, Acute Diarrhoeal Disease, Viral Hepatitis A & E, Dengue Leptospirosis and Chikungunya During October 2016 - 2018*

* Data extracted from IDSP Portal (www.idsp.nic.in) as on February 04, 2019.

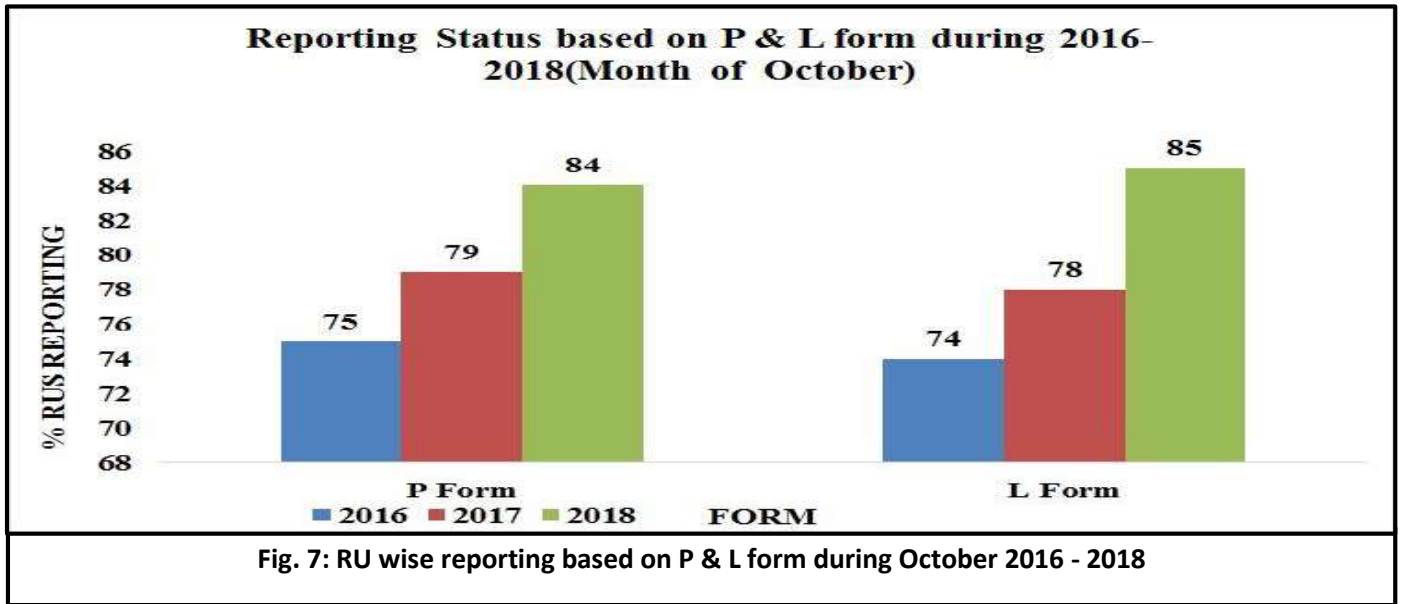


Fig. 7: RU wise reporting based on P & L form during October 2016 - 2018

As shown in Fig 7, in October 2016, 2017 and 2018, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 75%, 79% and 84% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 74%, 78% and 85% 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 increased over the years in both P and L form, thereby improving the quality of surveillance data.

Fig 8: State/UT wise P form completeness % for October 2018

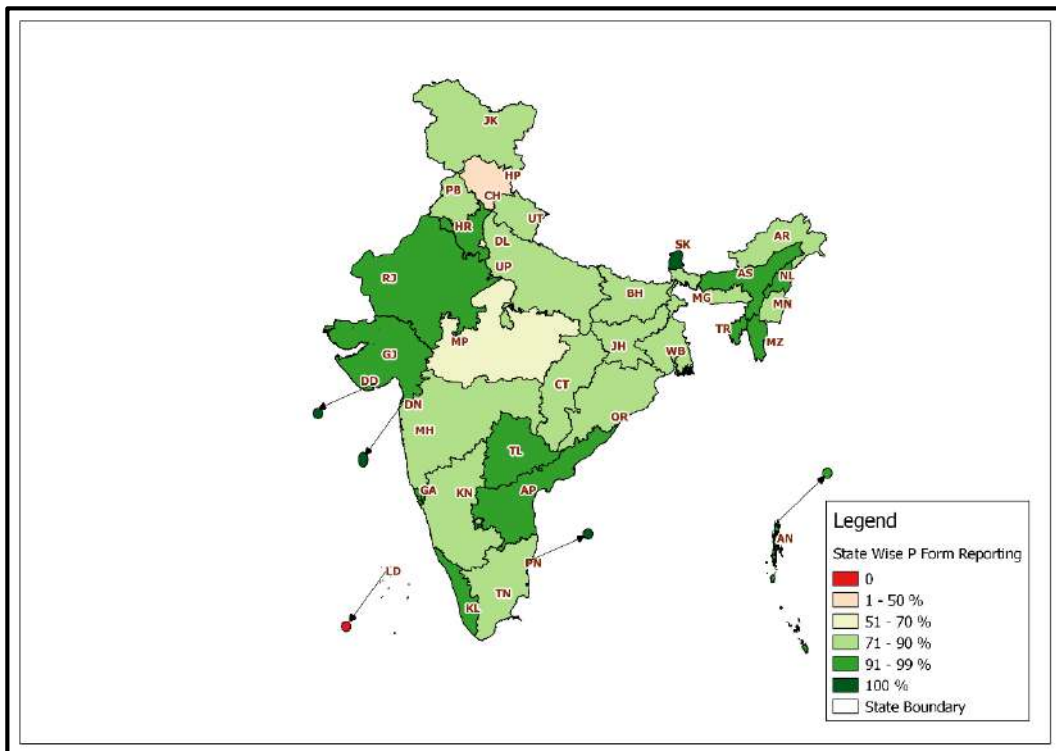
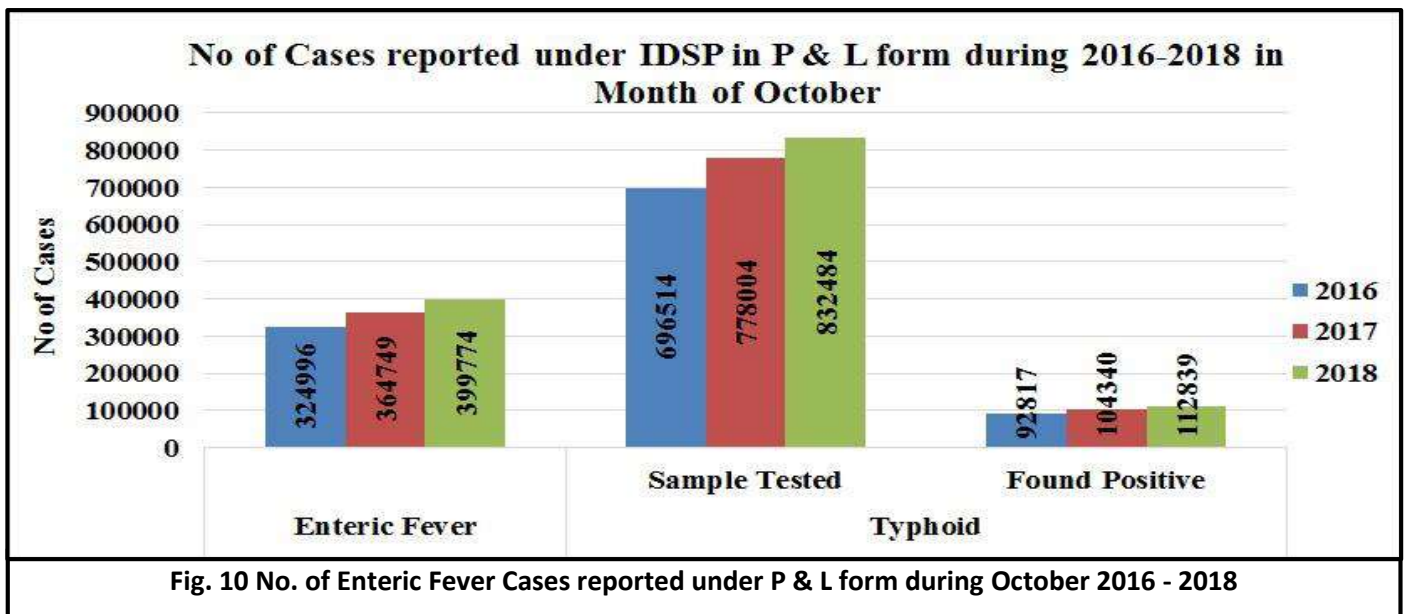
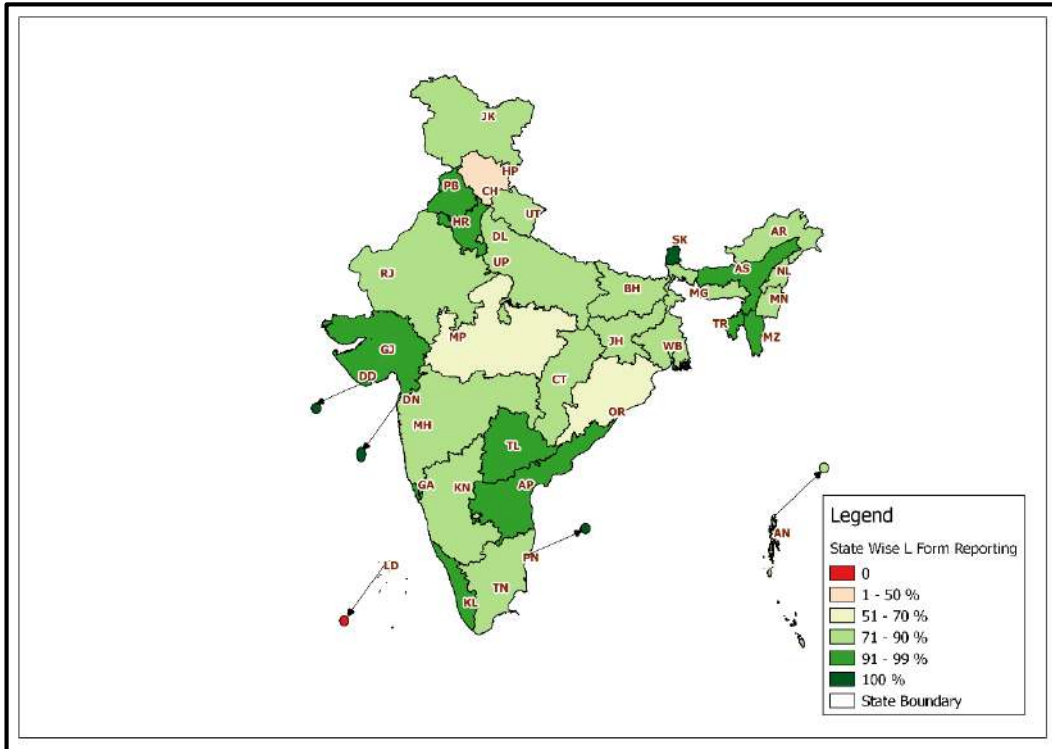


Fig 9: State/UT wise L form completeness % for October 2018



As shown in Fig 10, number of presumptive enteric fever cases, as reported by States/UTs in 'P' form was 324996 in October 2016; 364749 in October 2017 and 399774 in October 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in October 2016; 696514 samples were tested for Typhoid, out of which 92817 were found positive. In October 2017; out of 778004 samples, 104340 were found to be positive and in October 2018, out of 832484 samples, 112839 were found to be positive.

Sample positivity has been 13.32%, 13.41% and 13.55% in October month of 2016, 2017 & 2018 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.

Fig 11: State/UT wise Presumptive Enteric fever cases and outbreaks for October 2018

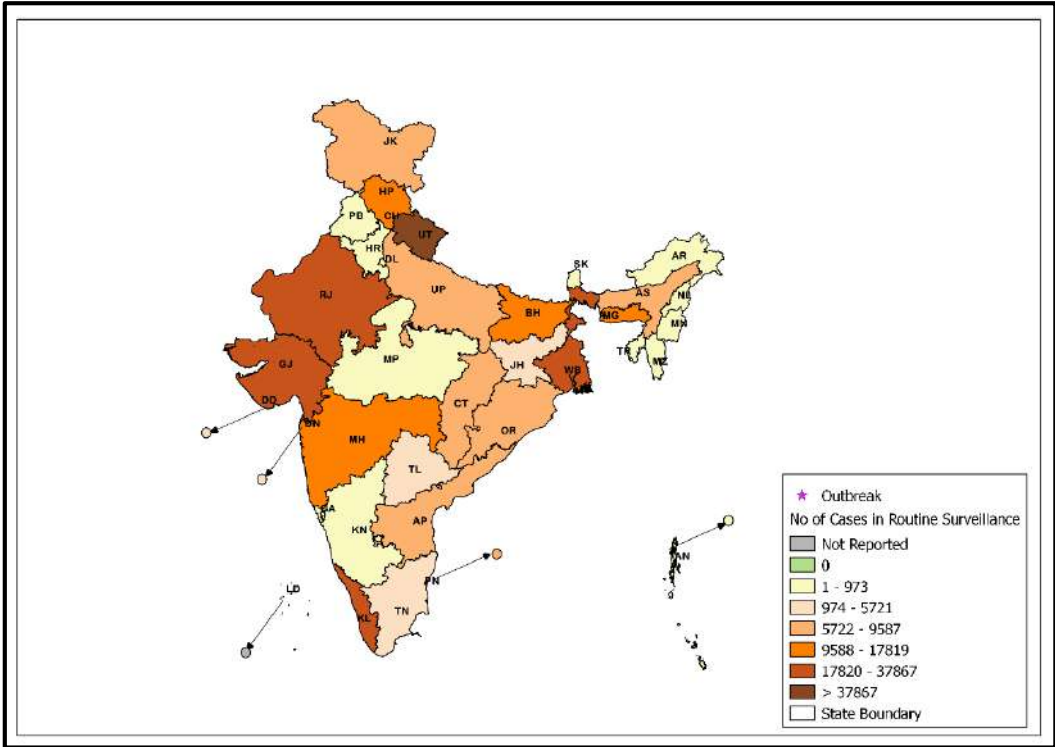
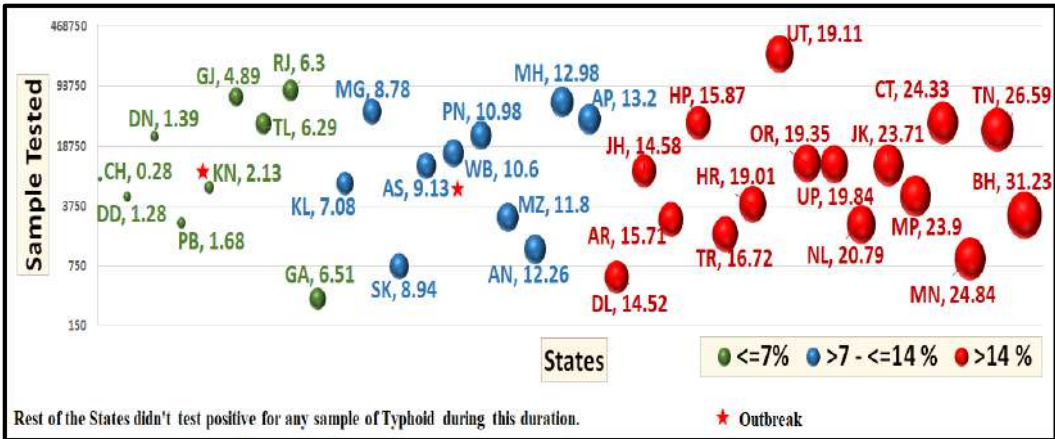
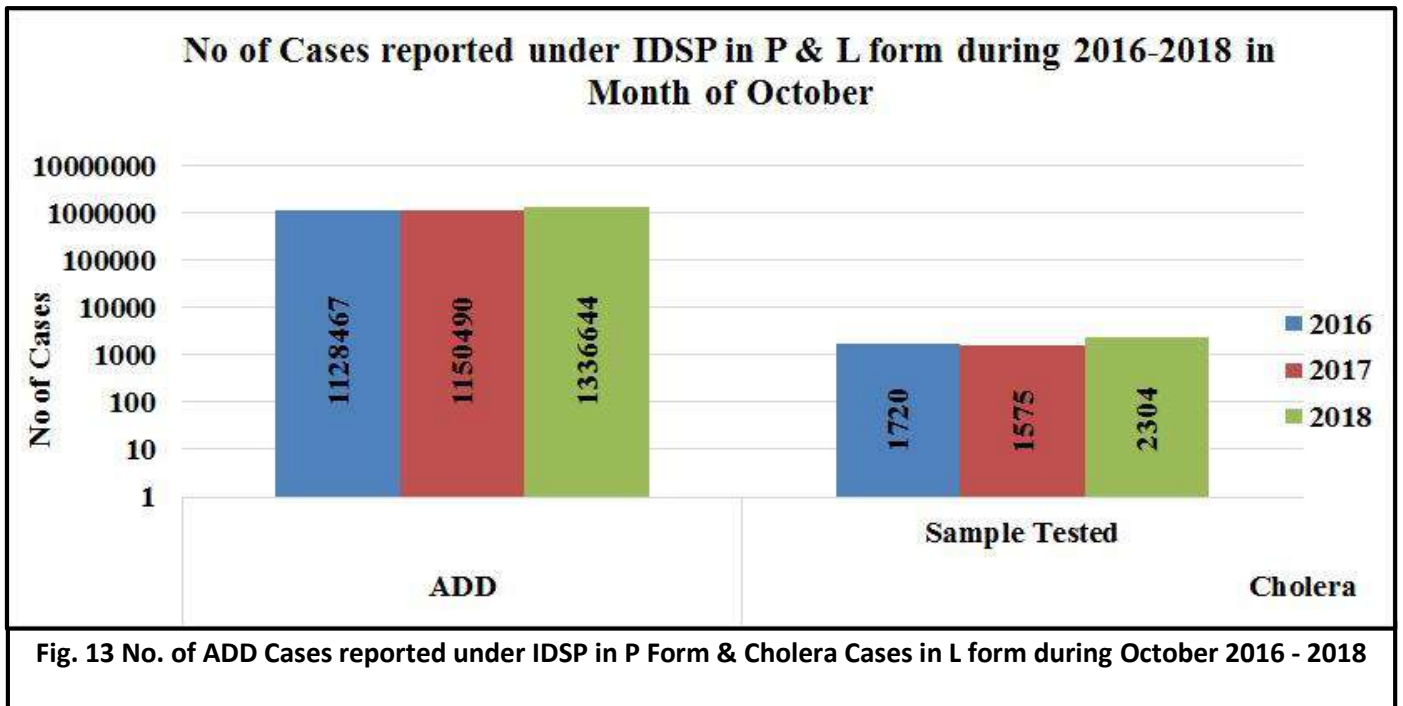


Fig 12: State/UT wise Lab Confirmed Typhoid cases and outbreaks for October 2018





As shown in Fig 13, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in 'P' form was 1128467 in October 2016; 1150490 in October 2017 and 1336644 in October 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in October 2016, 1720 samples were tested for Cholera out of which 57 tested positive; in October 2017, out of 1575 samples, 29 tested positive for Cholera and in October 2018, out of 2304 samples, 40 tested positive.

Sample positivity of samples tested for Cholera has been 3.31%, 1.84% and 1.74% in October month of 2016, 2017 & 2018 respectively.

Fig 14: State/UT wise Presumptive ADD cases and outbreaks for October 2018

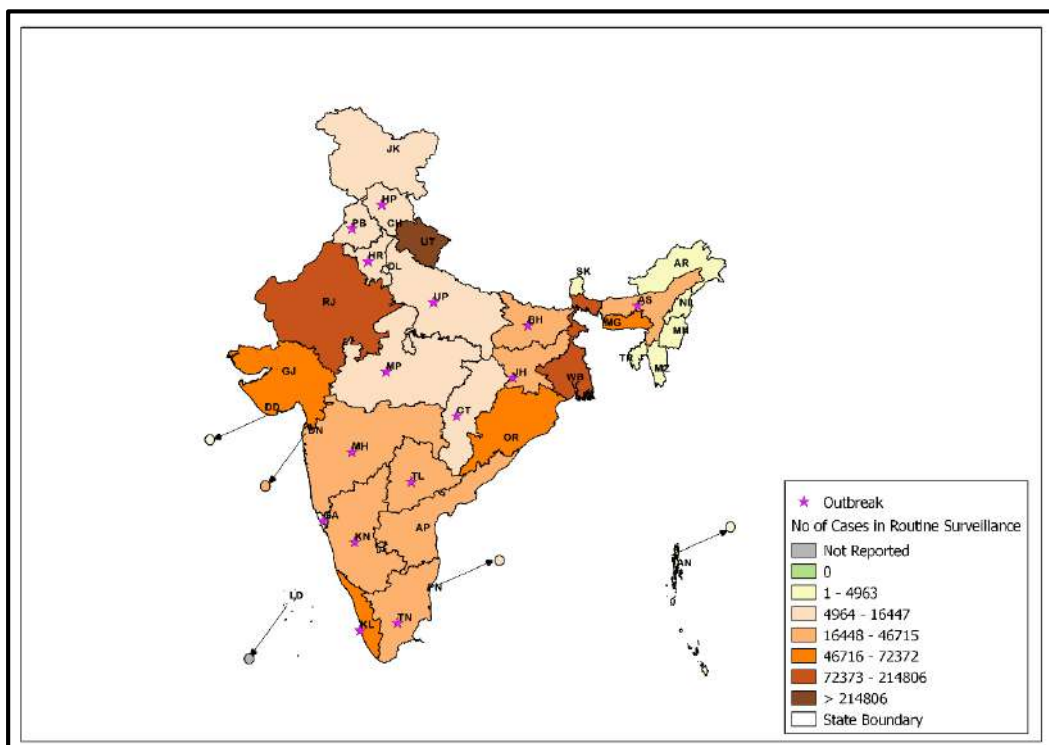


Fig 15: State/UT wise Lab Confirmed Cholera cases and outbreaks for October 2018

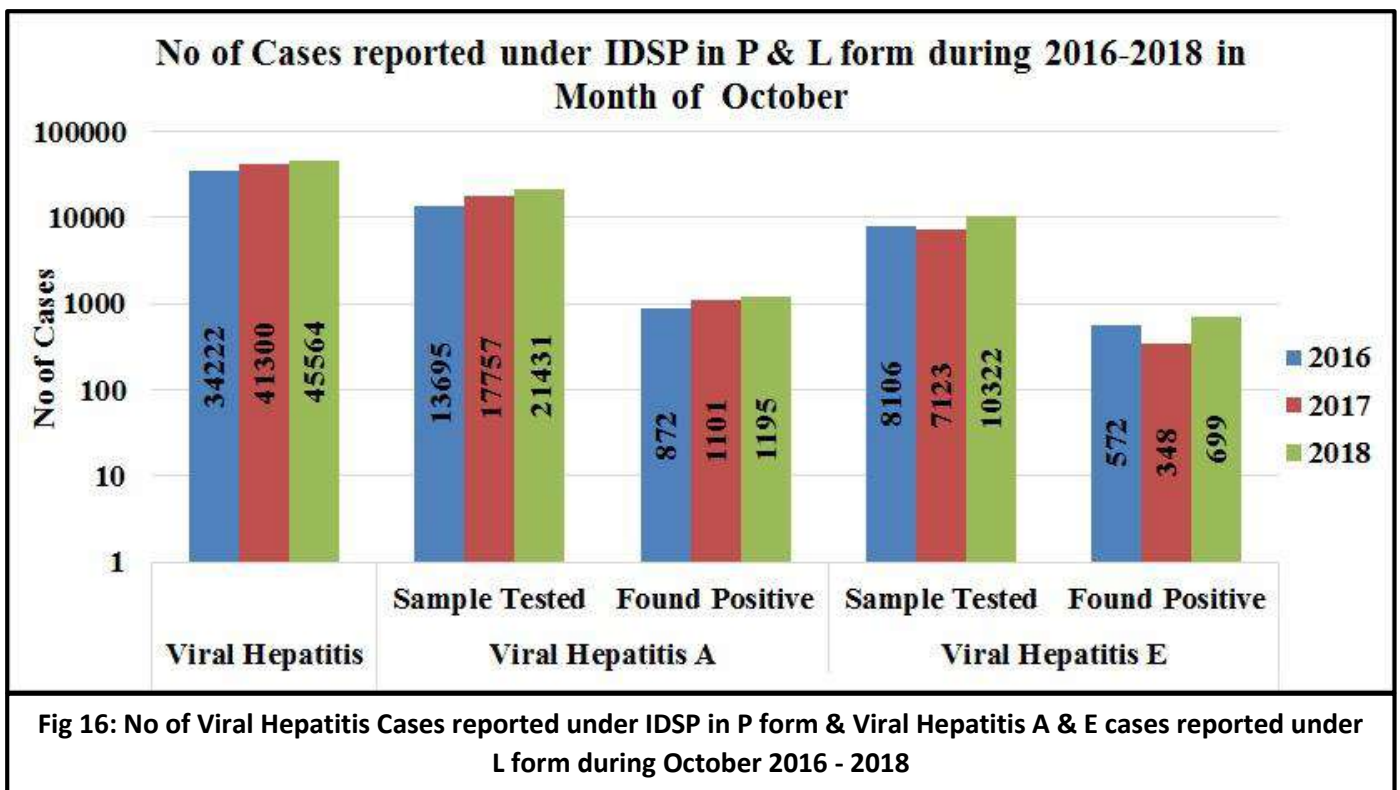


Fig 16: No of Viral Hepatitis Cases reported under IDSP in P form & Viral Hepatitis A & E cases reported under L form during October 2016 - 2018

As shown in Fig 16, the number of presumptive Viral Hepatitis cases was 34222 in October 2016, 41300 in October 2017 and 45564 in October 2018. These presumptive cases were diagnosed on the basis of case definitions provided under IDSP.

As reported in L form for Viral Hepatitis A, in October 2016; 13695 samples were tested out of which 872 were found positive. In October 2017 out of 17757 samples, 1101 were found to be positive and in October 2018, out of 21431 samples, 1195 were found to be positive.

Sample positivity of samples tested for Hepatitis A has been 6.37%, 6.20% and 5.58% in October month of 2016, 2017 & 2018 respectively.

As reported in L form for Viral Hepatitis E, in October 2016; 8106 samples were tested out of which 572 were found positive. In October 2017; out of 7123 samples, 348 were found to be positive and in October 2018, out of 10322 samples, 699 were found to be positive.

Sample positivity of samples tested for Hepatitis E has been 7.06%, 4.88% and 6.77% in October month of 2016, 2017 & 2018 respectively.

Fig 17: State/UT wise Presumptive Viral Hepatitis cases and outbreaks for October 2018

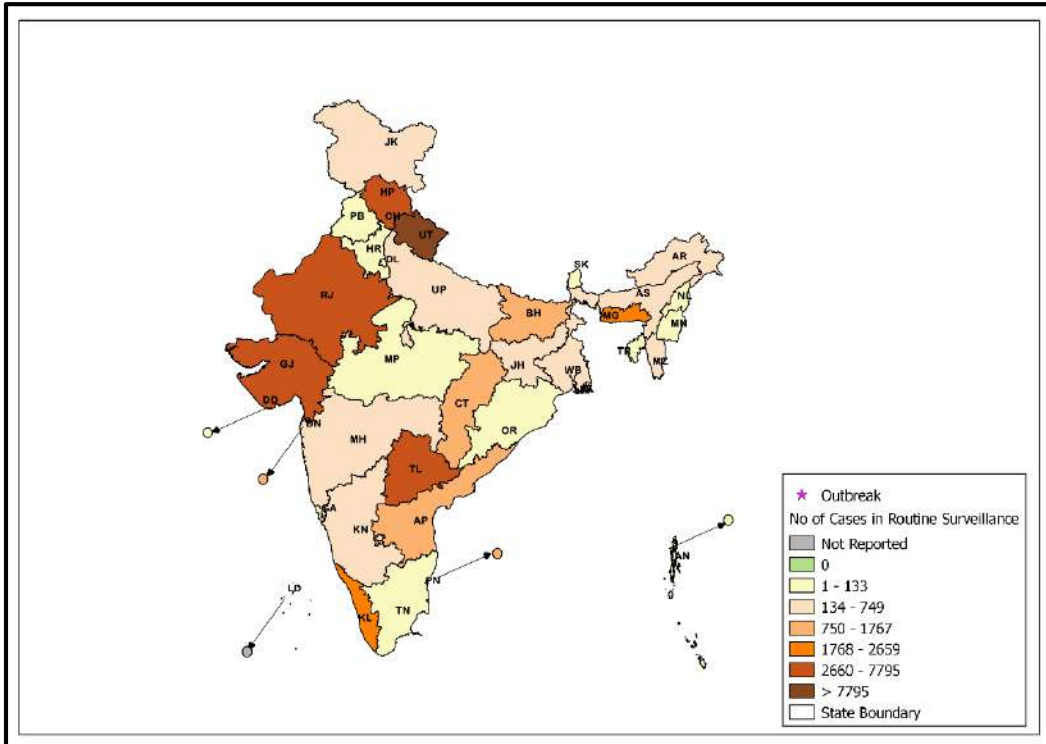


Fig 18: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for October 2018

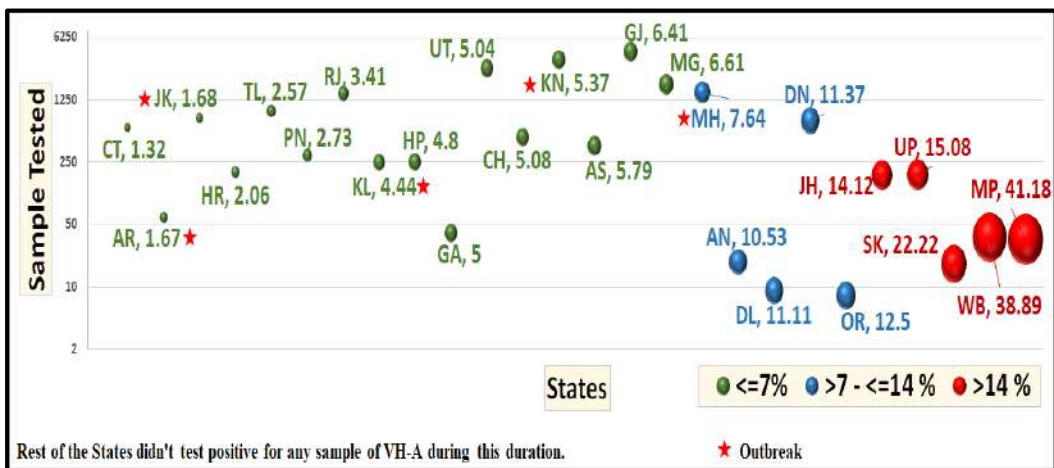


Fig 19: State/UT wise Lab Confirmed Viral Hepatitis E cases and outbreaks for October 2018

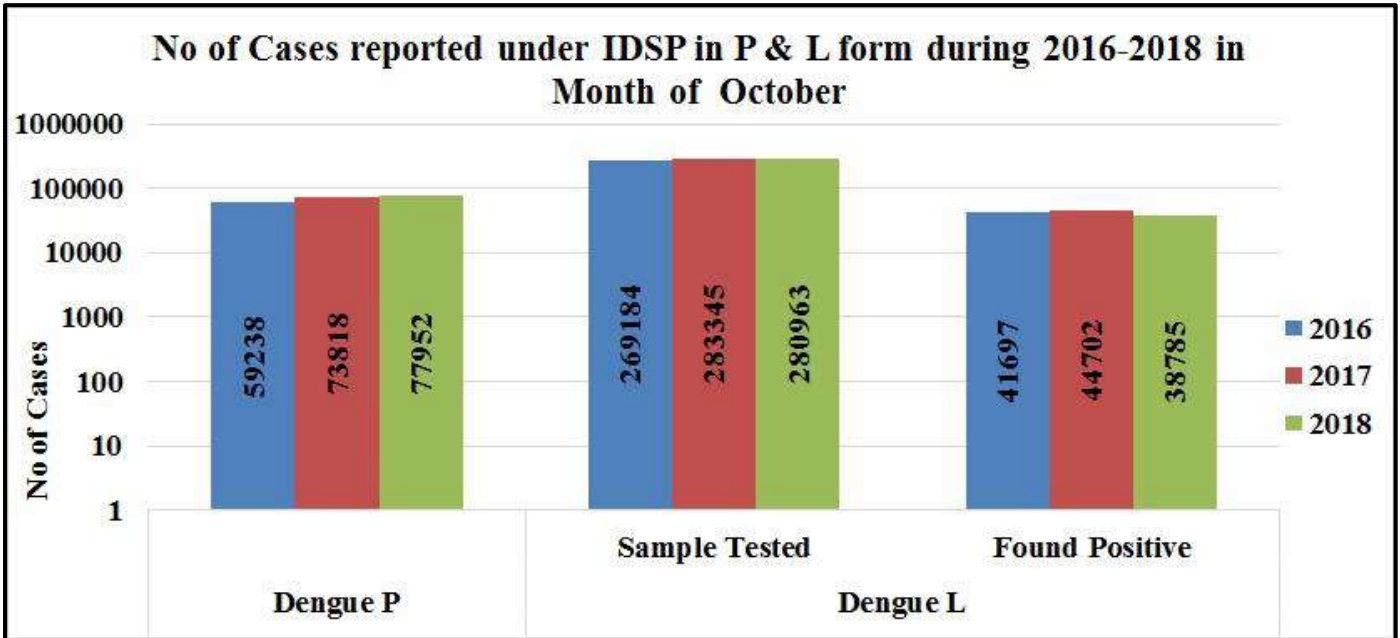
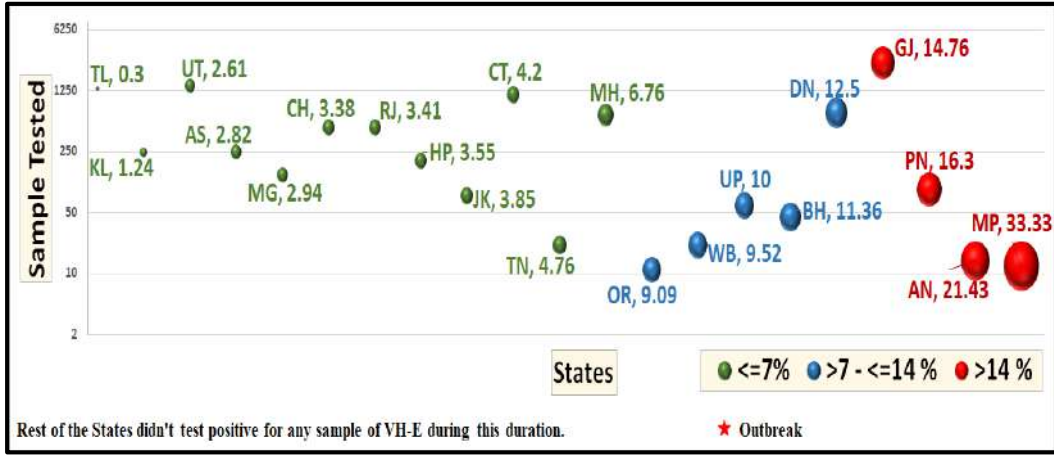


Fig 20: No. of Dengue Cases reported under IDSP in P & L form during October 2016 - 2018

As shown in Fig 20, number of presumptive Dengue cases, as reported by States/UTs in ‘P’ form was 59238 in October 2016; 58327 in October 2017 and 59485 in October 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in October 2016; 269184 samples were tested for Dengue, out of which 41697 were found positive. In October 2017; out of 283345 samples, 44702 were found to be positive and in October 2018, out of 280963 samples, 38785 were found to be positive.

Sample positivity of samples tested for Dengue has been 15.49%, 15.78% and 13.80% in October month of 2016, 2017 & 2018 respectively.

Fig 21: State/UT wise Presumptive Dengue cases and outbreaks for October 2018

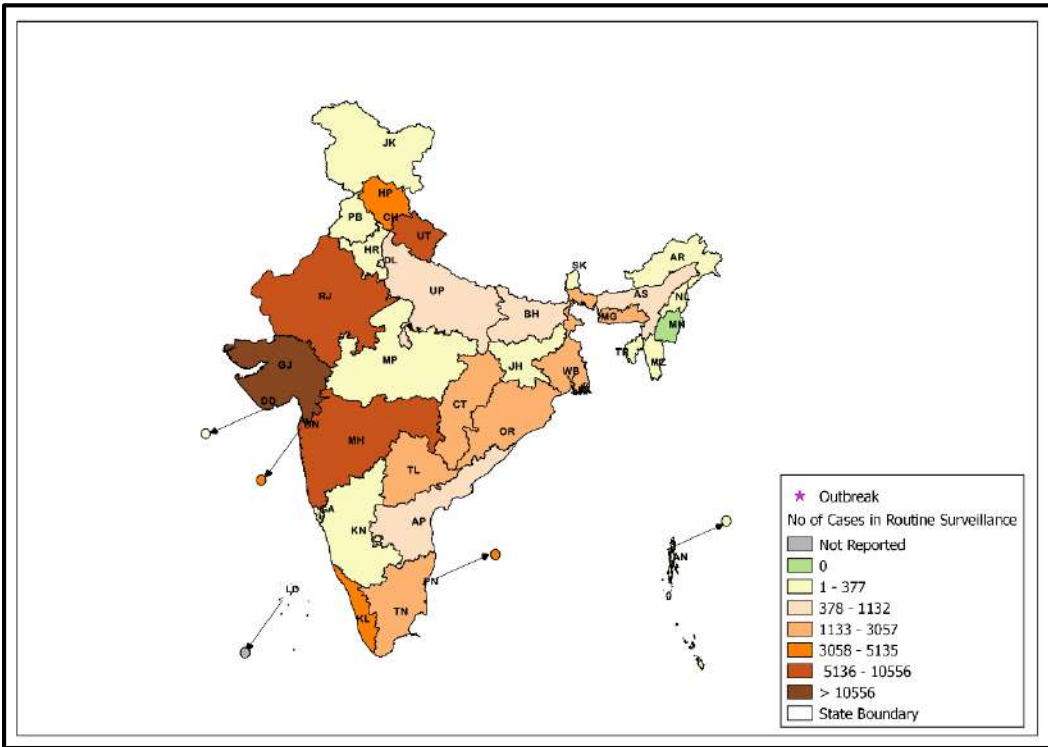
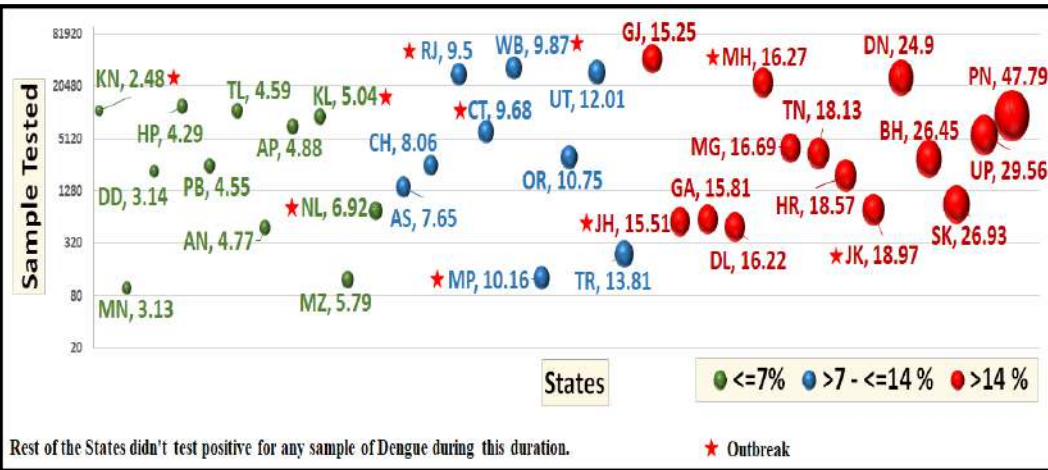
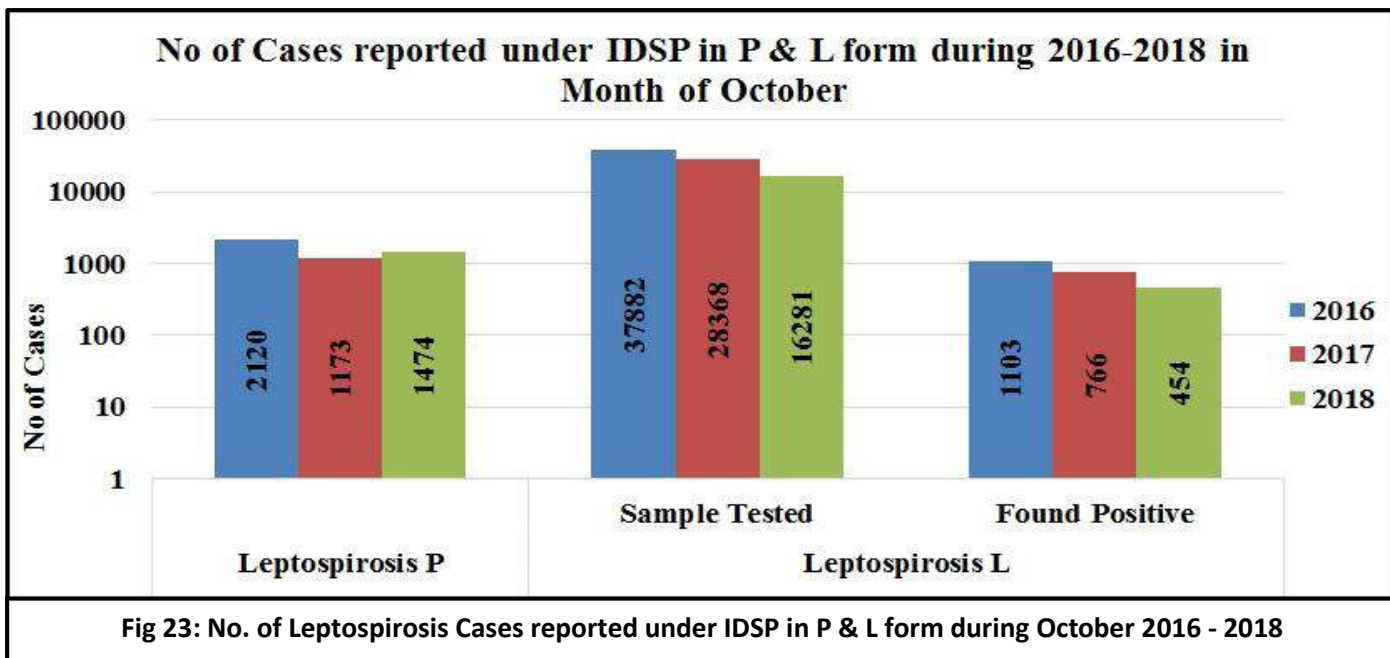


Fig 22: State/UT wise Lab Confirmed Dengue cases and outbreaks for October 2018





As shown in Fig 23, number of presumptive Leptospirosis cases, as reported by States/UTs in 'P' form was 2120 in October 2016; 1173 in October 2017 and 1474 in October 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in October 2016; 37882 samples were tested for Leptospirosis, out of which 1103 were found positive. In October 2017; out of 28368 samples, 766 were found to be positive and in October 2018, out of 16281 samples, 454 were found to be positive.

Sample positivity of samples tested for Dengue has been 2.91%, 2.70% and 2.79% in October month of 2016, 2017 & 2018 respectively.

Fig 24: State/UT wise Presumptive Leptospirosis cases and outbreaks for October 2018

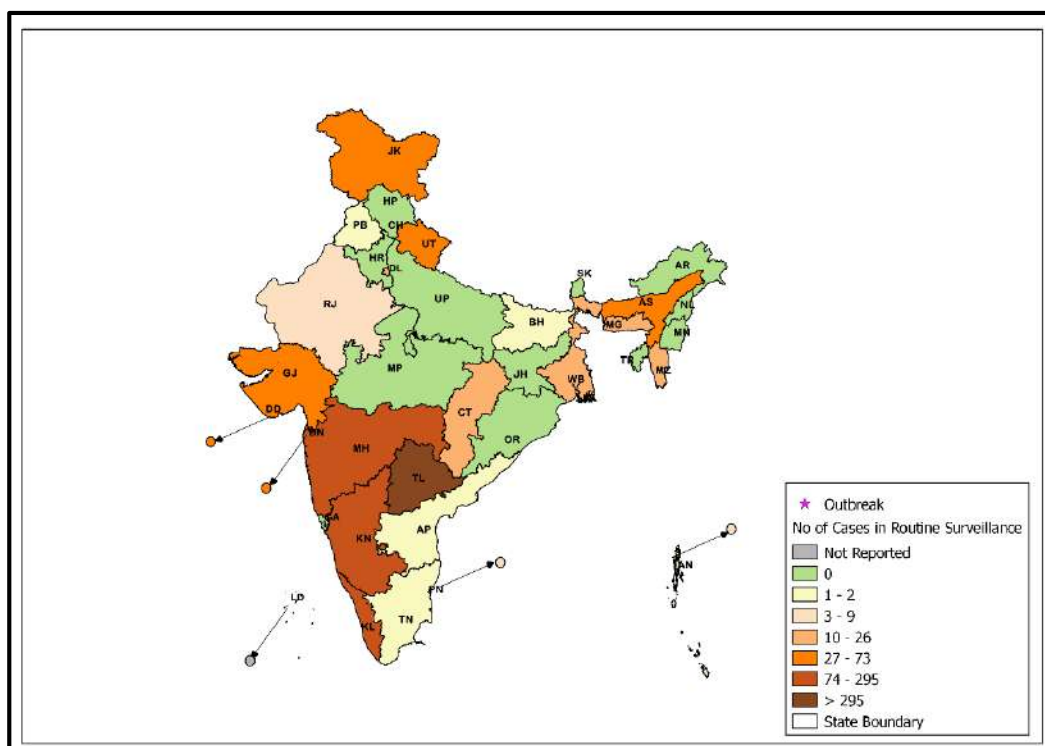


Fig 25: State/UT wise Lab Confirmed Leptospirosis cases and outbreaks for October 2018

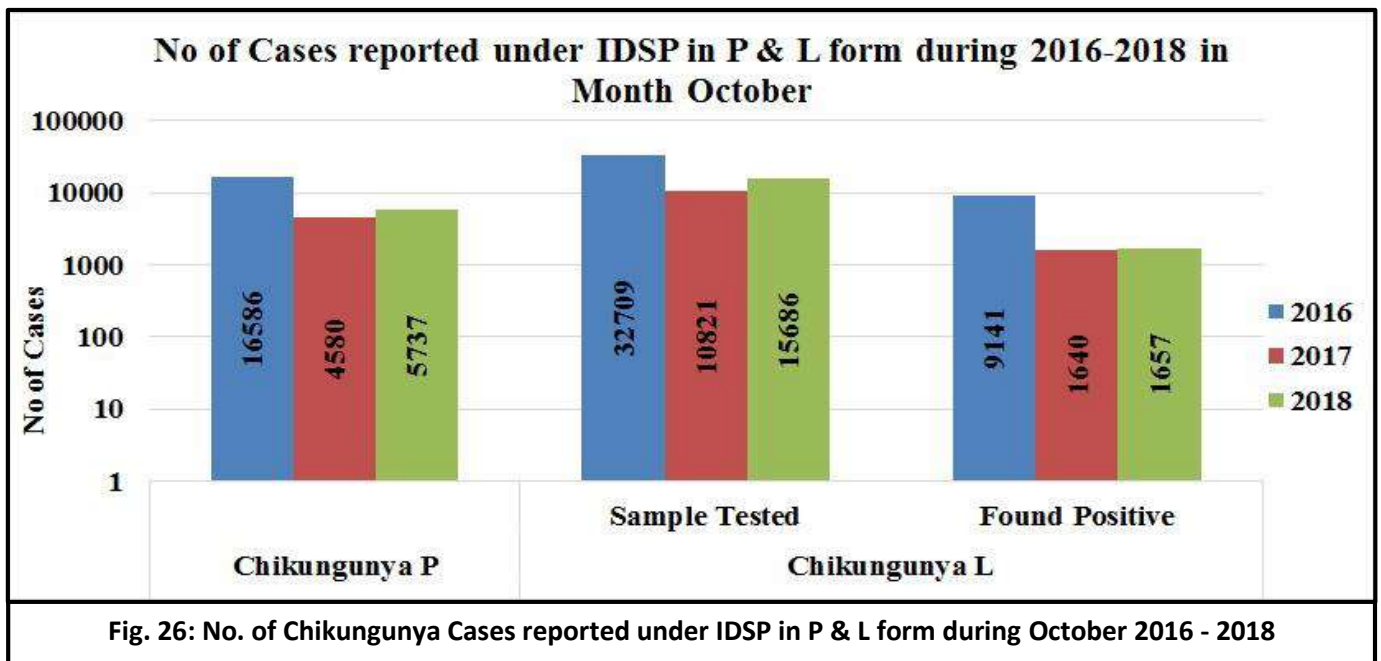
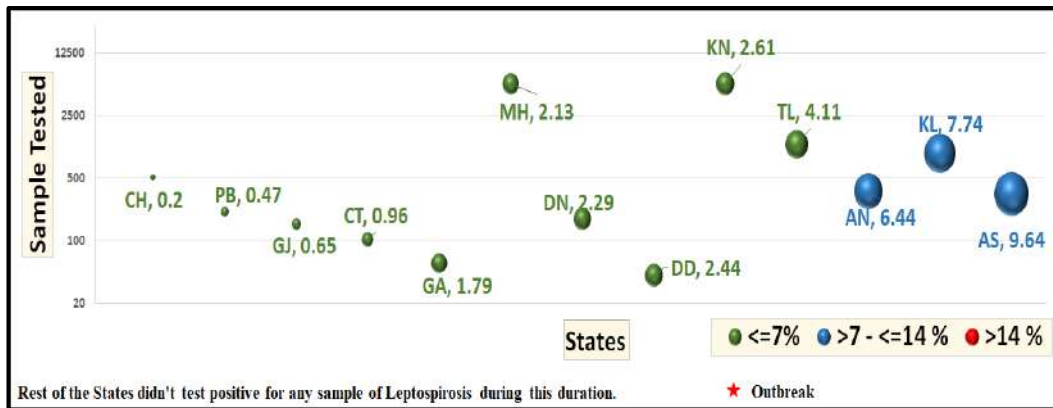


Fig. 26: No. of Chikungunya Cases reported under IDSP in P & L form during October 2016 - 2018

As shown in Fig 26, number of presumptive Chikungunya cases, as reported by States/UTs in 'P' form was 22846 in October 2016; 4263 in October 2017 and 4378 in October 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in October 2016; 32709 samples were tested for Chikungunya, out of which 9141 were found positive. In October 2017; out of 10821 samples, 1640 were found to be positive and in October 2018, out of 15686 samples, 1657 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 27.95%, 15.16% and 10.56% in October month of 2016, 2017 & 2018 respectively.

Fig 27: State/UT wise Presumptive Chikungunya cases and outbreaks for October 2018

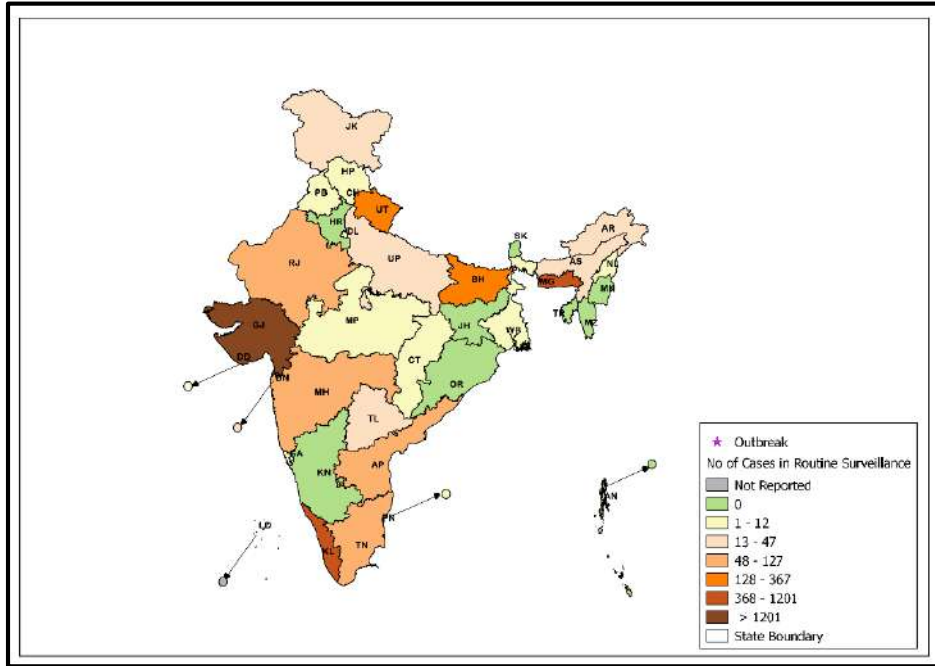


Fig 28: State/UT wise Lab Confirmed Chikungunya cases and outbreaks for October 2018

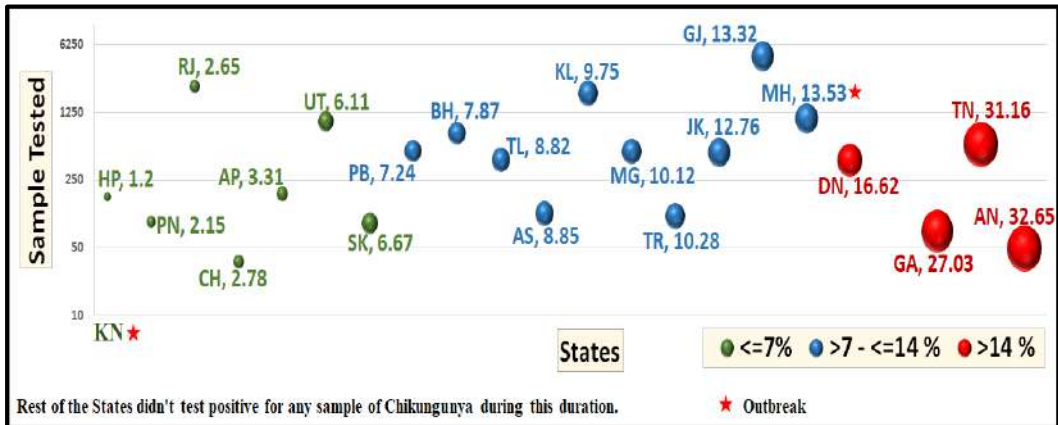
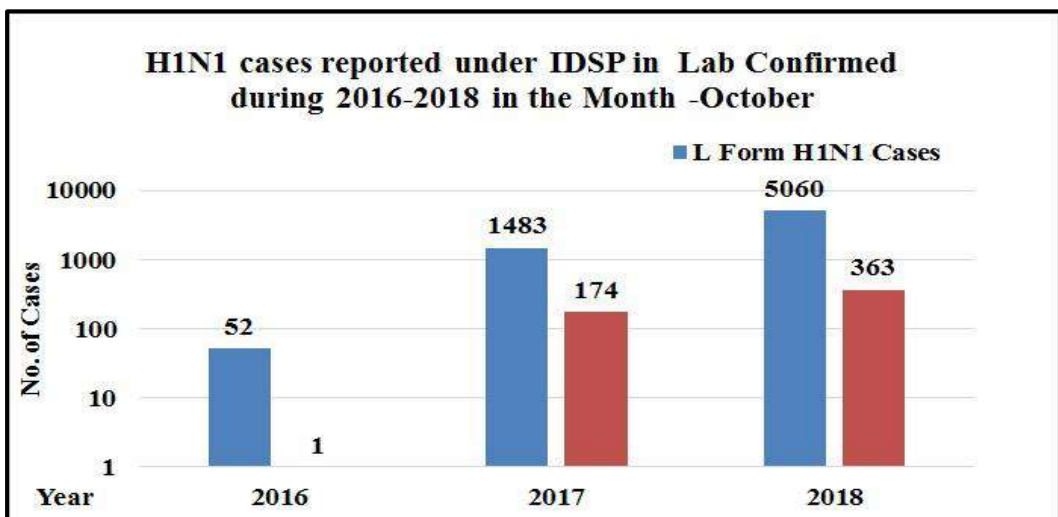


Fig 29: H1N1 cases reported under IDSP in L Form during 2016-2018 in October Month



As reported in L form, in October 2016; there were 52 cases and 1 deaths. In October 2017; there were 1483 cases and 174 deaths and in October 2018, there were 5060 cases and 363 deaths.

Case fatality rate for H1N1 were 1.92%, 11.73% and 7.17% in October month of 2016, 2017 & 2018 respectively.

Fig 30: State/UT wise Lab-confirmed H1N1 cases and outbreaks for October 2018

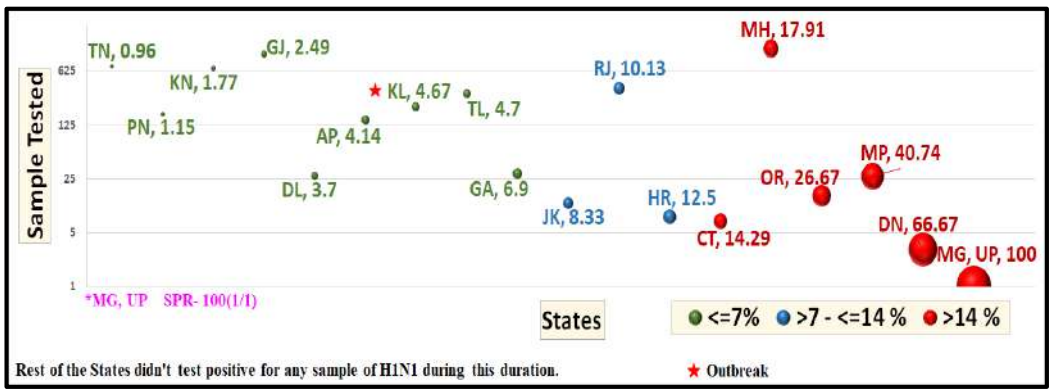
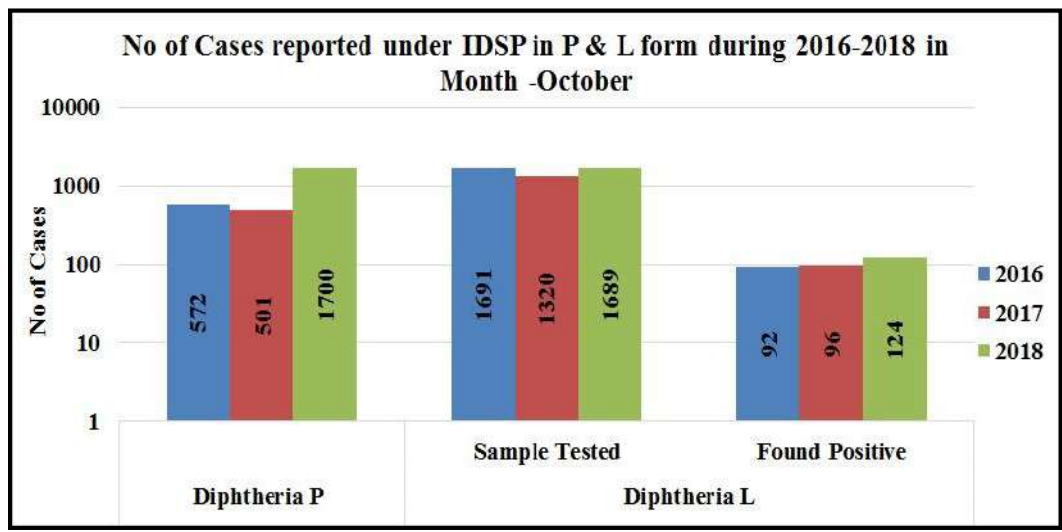


Fig 31: Diphtheria cases reported under IDSP under P & L Form during 2016-2018 in October Month



As shown in Fig 30, number of presumptive Diphtheria cases, as reported by States/UTs in 'P' form was 572 in October 2016; 501 in October 2017 and 1700 in October 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in October 2016; 1691 samples were tested for Diphtheria, out of which 92 were found positive. In October 2017; out of 1320 samples, 96 were found to be positive and in October 2018, out of 1689 samples, 124 were found to be positive.

Sample positivity of samples tested for Diphtheria has been 5.44%, 7.27% and 7.34% in October month of 2016, 2017 & 2018 respectively.

Fig 32: Presumptive Diphtheria cases reported under IDSP under P & L Form during 2016-2018 in October Month

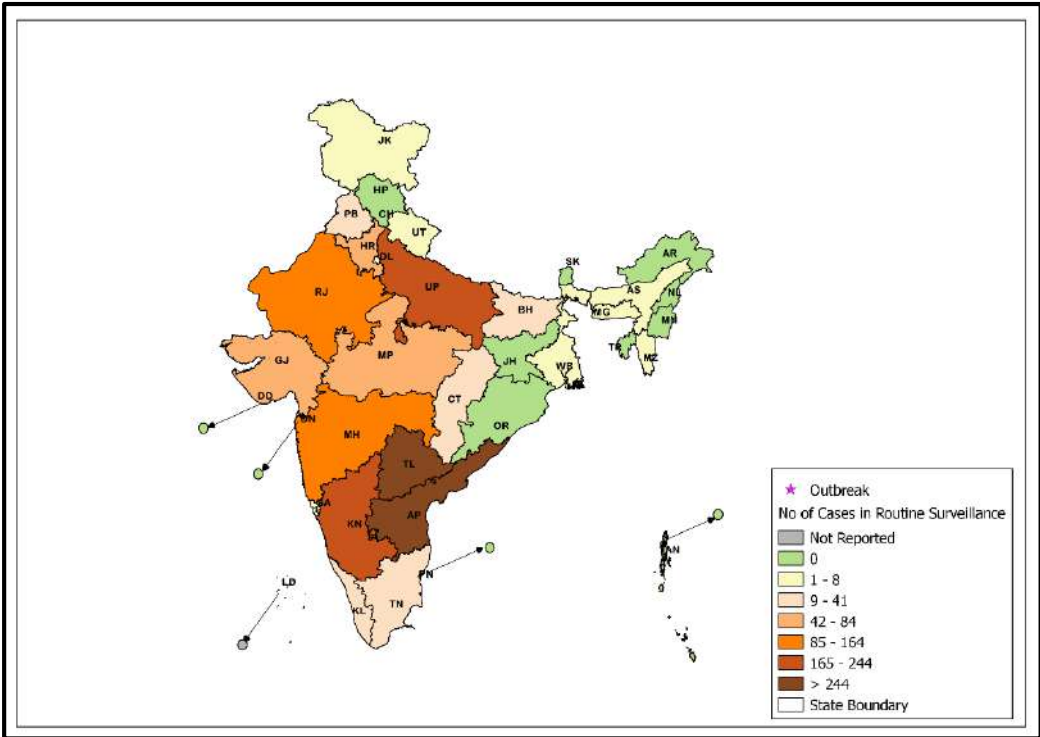
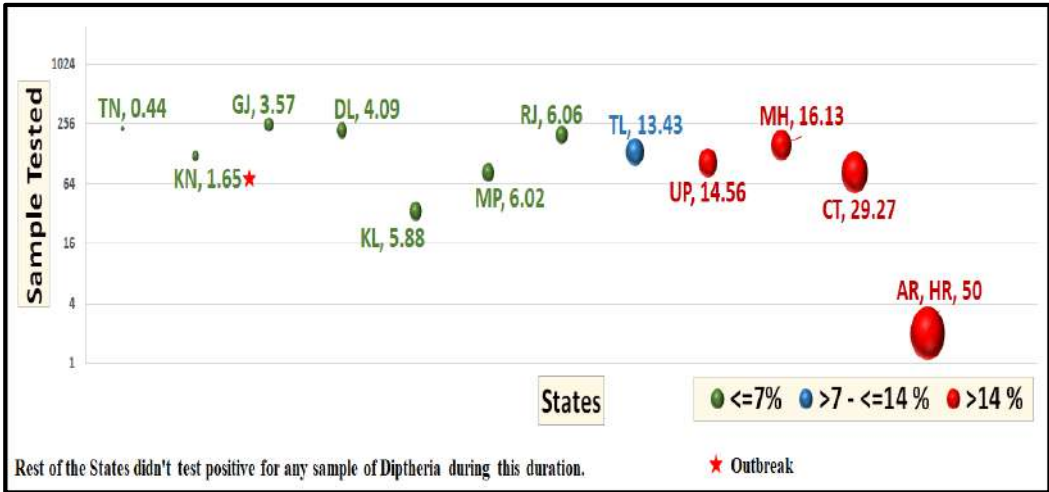


Fig 33: Lab Confirmed Diphtheria cases reported under IDSP under P & L Form during 2016-2018 in October Month



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:

- 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.

Acknowledgement:

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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 & idsp-npo@nic.in

Prepared by: Central Surveillance Unit, IDSP under guidance of Director, NCDC