



Disease Alert

प्रकोप चेतावनी

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

June 2018

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Investigation of Suspected Scrub Typhus Outbreak in Pangzawl Village, Mizoram

Background

Following reports of possible Scrub typhus cases in Pangzawl village, Lunglei district the Director of Health Services, Government of Mizoram, ordered the deputation of Rapid Response Team (RRT) vide Order No.D.32020/33/2014-DHS/IDSP, dated 26th June 2018.

The purpose of RRT was to conduct epidemiological, entomological and environmental studies and to undertake public awareness campaigns in the affected village & nearby areas. Mobile Medical Unit and IDSP staff of Lunglei consisting of Microbiologist and Data Manager were also deployed by Chief Medical Officer, Lunglei district.

RRT team comprised of following members:-

1. Dr. Pachuau Lalmalsawma, State Nodal officer, IDSP
2. Lalfakzuala Pautu, State Entomologist, IDSP
3. K. Lalrinsiana, Projectionist, MEM, DHS
4. Dr. Noel Lalremruata Sailo, M.O., Hrangchalkawn UPHC
5. Dr. C. Lalnunhlimi, M.O., Sazaikawn UPHC
6. Z. D. Laremruati, Microbiologist at district IDSP lab
7. Angela Zonuntluangi, Pharmacist, MMU
8. R. Lalruatkima, District Data Manager, IDSP
9. H. Lalmalsawma, Lab. Technician, MMU

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Methodology adopted by RRT

The team reached the affected area destination at 4:30 pm on 27th June 2018 and started the necessary investigations on the same day.

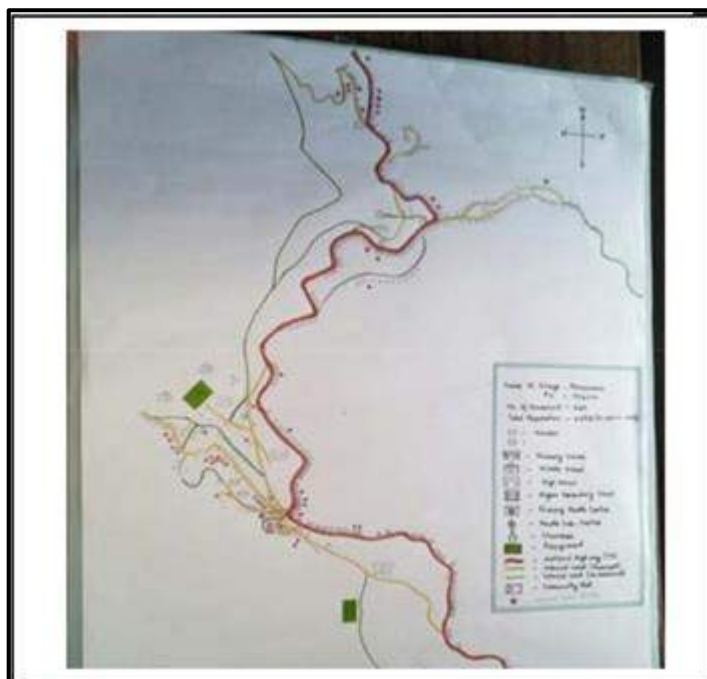


Fig. 1: 1 Sketch map of Pangzawl Village showing positive houses

- Initially, the team interviewed patients of suspected Scrub typhus disease in the affected village.
- Preliminary testing was carried out where Rapid diagnostic kits (Tsetsugamushi test kits) manufactured by SD Boline labs for utilized in the first phase. 150 such kits were provided by DHS, Mizoram.



Fig. 2: Collection of samples at Pangzawl PHC

- Free clinic was organised at PHC, Pangzawl, on 28th June 2018, starting from 11:00 A.M. onwards. 244 people attended the clinic when it was in operation. Medicines were supplied by Directorate of Health Services (DHS), Mizoram as well as nearby govt. health facilities.



**Fig. 3: RRT team at Pangzawl PHC for investigation
Scrub Typhus Outbreak**

- Epidemiological, Entomological and Environmental survey was conducted at the village by RRT.
- Rodent live traps were laid at domestic and peri-domestic areas of Scrub typhus positive houses at night on 27th & 28th June 2018 to catch rodents (Reservoir of Scrub typhus). As no rats were caught the first night, attempt was made with rodent sticky glue traps purchased from the local store the second night along with the live traps



**Fig. 4: Rodents caught on sticky glue traps during Scrub
Typhus Outbreak in Pangzawl village, Mizoram**

- Public Meeting on increasing awareness and education on Scrub typhus disease was jointly organized by Village Council and YMA at YMA Hall, Ramrikawn, Pangzawl on 28th June 2018 at 7:30 pm. There was also a session of Questions & Answers to clear doubts and sharing of the experiences by patients who have recovered from the disease on the signs and symptoms, including treatment and recovery



**Fig. 5: Public Meeting at YMA Hall, Pangzawl during
Scrub Typhus Outbreak in Pangzawl village, Mizoram**

Observations:-

1. Environmental survey indicated that there has been massive rodent infestation inside the village and areas surrounding the human habitation. These rodents are the natural reservoirs of the disease and carriers of the vector (Mites) of the disease.
2. Five (5) rodents, two *Rattus rattus* and three *Rattus norvegicus* were caught with the sticky glue traps. Trombiculid mites (vector of scrub typhus) were found in the pinna of ears of rodents. They were dissected out and rat fleas were also combed out which were then preserved with 70% alcohol to be sent to RMRC (Dibrugarh) for vector identification and other further studies.
3. Intermittent Scrub typhus positive cases has been recorded from the middle of the month of April 2018. The disease outbreak was started from 20th June 2018, 107 sero- positive cases were recorded with an unfortunate death of 29 years old male patient.
4. As updated on 4th July 2018, 107 sero-positive cases were recorded comprising of 53 females and 54 males.



Fig. 6: Interview & counselling of patients at Pangzawl PHC during Scrub Typhus Outbreak investigation

Epidemiological Analysis

Data from 16th April to 29th June was analyzed by the team. It was found that during this period 106 cases were reported from Pangzawl village. There had been sporadic cases till 4th June when the number of cases started being reported on a regular basis. From 20th June there has been spurt in numbers with the peak of epidemic occurring on 25th June.

There has been consistently high number of cases till 27th June when RRT arrived in the village. Because of control measures instituted, subsequently there had been a decline in subsequent days.

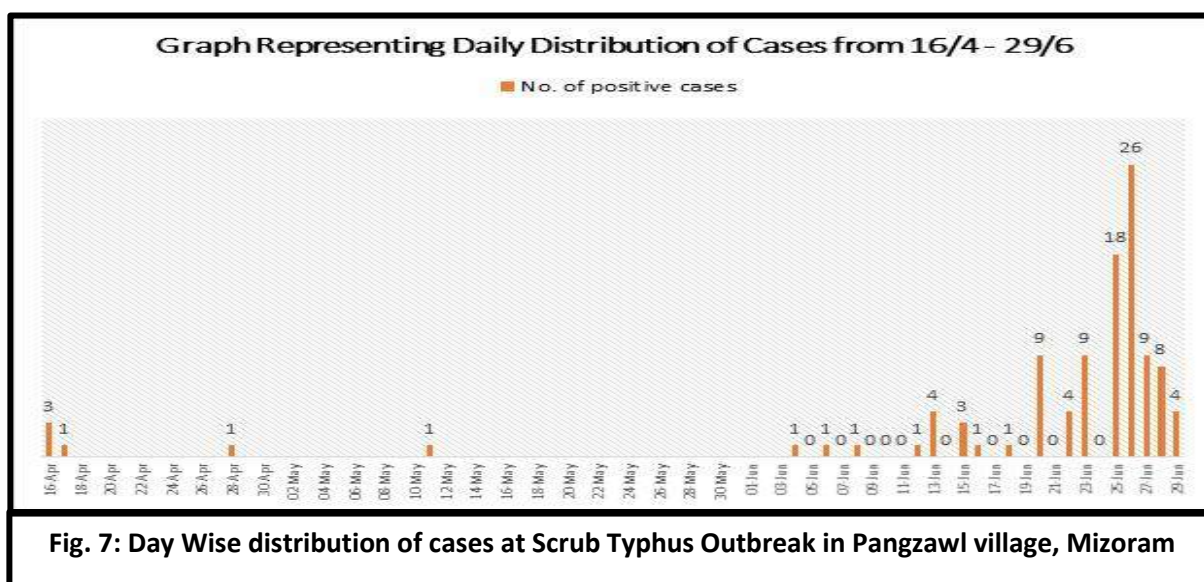


Fig. 7: Day Wise distribution of cases at Scrub Typhus Outbreak in Pangzawl village, Mizoram

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Laboratory Results:- Main laboratory findings are as follows -

- All 107 samples were tested positive using Rapid Test.
- Out of these 107 samples, 41 were subjected to Weil Felix Test (which included 31 positive and 10 negative samples) at Department of Microbiology, Civil Hospital, Lunglei. Out of thirty-one (31) sero-positive samples with rapid diagnostic test kit, were found positive when tested with Weil Felix Test, while 8 samples were found positive from the 10 negative samples with rapid diagnostic test kit. From this observation and from the previous findings, it is clear that there has been considerable percentage of both false negative and false positive with the RDK which are commonly utilized in the state.
- However, since diagnosis with rapid test kits are not approved by Ministry of Health & Family Welfare Department, Gol for a disease confirmation these samples has to be sent to Regional Medical Research Centre (RMRC) Dibrugarh for further testing and confirmation with ELISA. Result for this are awaited.
- Rodent serum samples were also collected which were to be sent to RMRC (Dibrugarh) for disease confirmation in rodents. Result for this are awaited.



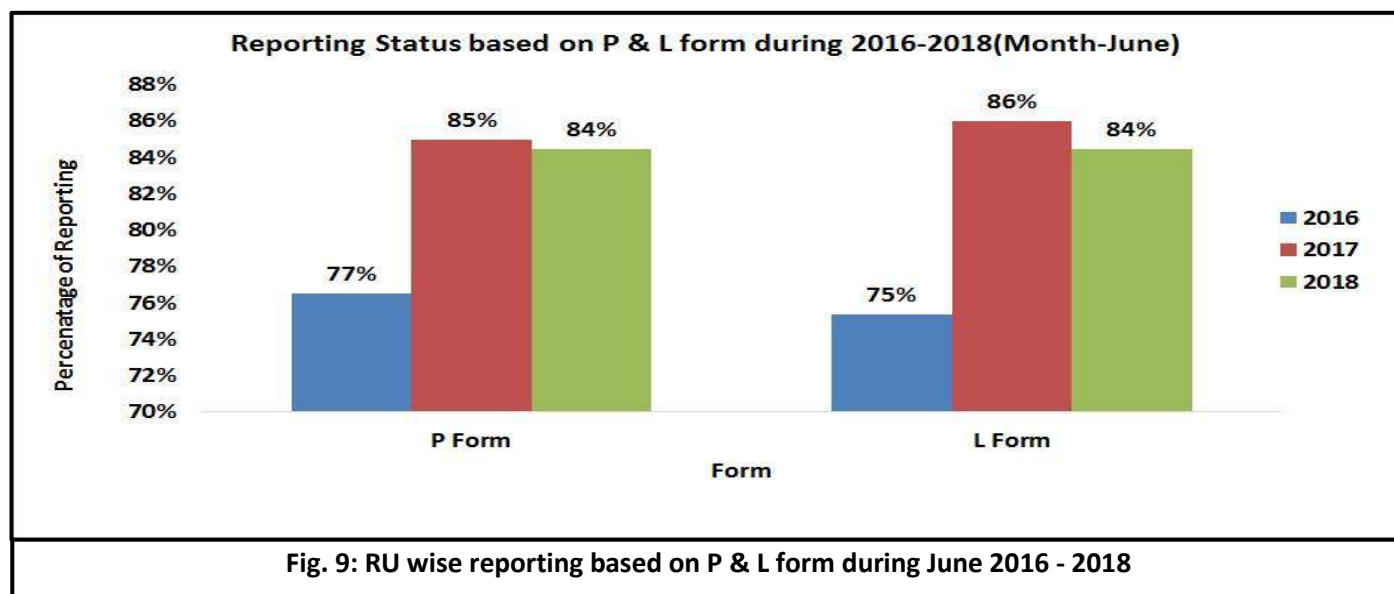
Fig. 8: Examination & Dissection of Rodents for fleas during Scrub Typhus Outbreak in Pangzawl village,

Recommendations:-

1. As scrub typhus appears endemic in the area, constant monitoring with sufficient supply of test kits and medicines should be ascertained at all times.
2. The commonly used rapid diagnostic kits like Tsutsugamushi test, My test, etc. are not encouraged by the Ministry of Health & Family Welfare, Gol, for diagnosis of Scrub Typhus. , were found to exhibit both false negativity and positivity results from the studies. Hence, utilization of Weil felix test which is more reliable, less expensive and approved by the Ministry may be encouraged at government and private sectors.
3. As the surveyed areas were found to be infested with rodents, rodents control by means of environmental management or by using rodenticides may be effective.
4. Control of Mites by spraying Synthetic pyrethroids like Alpha-cypermethrine 5%, deltamethrine 2.5% etc. in the vegetations surrounding human dwellings would be highly effective and beneficial.

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

* Data extracted from IDSP Portal (www.idsp.nic.in) as on Sep 28, 2018.



As shown in Fig 9, in June 2016, 2017 and 2018, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 77%, 85% and 84% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 75%, 86% and 84% 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 10: State/UT wise P form completeness % for June2018

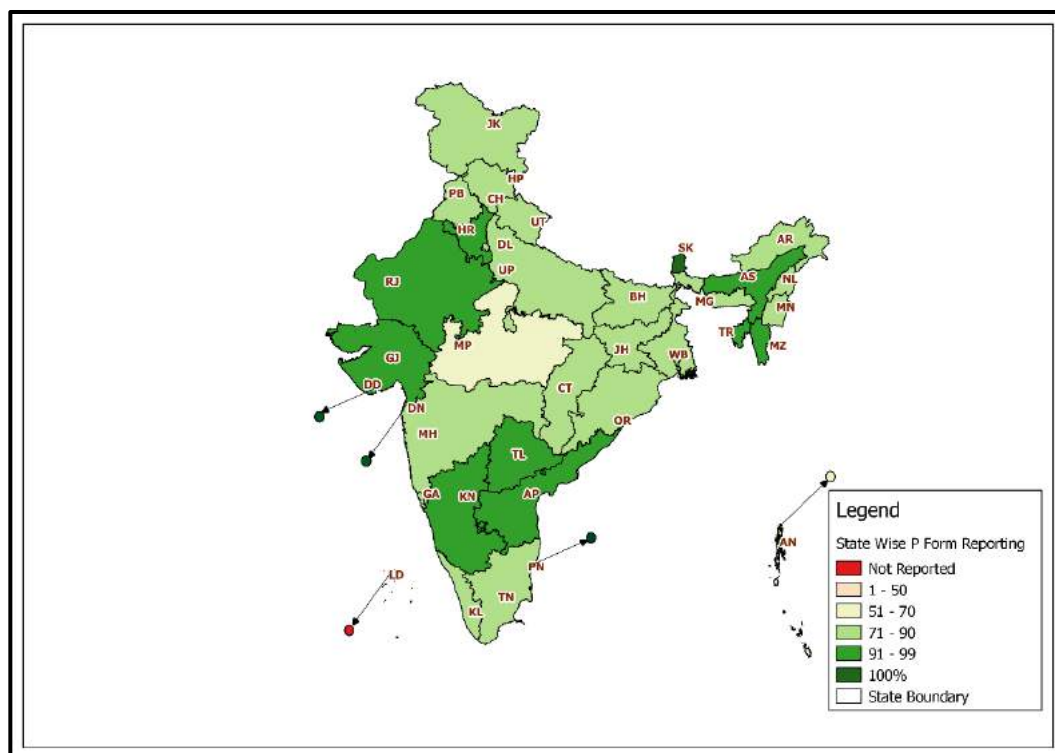
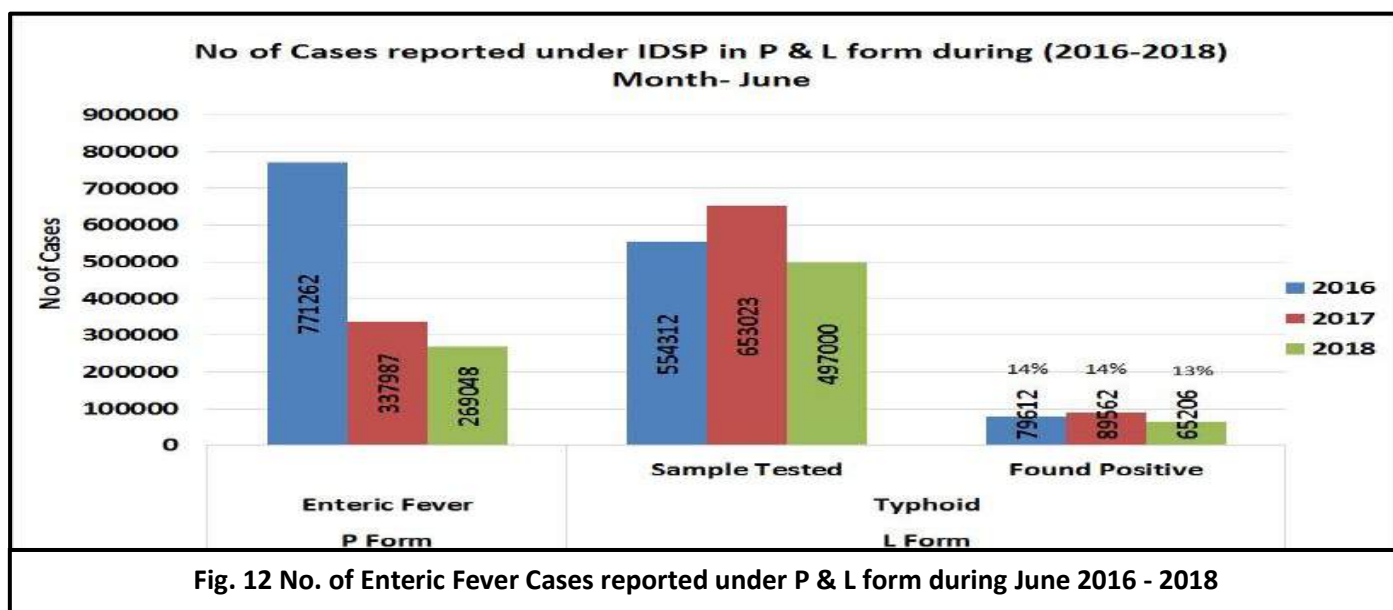
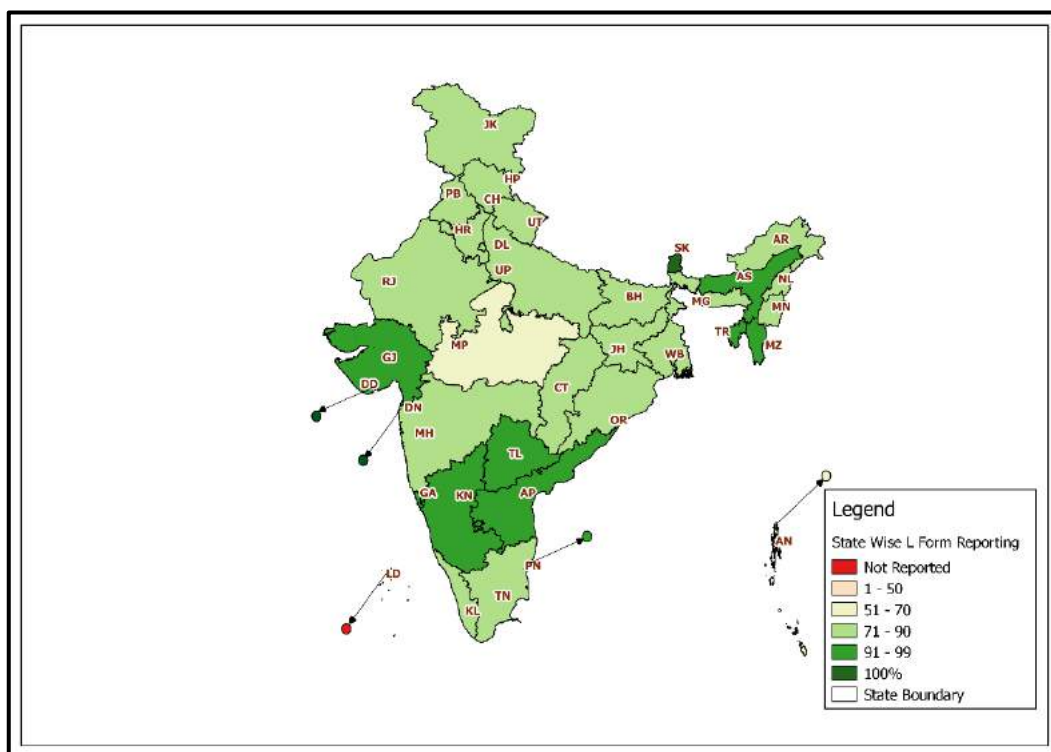


Fig 11: State/UT wise L form completeness % for June2018



As shown in Fig 12, number of presumptive enteric fever cases, as reported by States/UTs in 'P' form was 771262 in June 2016; 337987 in June 2017 and 269048 in June 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in June 2016; 554312 samples were tested for Typhoid, out of which 79612 were found positive. In June 2017; out of 653023 samples, 89562 were found to be positive and in June 2018, out of 497000 samples, 65206 were found to be positive.

Sample positivity has been 14.36%, 13.71% and 13.11% in June 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 13: State/UT wise Presumptive Enteric fever cases and outbreaks for June 2018

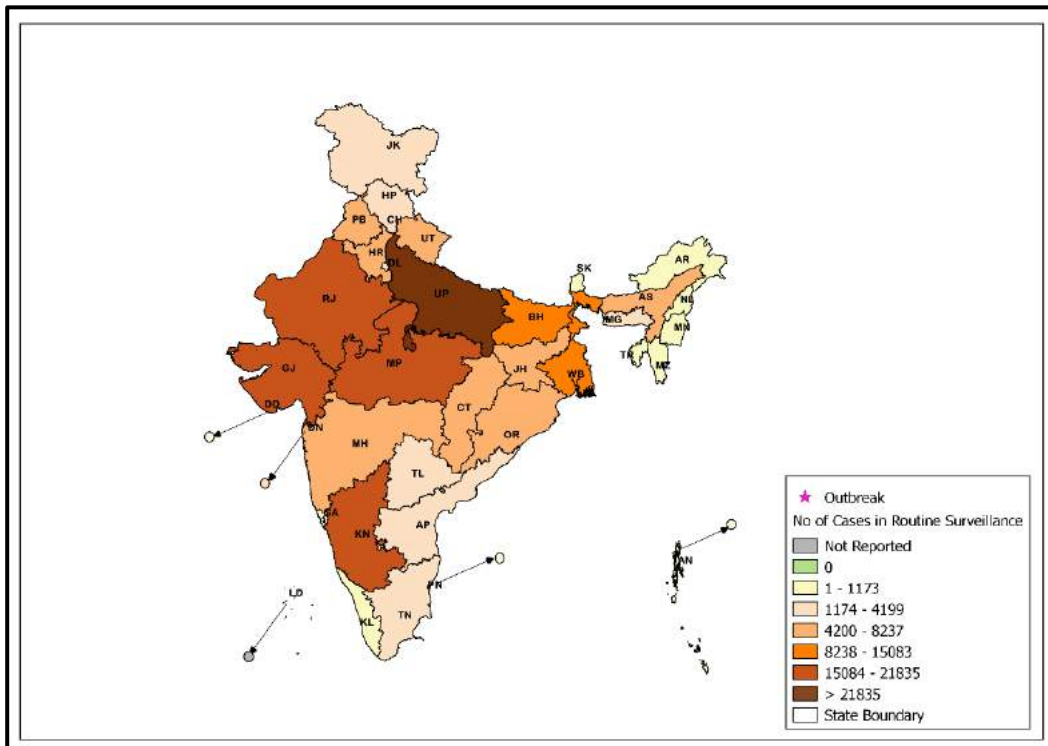
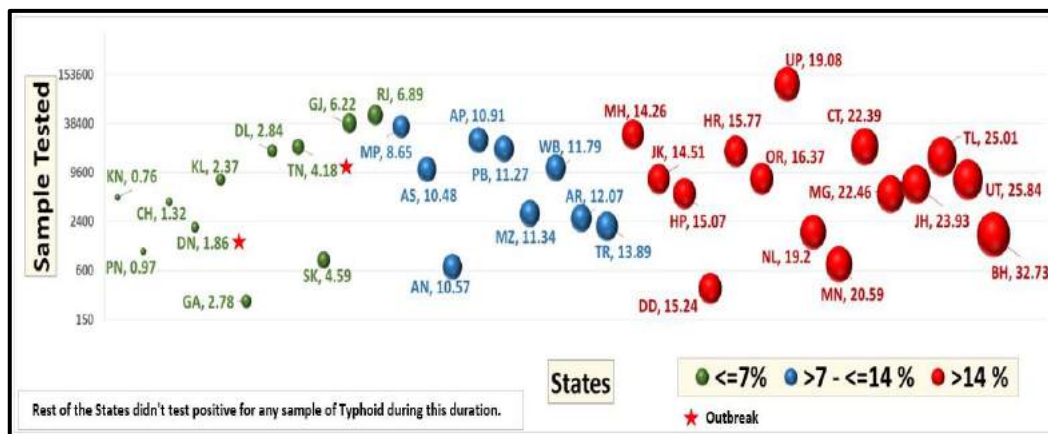


Fig 14: State/UT wise Lab Confirmed Typhoid cases and outbreaks for June 2018



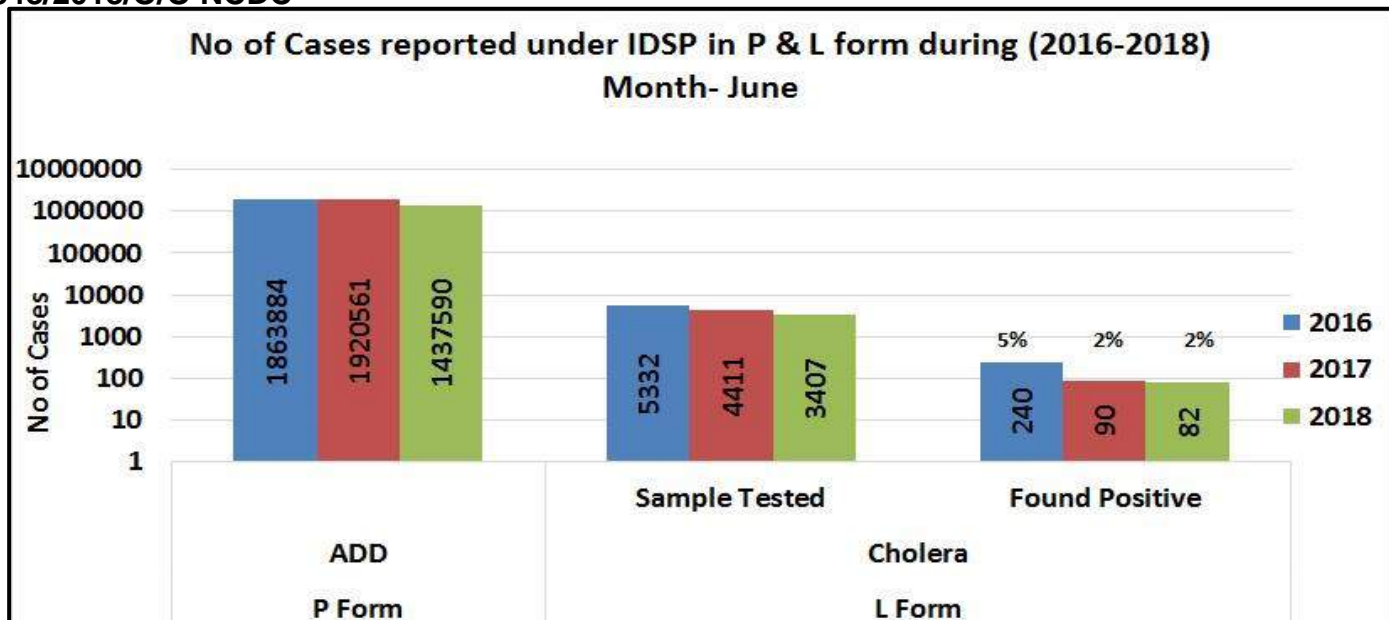


Fig. 15 No. of ADD Cases reported under IDSP in P Form & Cholera Cases in L form during June 2016 - 2018

As shown in Fig 15, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in 'P' form was 186388 in June 2016; 192056 in June 2017 and 1437590 in June 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in June 2016, 5332 samples were tested for Cholera out of which 240 tested positive; in June 2017, out of 4411 samples, 90 tested positive for Cholera and in June 2018, out of 3407 samples, 82 tested positive.

Sample positivity of samples tested for Cholera has been 4.50%, 2.04% and 2.40% in June month of 2016, 2017 & 2018 respectively.

Fig 16: State/UT wise Presumptive ADD cases and outbreaks for June 2018

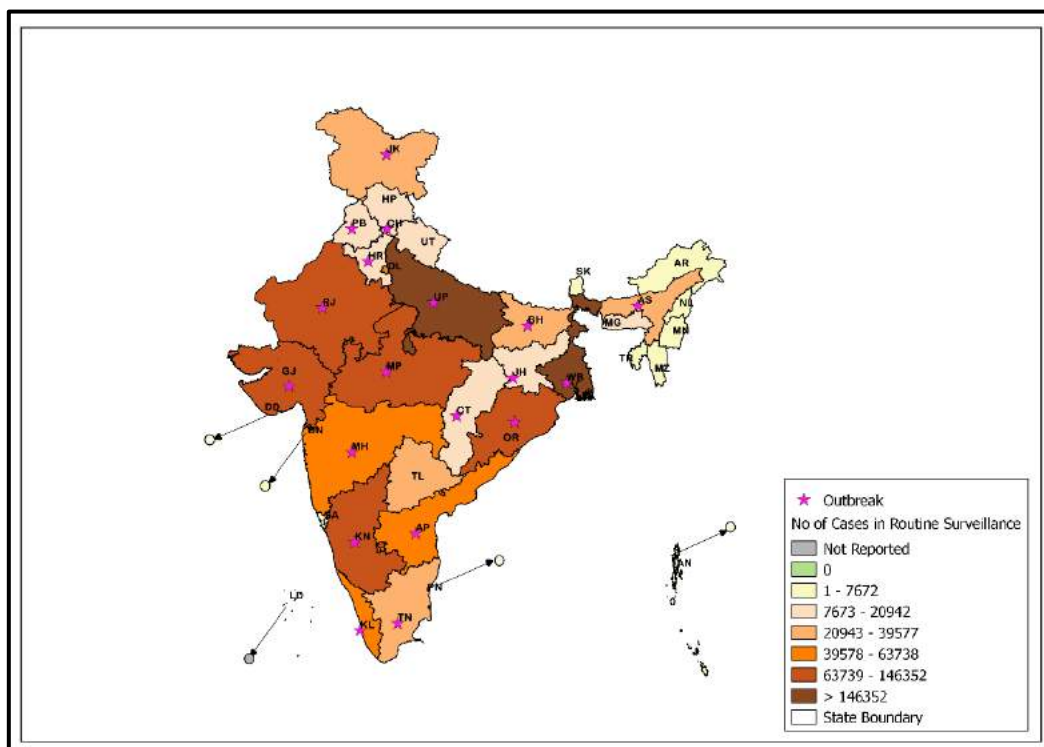


Fig 17: State/UT wise Lab Confirmed Cholera cases and outbreaks for June 2018

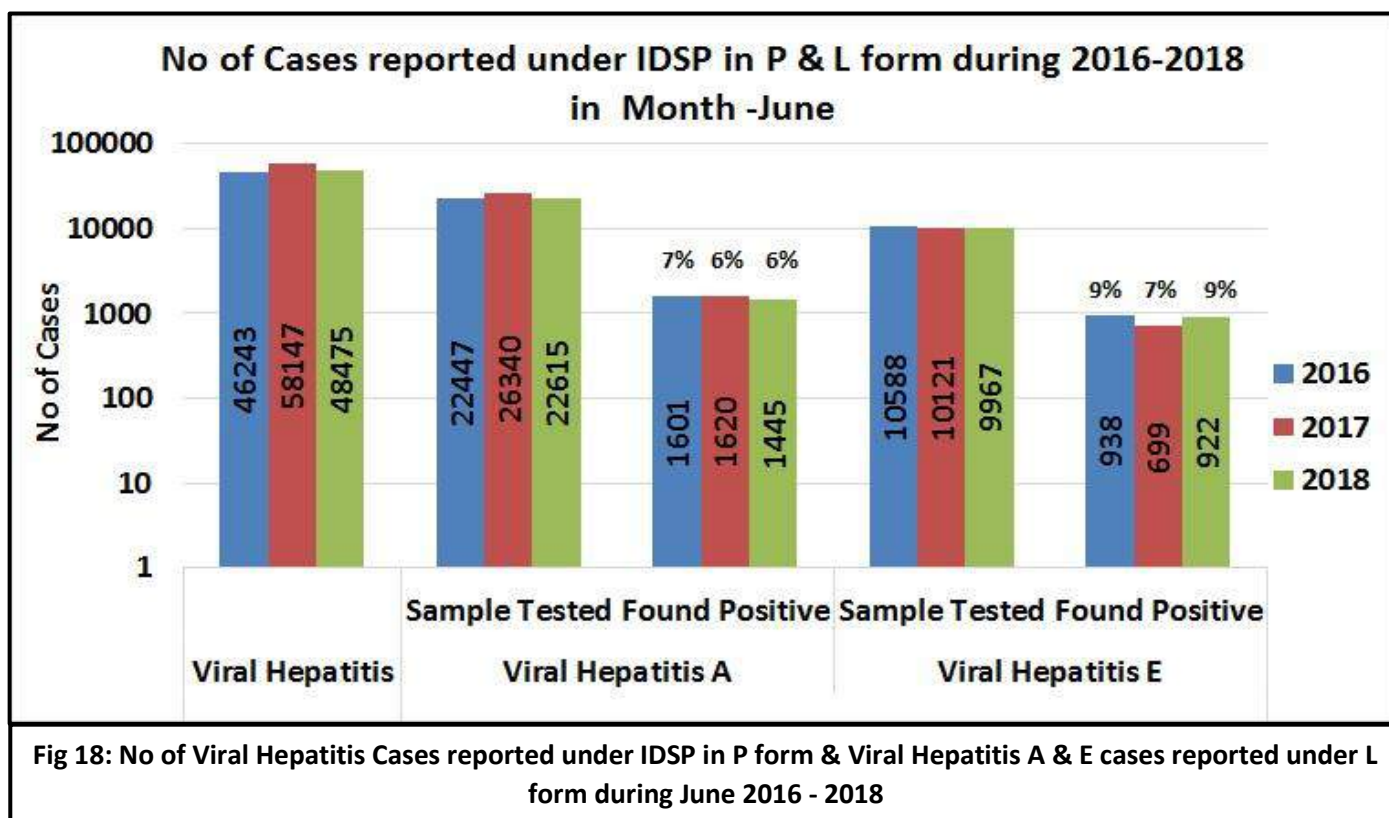
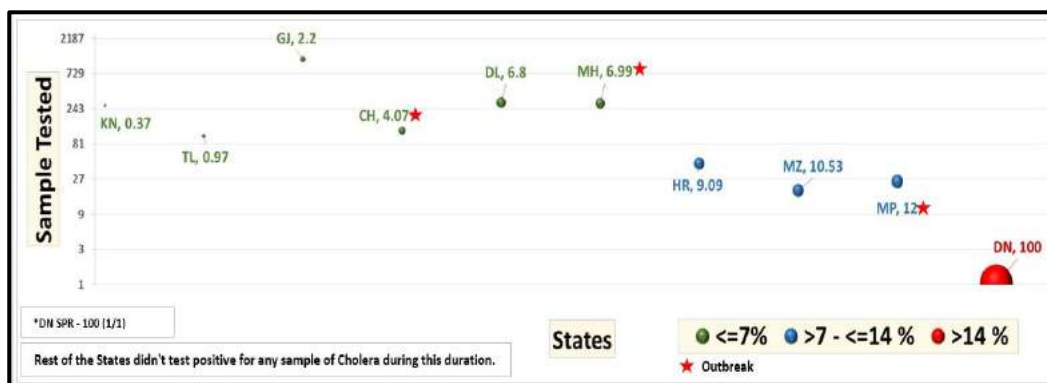


Fig 18: No of Viral Hepatitis Cases reported under IDSP in P form & Viral Hepatitis A & E cases reported under L form during June 2016 - 2018

As shown in Fig 18, the number of presumptive Viral Hepatitis cases was 46243 in June 2016, 58147 in June 2017 and 48475 in June 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 June 2016; 22447 samples were tested out of which 1601 were found positive. In June 2017 out of 26340 samples, 1620 were found to be positive and in June 2018, out of 22615 samples, 1445 were found to be positive.

Sample positivity of samples tested for Hepatitis A has been 7.13%, 6.15% and 6.40% in June month of 2016, 2017 & 2018 respectively.

As reported in L form for Viral Hepatitis E, in June 2016; 10588 samples were tested out of which 938 were found positive. In June 2017; out of 10121 samples, 699 were found to be positive and in June 2018, out of 9967 samples, 922 were found to be positive.

Sample positivity of samples tested for Hepatitis E has been 8.86%, 6.90% and 9.25% in June month of 2016, 2017 & 2018 respectively.

Fig 19: State/UT wise Presumptive Viral Hepatitis A cases and outbreaks for June 2018

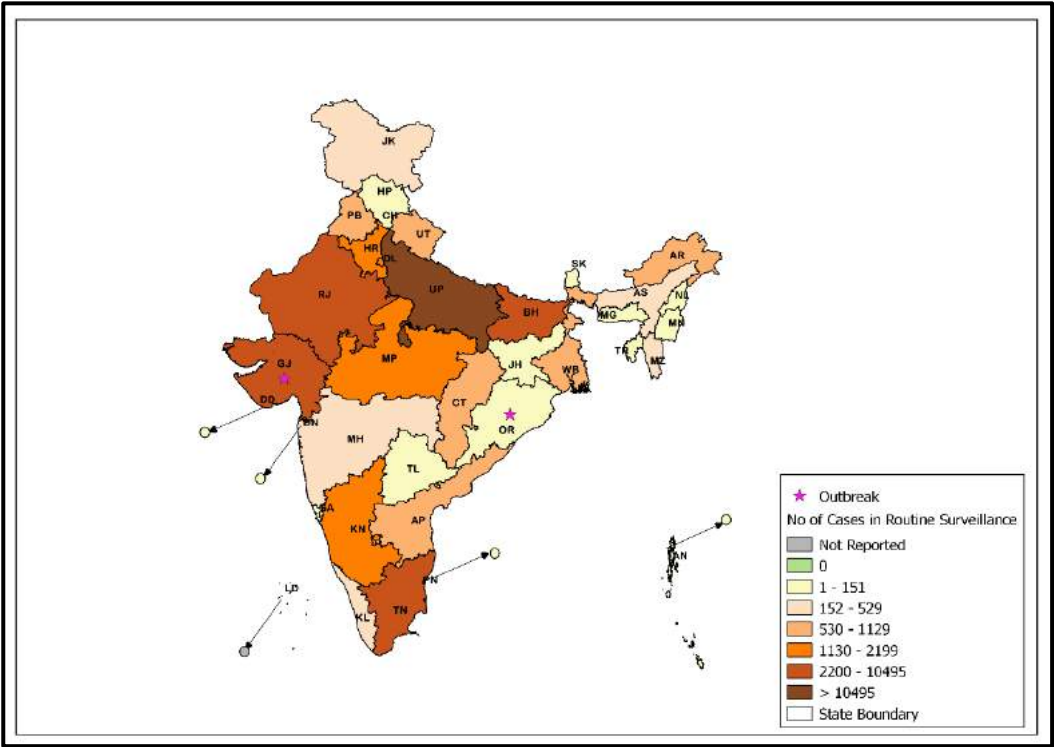


Fig 20: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for June 2018

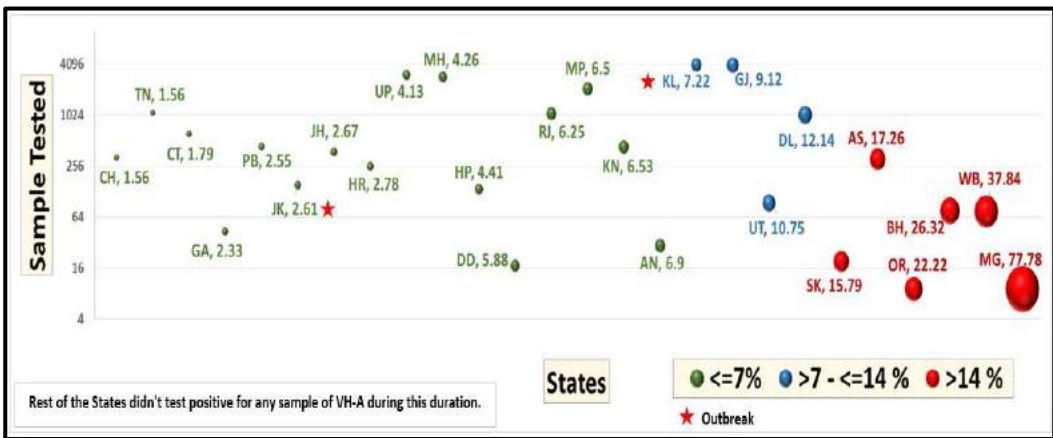
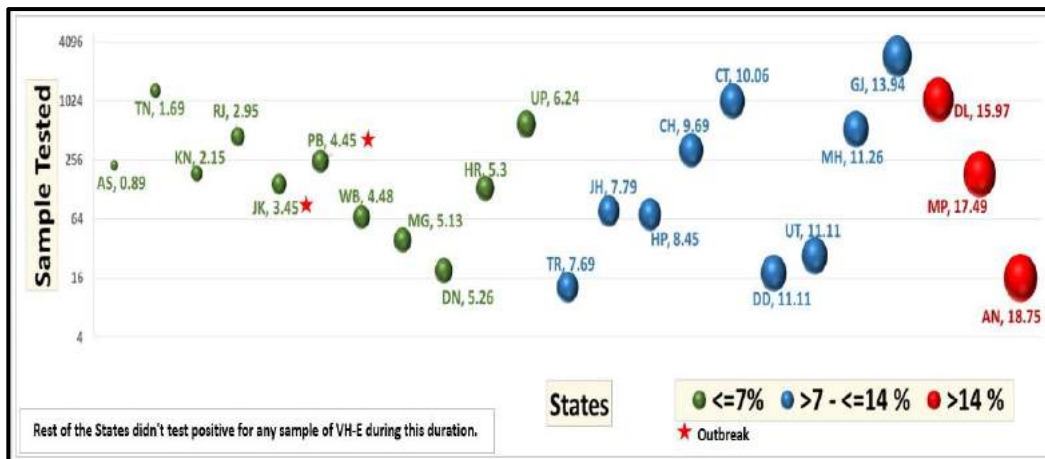


Fig 21: State/UT wise Lab Confirmed Viral Hepatitis E cases and outbreaks for June 2018



Rest of the States didn't test positive for any sample of VH-E during this duration.

States

● <=7% ● >7 - <=14% ● >14%

★ Outbreak

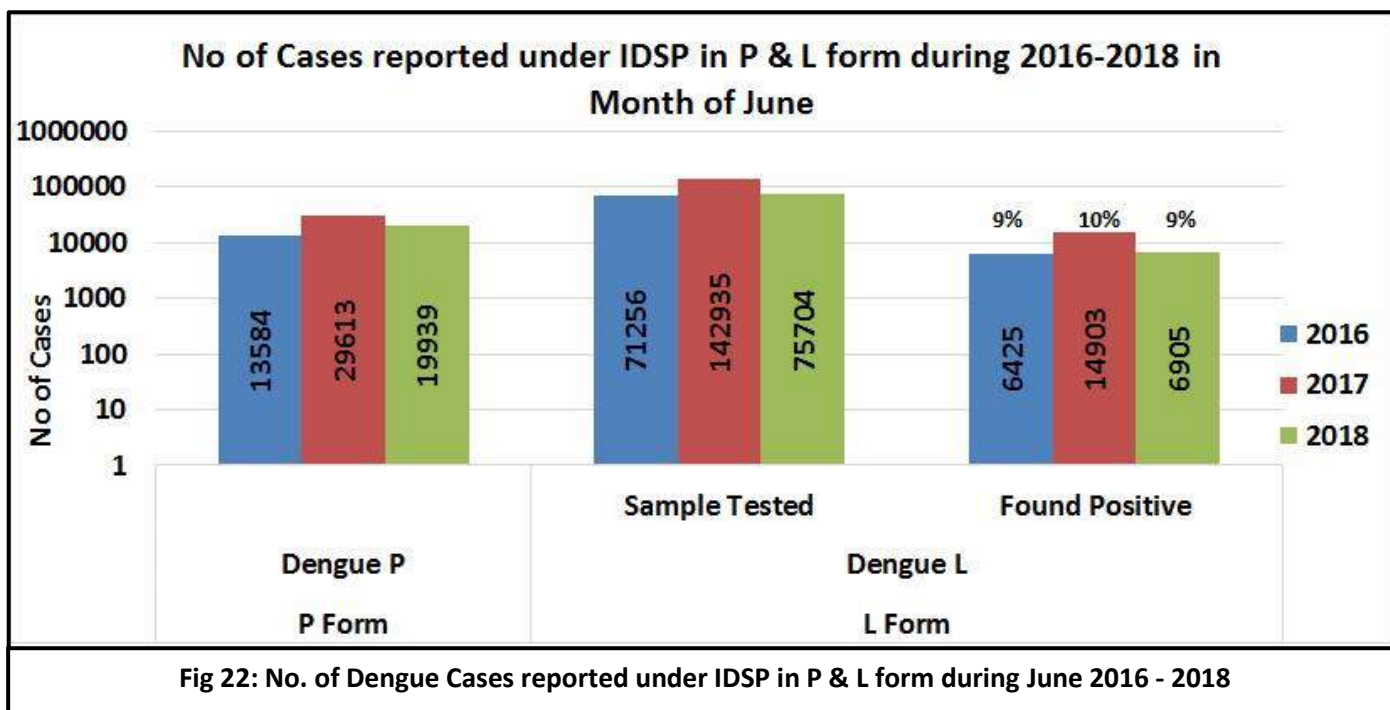


Fig 22: No. of Dengue Cases reported under IDSP in P & L form during June 2016 - 2018

As shown in Fig 22, number of presumptive Dengue cases, as reported by States/UTs in ‘P’ form was 13584 in June 2016; 29613 in June 2017 and 19939 in June 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in June 2016; 71256 samples were tested for Dengue, out of which 6425 were found positive. In June 2017; out of 142935 samples, 14903 were found to be positive and in June 2018, out of 75704 samples, 6905 were found to be positive.

Sample positivity of samples tested for Dengue has been 9.02%, 10.43% and 9.12% in June month of 2016, 2017 & 2018 respectively.

Fig 23: State/UT wise Presumptive Dengue cases and outbreaks for June 2018

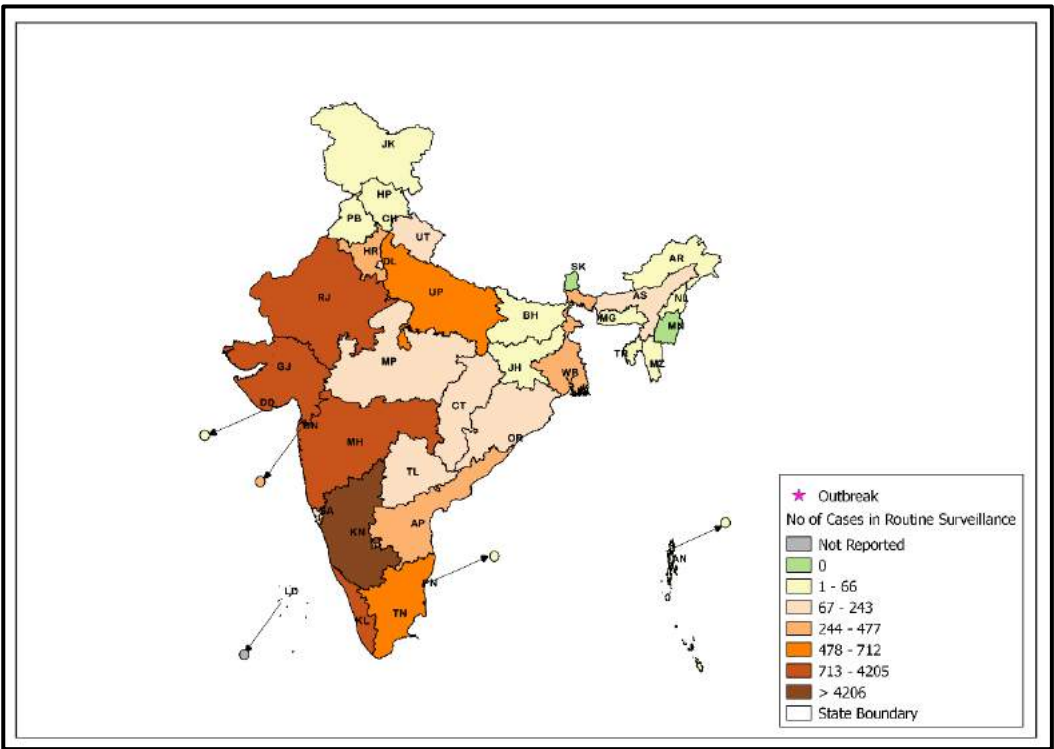
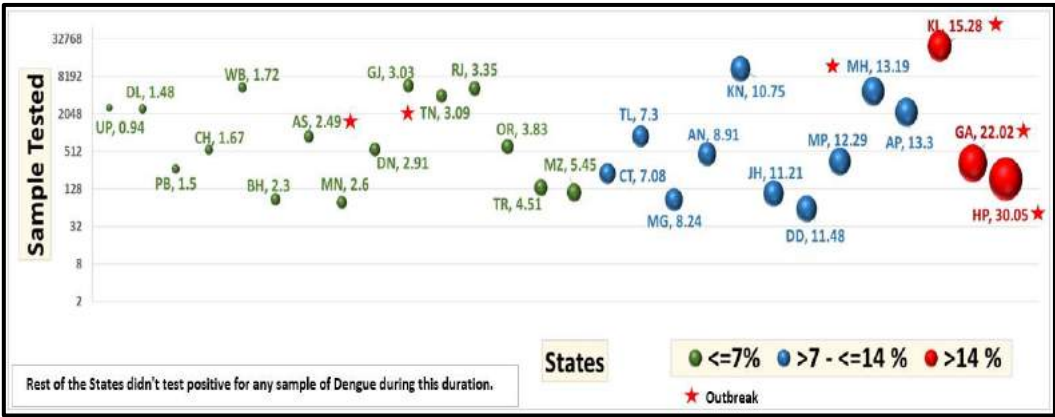


Fig 24: State/UT wise Lab Confirmed Dengue cases and outbreaks for June 2018



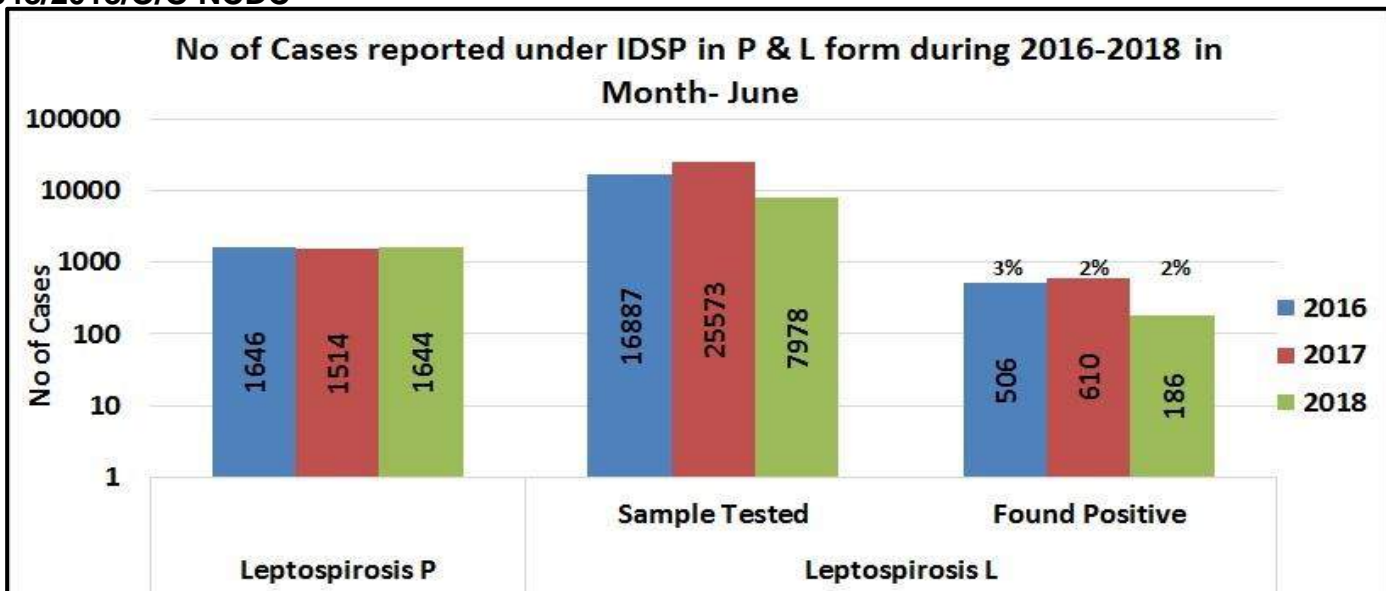


Fig 25: No. of Leptospirosis Cases reported under IDSP in P & L form during June 2016 - 2018

As shown in Fig 25, number of presumptive Leptospirosis cases, as reported by States/UTs in ‘P’ form was 1646 in June 2016; 1514 in June 2017 and 1644 in June 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in June 2016; 16887 samples were tested for Leptospirosis, out of which 506 were found positive. In June 2017; out of 25573 samples, 610 were found to be positive and in June 2018, out of 7978 samples, 186 were found to be positive.

Sample positivity of samples tested for Dengue has been 3.00%, 2.39% and 2.33% in June month of 2016, 2017 & 2018 respectively.

Fig 26: State/UT wise Presumptive Leptospirosis cases and outbreaks for June 2018

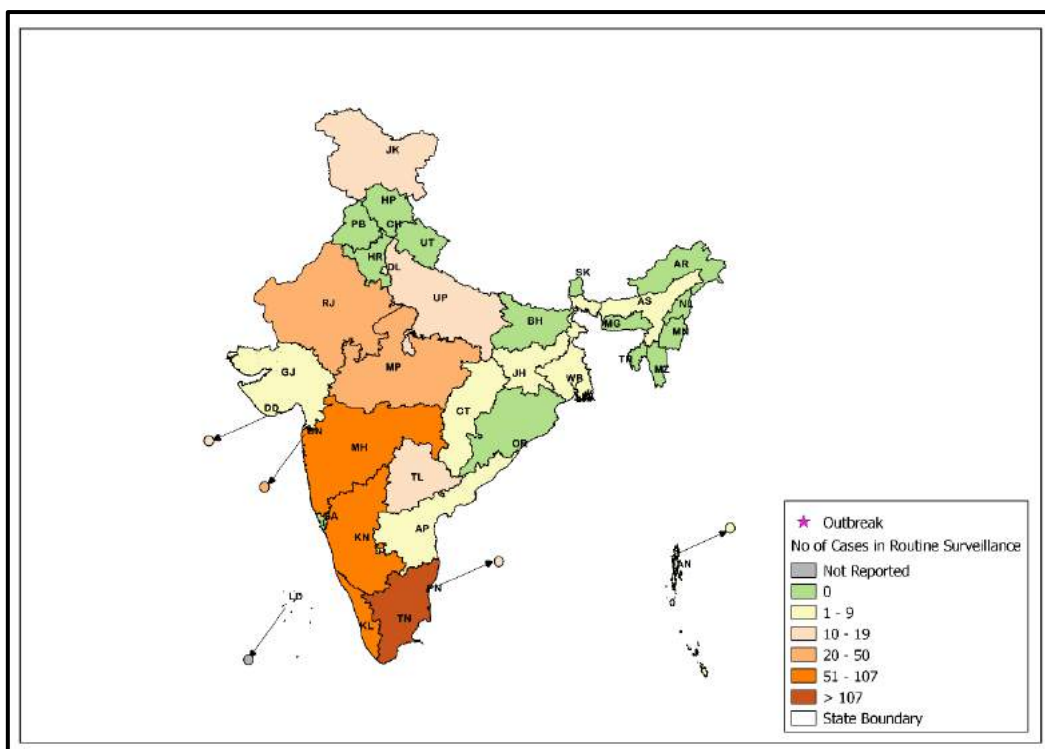
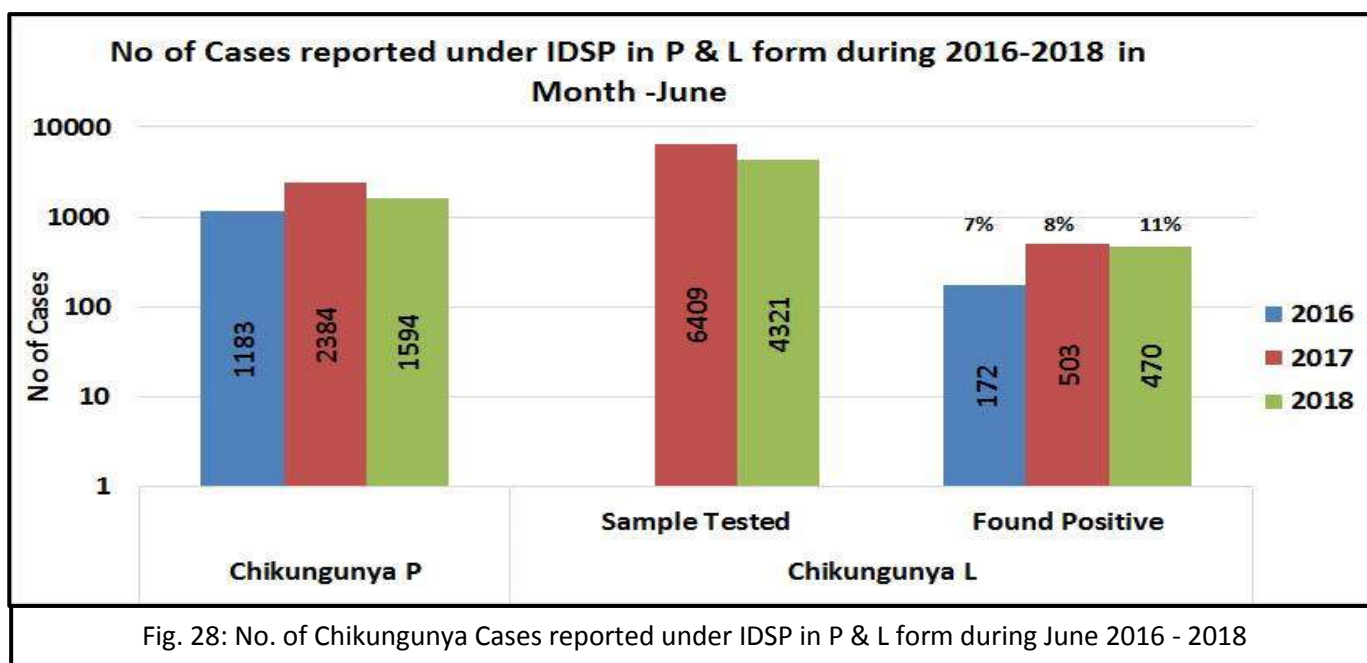
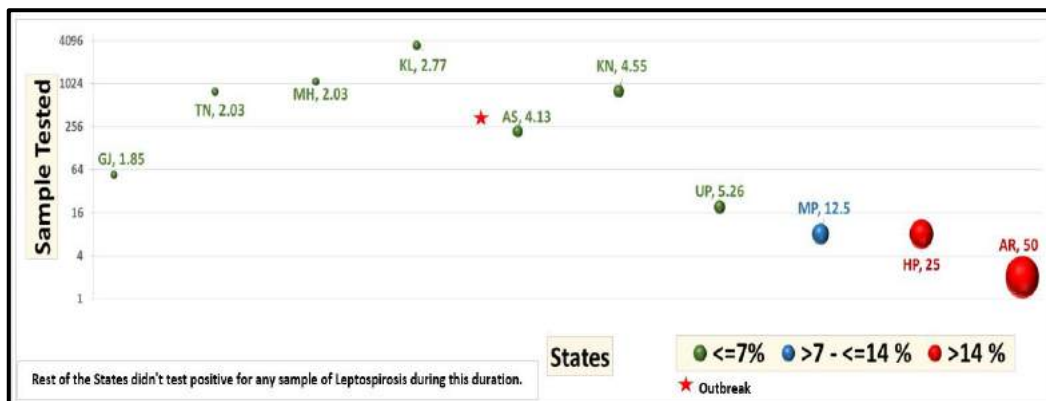


Fig 27: State/UT wise Lab Confirmed Leptospirosis cases and outbreaks for June 2018



As shown in Fig 28, number of presumptive Chikungunya cases, as reported by States/UTs in 'P' form was 1183 in June 2016; 2384 in June 2017 and 1594 in June 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in June 2016; 2360 samples were tested for Chikungunya, out of which 172 were found positive. In June 2017; out of 6409 samples, 503 were found to be positive and in June 2018, out of 4321 samples, 470 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 7.29%, 7.85% and 10.88% in June month of 2016, 2017 & 2018 respectively.

Fig 29: State/UT wise Presumptive Chikungunya cases and outbreaks for June 2018

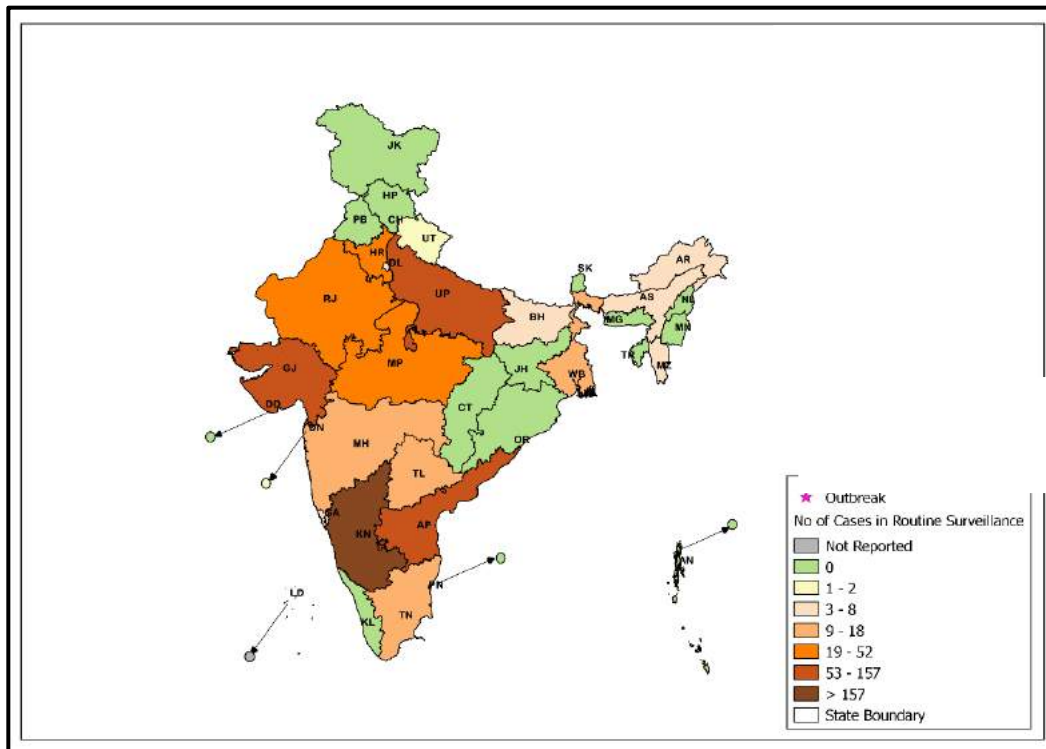


Fig 27: State/UT wise Lab Confirmed Chikungunya cases and outbreaks for June 2018

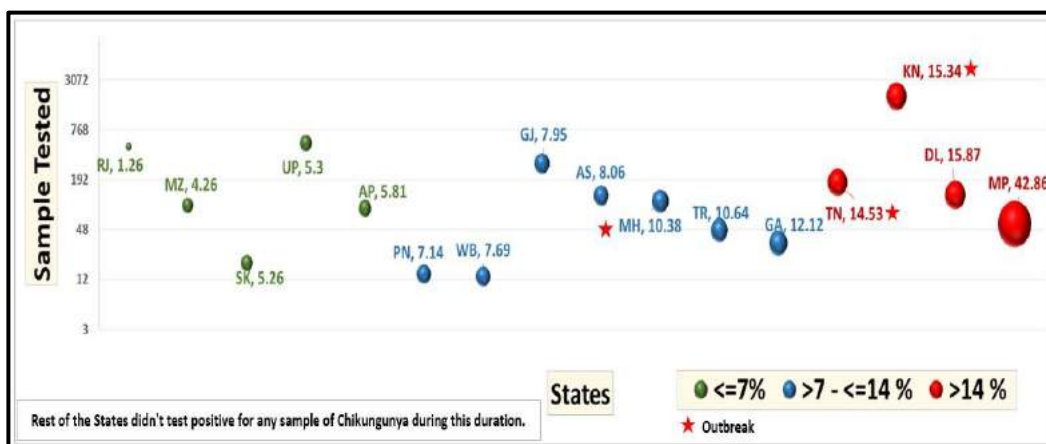
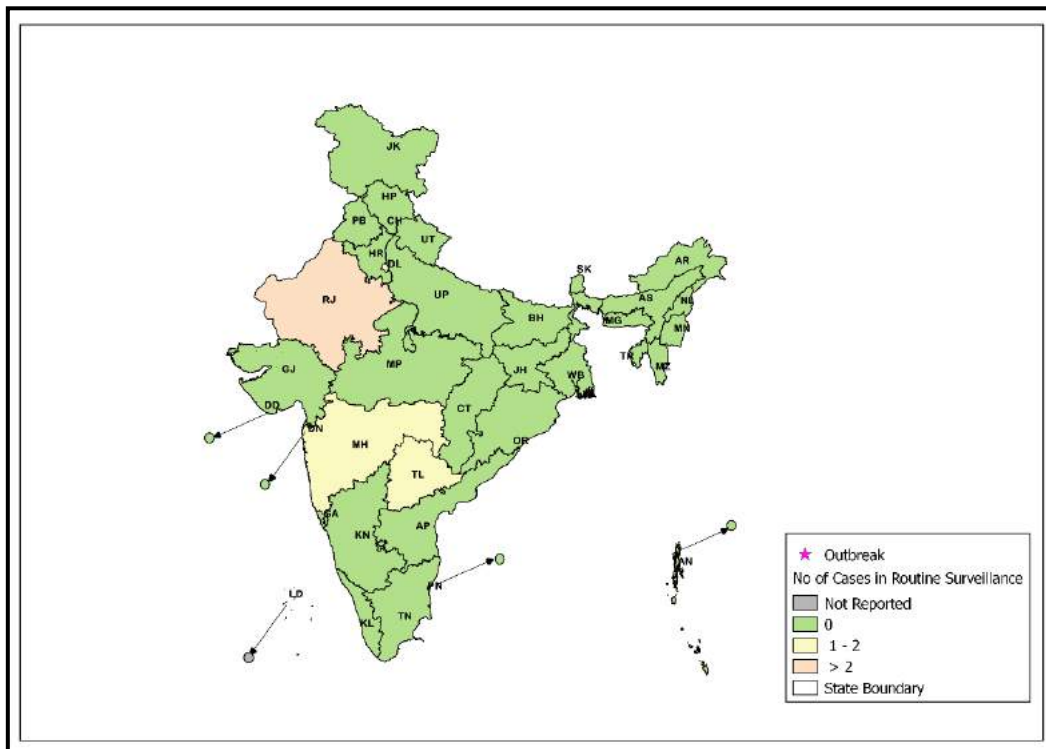


Fig 28: State/UT wise Influenza A (H1N1) cases & outbreak for June 2018



Action from the field

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)

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- **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