Disease Alert
प्रकोप चेतावनी

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

Investigation Report of case of West Nile Disease from Kannur, Kerala

Background

A Case of West Nile Disease was reported in IDSP system from Dist. Kannur, Kerala in May' 2019. The patient in this incidence was a 43 year old Male who was a resident of Ward VIII, P. O. Alavil, Azhikode South, Azhikode Grama Panchayat in Kannur District. He worked as a painter in the same locality. A divorcee, the patient used to reside with his mother.

The incidence was investigated by a Public Health team from State of Kerala.

Regarding West Nile Disease

West Nile Virus is a mosquito-borne flavivirus. It is maintained in nature in cycle involving transmission between birds and mosquitoes. Birds, especially Crows, serve as the reservoir of virus in nature. However, humans, horses and other mammals can be infected. In addition to mosquito bites, the virus may also be transmitted through contact with infected animals, their blood or blood products. Till date, no human-to-human transmission of WNV through casual contact has been documented (as per WHO).

The usual transmitting species of mosquitos is of genus Culex, particularly Culex pipens. The virus is maintained in mosquitos through vertical transmission (adults to eggs) or by feeding on infected animals.

This relatively rare disease in India was first reported in IDSP system in July' 2018 from Kozhikode, Kerala. It involved a single patient. Since then 8 more outbreaks have been reported, all from Kerala State, and all involving a single patient.

In Yr 2019, 8 outbreaks have been reported. In essence, all the outbreaks except the first report have been reported this year. Most of the outbreaks have been reported from Kozhikode district. The district-wise distribution as reported in IDSP is as follows

S. No	Name of District	No. of Outbreaks reported
1.	Kozhikode	6
2.	Malappuram	2
3.	Kannur	1

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Thus, although till date more than 60% of the outbreaks have been reported from Kozhikode, this incidence was reported from a new district – Kannur which is just north of Kozhikode. However, the patient had a history of frequent travel to Kozhikode.

Medical History:

History of Present Illness: Initially the patient was admitted to District Hospital, Kannur with symptoms of fever, bodyache and altered sensorium on 15th May.

When after three days of standard treatment his condition failed to improve he was referred to Government Medical College, Kozhikode for further treatment. Based on symptomatology & previous reporting from Kerala, the possibility of West Nile infection was raised by physicians.

On 28th May blood samples were sent to NIV, Alappey for testing for West Nile. On 7th June, samples came out to be positive for West Nile Virus. The patient was then put on standard treatment protocol. At present the patient is apparently healthy.

Past History

He had a history of suffering from urinary tract infections and was admitted at Government medical college Kozhikode in the year 2018.

Other pertinent history

- Initial symptoms of fever & altered sensorium pointed to West Nile infection.
- The patient is a chronic alcoholic

Details of Investigation

District Public Health Team visited the area and reviewed the situation. A meeting was convened in which specific action plan was chalked out. No water logging was found in the area where the patient was residing.

District Vector Control Unit (DVC) unit team were deployed in the area and instructions were given carry out anti larval source reduction activities jointly with the healthcare workers from CHC Azhikode and LSGD

Epidemiology Observations

Patient had a history of visiting Kozhikode for job purpose recently. No suspicious crow/bird death have been reported from the area in recent past. No similar cases have been reported from the area in the recent past.

Therefore, the investigation team concluded that patient had probably contacted the disease through bite of mosquito. Since he used to visit Kozhikode frequently for his job, the possibility that he may have acquired infection from there could not be ruled out
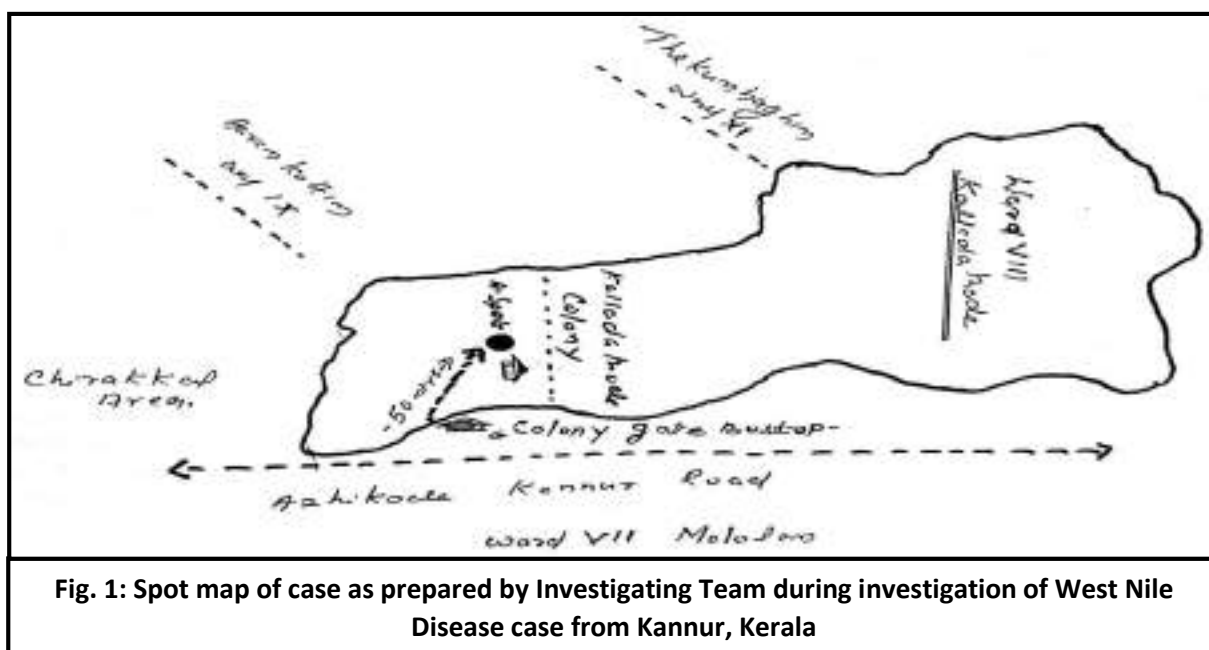
Fig. 1: Spot map of case as prepared by Investigating Team during investigation of West Nile Disease case from Kannur, Kerala

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Entomological Investigations

Following were the main findings of entomological investigation report prepared by DVC

- 60 THV's were checked, out of which 6 (10%) were found positive.
- 114 Wet Containers were checked for breeding out of which 4 (3.51%) were found positive.
- 25 Fridge trays were checked, out of which 2 (8%) were found positive.
- Following indices were found – HI = 10%, CI = 3.51% and BI = 6.66%
- 51 health talks were given during the visit

Details of Laboratory Investigations

The sample was tested on 7th June' 2019 in NIV (Kerala Unit), Alappuzha. It tested positive for West Nile by ELISA. No PCR test was conducted

Control Measures Taken

- The area where patient resided and the surrounding places were instructed to be kept clean and free of water logging.
- Fever survey was conducted in the area but no similar cases were identified.
- DVC team visited 194 houses and conducted source reduction activities.
- Three rounds of fogging were done in the locality

Conclusion

It was concluded that the patient was a case of rare West Nile disease based on clinical symptoms & ELISA testing at NIV, (Kerala Unit), Alappuzha.

Recommendations

1. Establishment of active surveillance in animals, especially birds. Dead birds, especially crows, should be used as early warning sign in prevalent areas.
2. Doing IEC regarding transmission and protection from mosquito bites. People should be told to wear long sleeved shirts & full pants when working outdoors.
3. Taking proper precautions when handling dead birds or animal tissues. Proper IEC should be imparted to slaughterhouse workers regarding avoidance of contact to animal tissues.
4. Vector control activates should be undertaken vigorously especially in post-monsoon periods.
5. Integrated control measures should be undertaken including source reduction (with active community participation), water management (to remove breeding sources), and chemical insecticides

Team investigating case of West Nile Disease from Kannur, Kerala

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> **Surveillance data of Enteric Fever, Acute Diarrhoeal Disease, Viral Hepatitis A & E, Dengue Leptospirosis, Dengue, Chikungunya, Leptospirosis and Seasonal Influenza A (H1N1) During May 2017 - 2019***

* Data extracted from IDSP Portal (www.idsp.nic.in) as on September 09, 2019.

Fig. 2: RU wise reporting based on P & L form during May 2017 - 2019
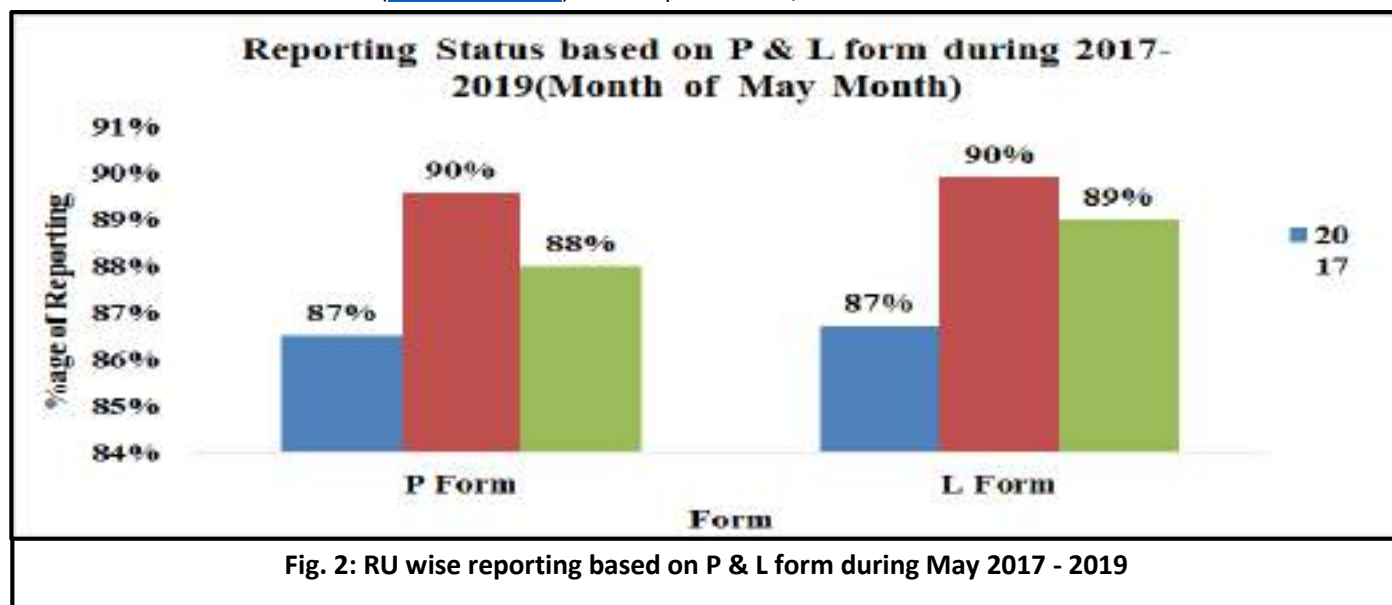
As shown in Fig 2, in May 2017, 2018 and 2019, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 87%, 90% and 88% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 87%, 90% and 89% respectively 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.

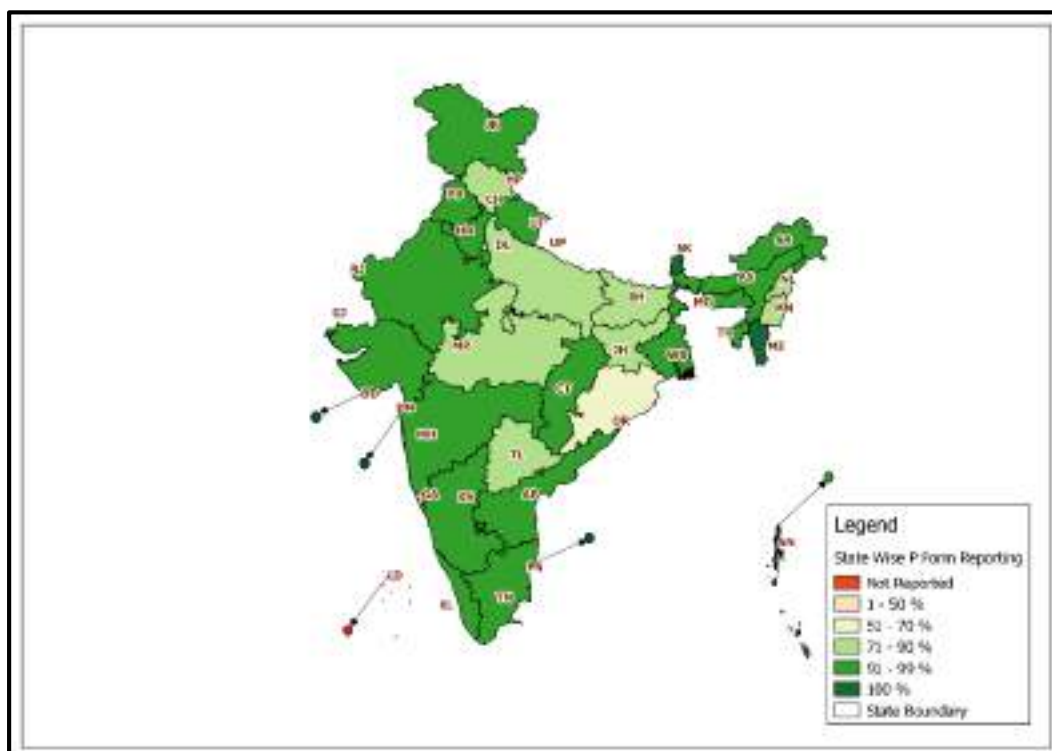**Fig 3: State/UT wise P form completeness % for May 2019**

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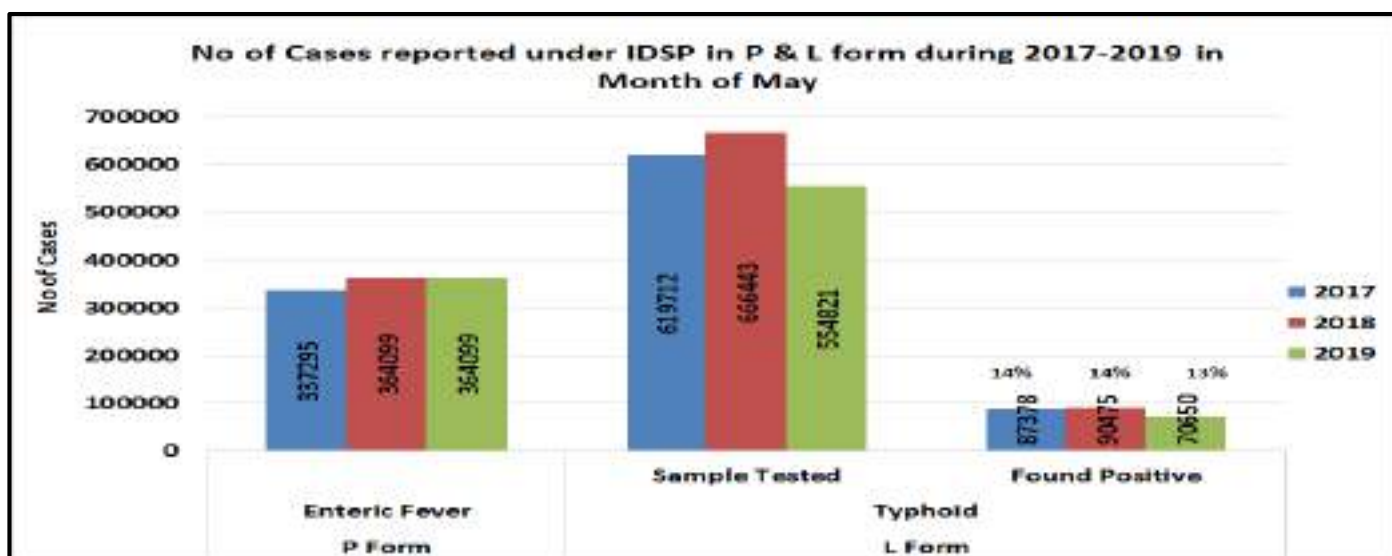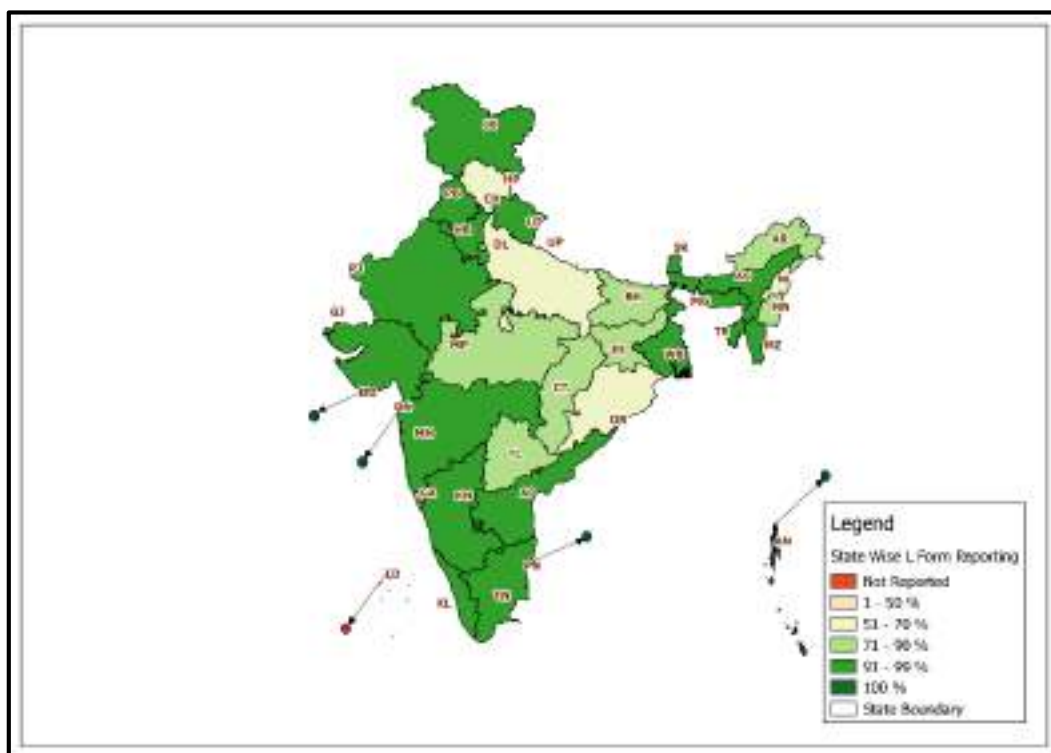**Fig 4: State/UT wise L form completeness % for May 2019**

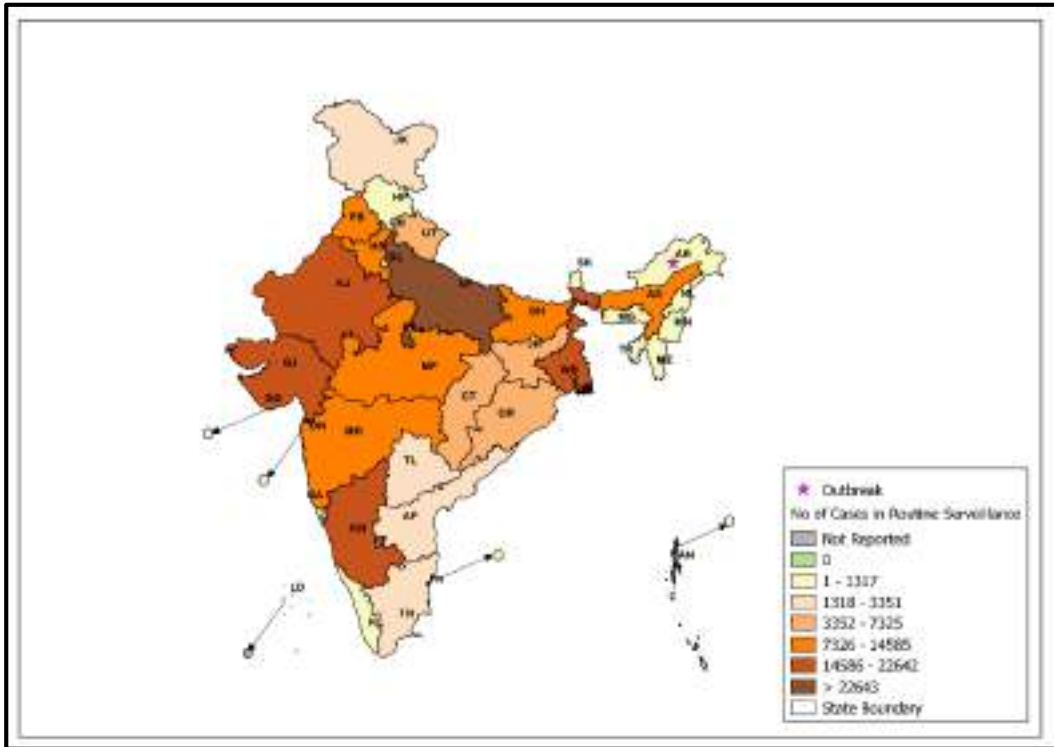**Fig. 5 No. of Enteric Fever Cases reported under P & L form during May 2017 - 2019**

As shown in Fig 5, number of presumptive enteric fever cases, as reported by States/UTs in 'P' form was 337295 in May 2017; 364099 in May 2018 and 364099 in May 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2017; 619712 samples were tested for Typhoid, out of which 87378 were found positive. In May 2018; out of 666443 samples, 90475 were found to be positive and in May 2019, out of 554821 samples, 70650 were found to be positive.

Sample positivity has been 14.10%, 13.58% and 12.73% in May month of 2017, 2018 & 2019 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.

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Fig 6: State/UT wise Presumptive Enteric fever cases and outbreaks for May 2019

Fig 7: State/UT wise Lab Confirmed Typhoid cases and outbreaks for May 2019

Fig. 8: No. of ADD Cases reported under IDSP in P Form & Cholera Cases in L form during May 2017 - 2019
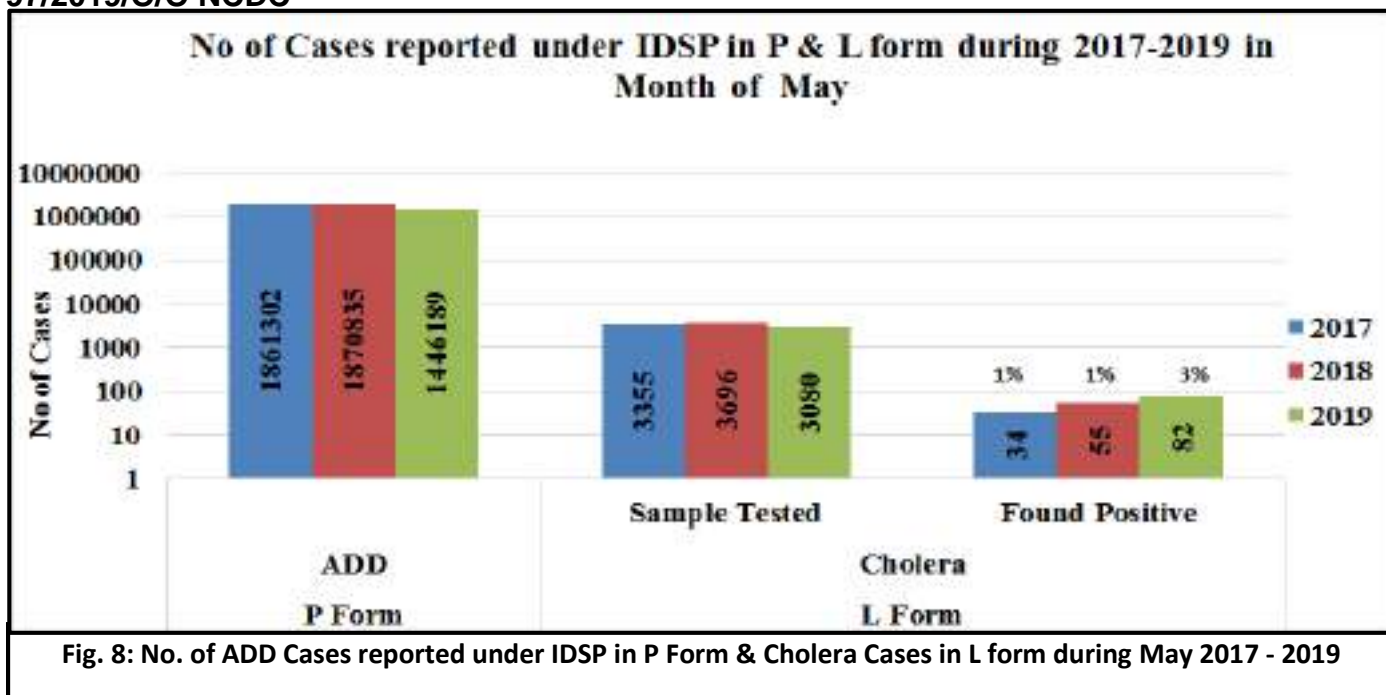
As shown in Fig 8, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in 'P' form was 1861302 in May 2017; 1870835 in May 2018 and 1446189 in May 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2017, 3355 samples were tested for Cholera out of which 34 tested positive; in May 2018, out of 3696 samples, 55 tested positive for Cholera and in May 2019, out of 3080 samples, 82 tested positive.

Sample positivity of samples tested for Cholera has been 1.01%, 1.49% and 2.66% in May month of 2017, 2018 & 2019 respectively.

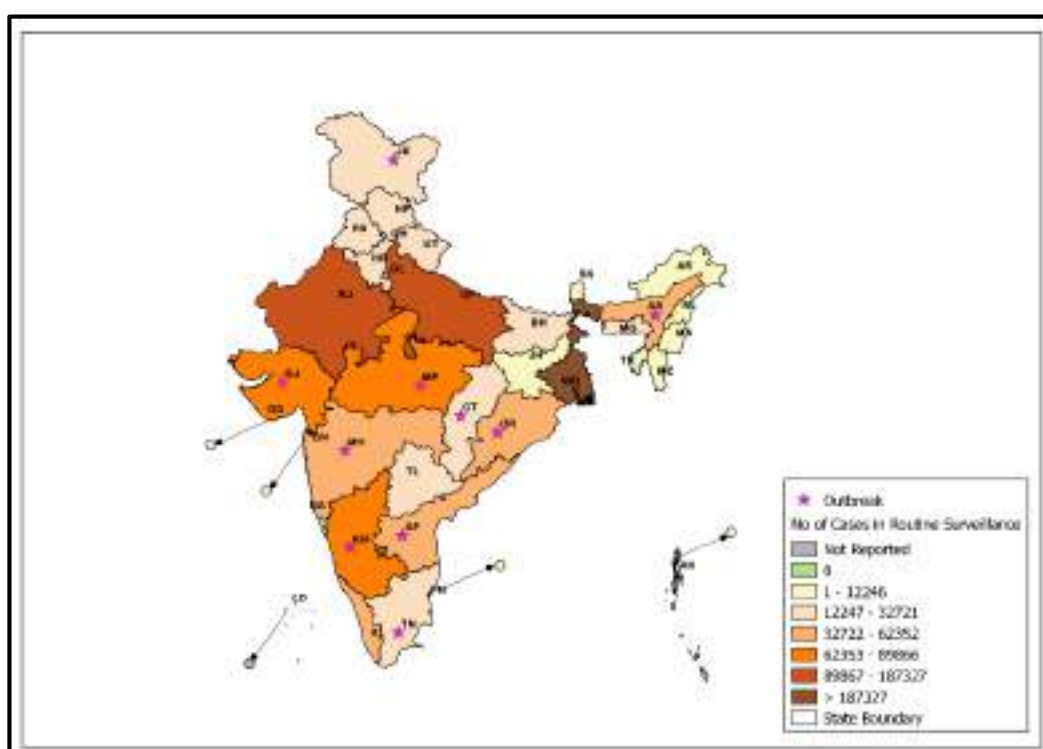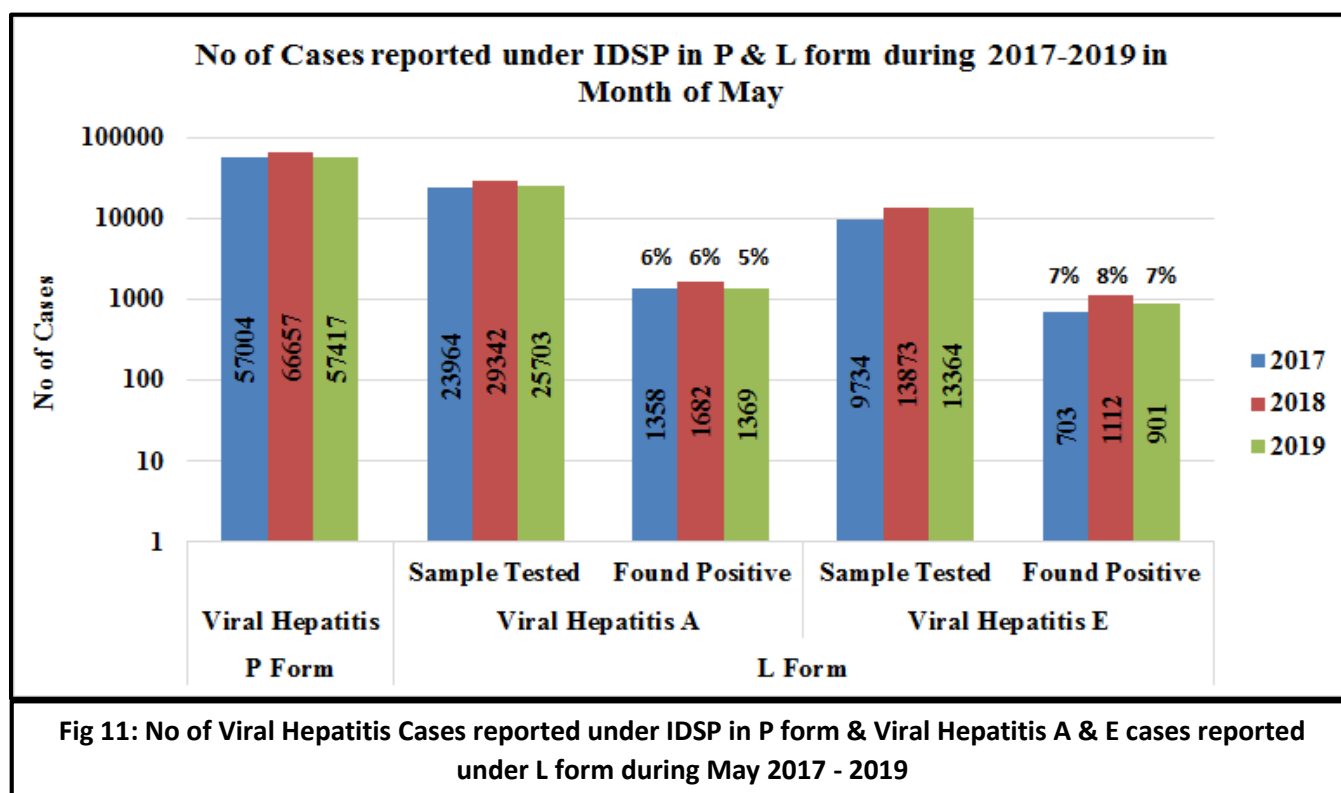**Fig 9: State/UT wise Presumptive ADD cases and outbreaks for May 2019**

> **Fig 10: State/UT wise Lab Confirmed Cholera cases and outbreaks for May 2019**

> **Fig 11: No of Viral Hepatitis Cases reported under IDSP in P form & Viral Hepatitis A & E cases reported under L form during May 2017 - 2019**

As shown in Fig 11, the number of presumptive Viral Hepatitis cases was 57004 in May 2017, 66657 in May 2018 and 57417 in May 2019. These presumptive cases were diagnosed on the basis of case definitions provided under IDSP.
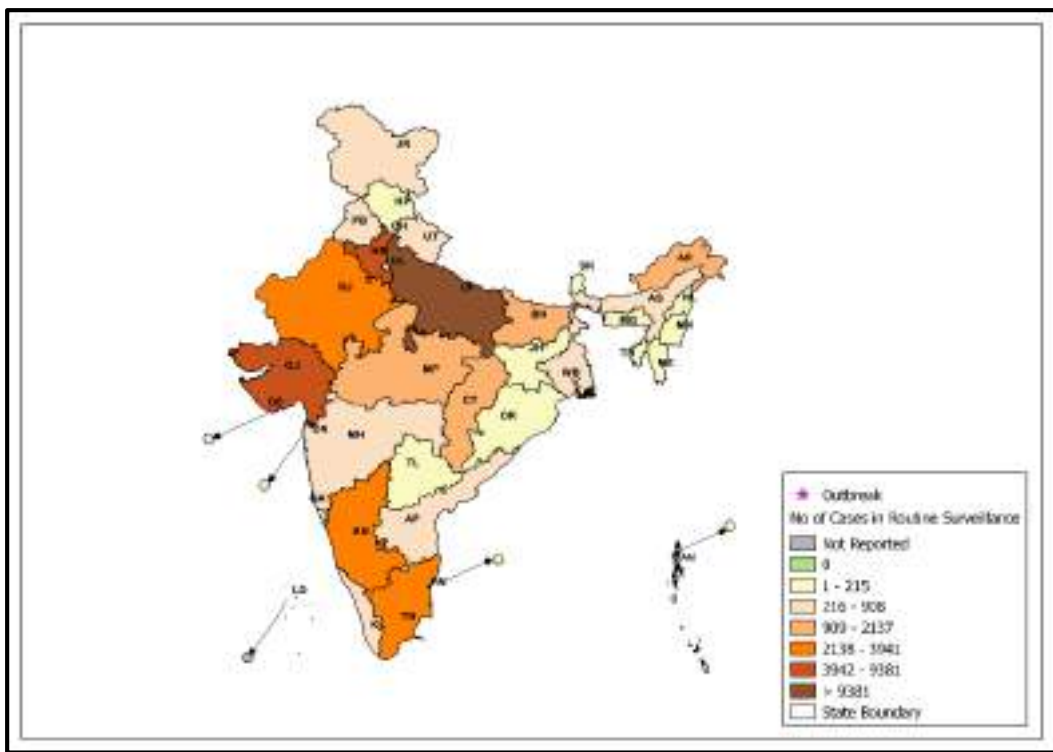
As reported in L form for Viral Hepatitis A, in May 2017; 23964 samples were tested out of which 1358 were found positive. In May 2018 out of 29342 samples, 1682 were found to be positive and in May 2019, out of 25703 samples, 1369 were found to be positive.

Sample positivity of samples tested for Hepatitis A has been 5.67%, 5.73% and 5.33% in May month of 2017, 2018 & 2019 respectively.

As reported in L form for Viral Hepatitis E, in May 2017; 9734 samples were tested out of which 703 were found positive. In May 2018; out of 13873 samples, 1112 were found to be positive and in May 2019, out of 13364 samples, 901 were found to be positive.

Sample positivity of samples tested for Hepatitis E has been 7.22%, 8.02% and 6.74% in May month of 2017, 2018 & 2019 respectively.

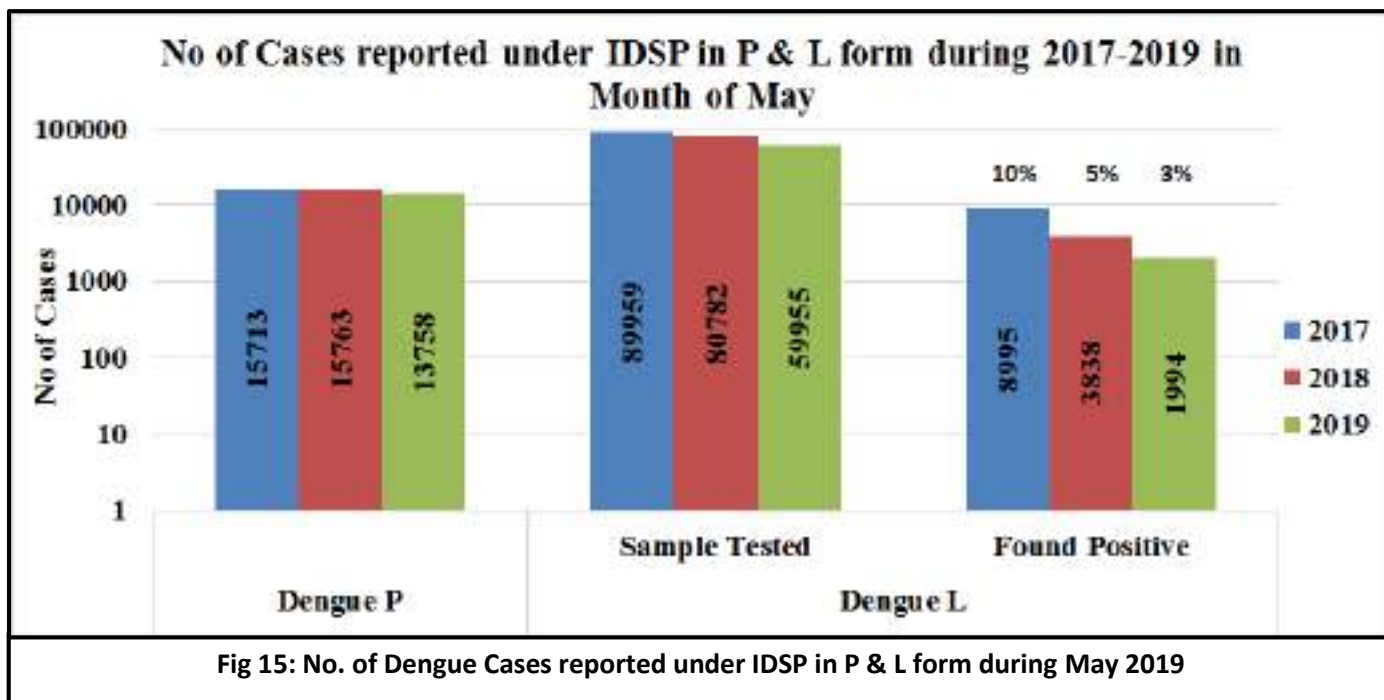## Fig 12: State/UT wise Presumptive Viral Hepatitis cases and outbreaks for May 2019

Fig 13: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for May 2019

Fig 14: State/UT wise Lab Confirmed Viral Hepatitis E cases and outbreaks for May 2019

No of Cases reported under IDSP in P & L form during 2017-2019 in Month of May

Fig 15: No. of Dengue Cases reported under IDSP in P & L form during May 2019

As shown in Fig 15, number of presumptive Dengue cases, as reported by States/UTs in 'P' form was 15713 in May 2017; 15763 in May 2018 and 13758 in May 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2017; 89959 samples were tested for Dengue, out of which 8995 were found positive. In May 2018; out of 80782 samples, 3838 were found to be positive and in May 2019, out of 59955 samples, 1994 were found to be positive.

Sample positivity of samples tested for Dengue has been 10.00%, 4.75% and 3.33% in May month of 2017, 2018 & 2019 respectively**.**

Fig 16: State/UT wise Presumptive Dengue cases and outbreaks for May 2019

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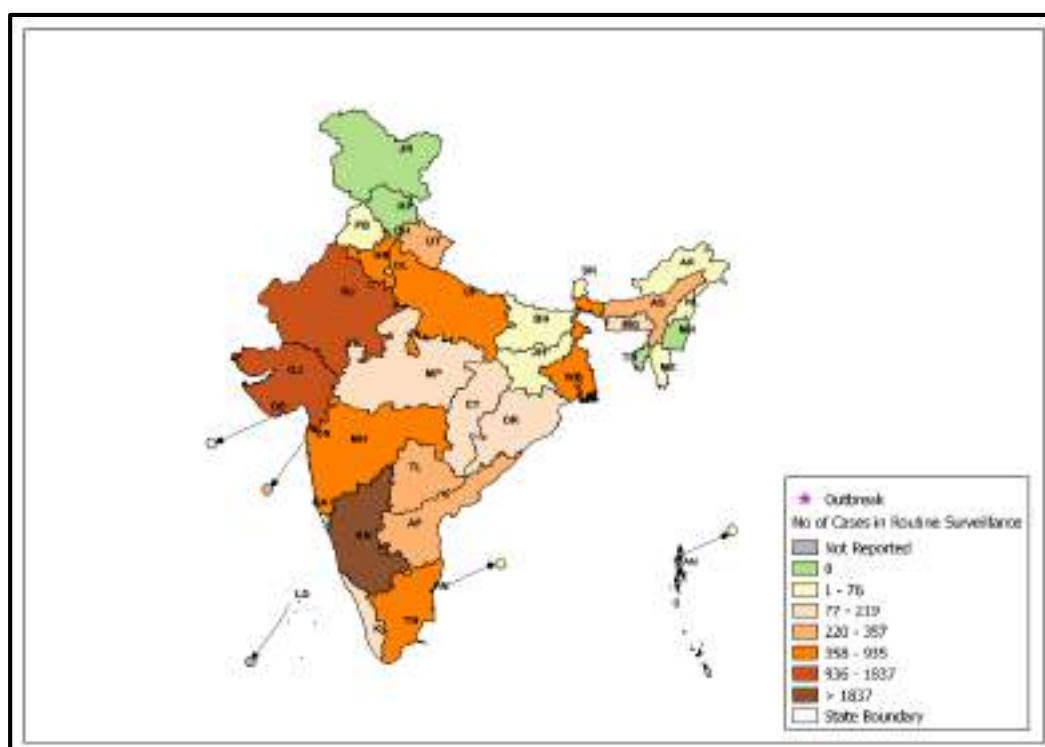
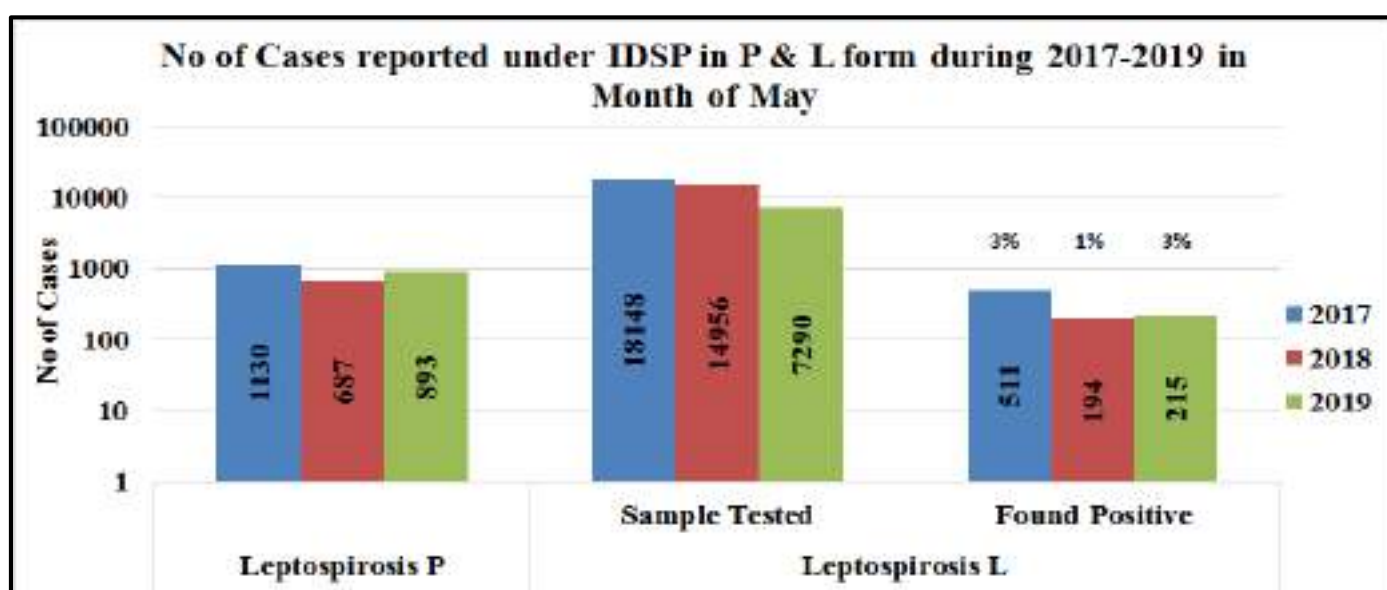Fig 17: State/UT wise Lab Confirmed Dengue cases and outbreaks for May 2019

Fig 18: No. of Leptospirosis Cases reported under IDSP in P & L form during May 2016 – 2018

As shown in Fig 18, number of presumptive Leptospirosis cases, as reported by States/UTs in 'P' form was 1130 in May 2017; 687 in May 2018 and 893 in May 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2017; 18148 samples were tested for Leptospirosis, out of which 511 were found positive. In May 2018; out of 14956 samples, 194 were found to be positive and in May 2019, out of 7290 samples, 215 were found to be positive.

Sample positivity of samples tested for Dengue has been 2.82%, 1.30% and 2.95% in May month of 2017, 2018 & 2019 respectively.

Fig 19: State/UT wise Presumptive Leptospirosis cases and outbreaks for May 2019
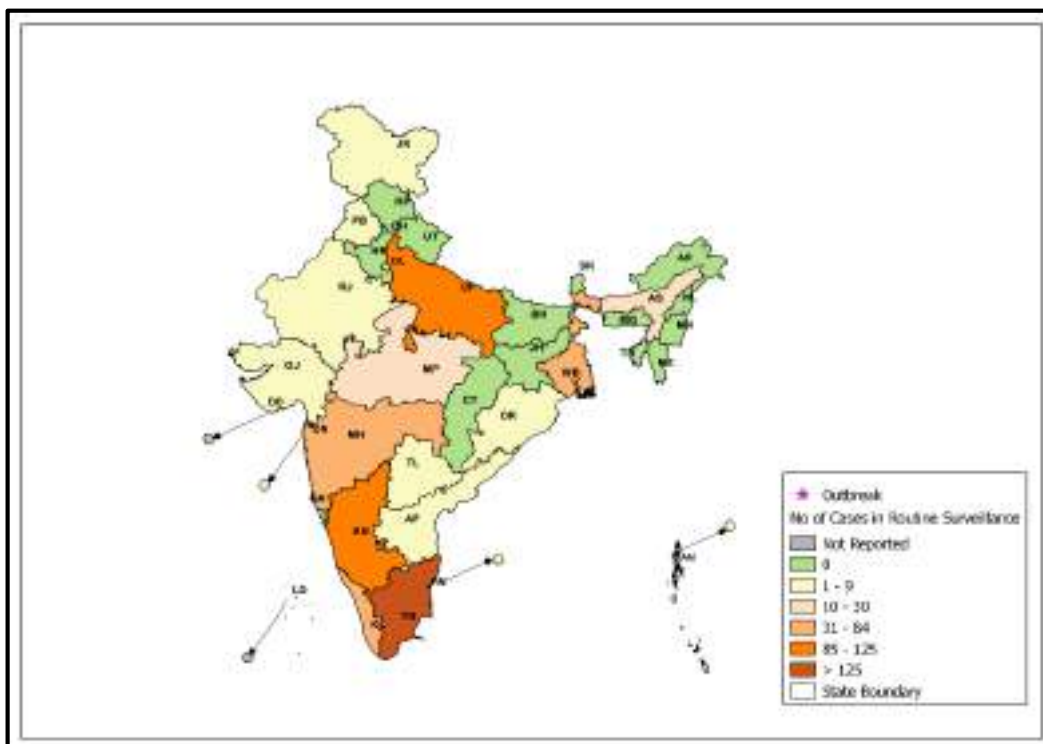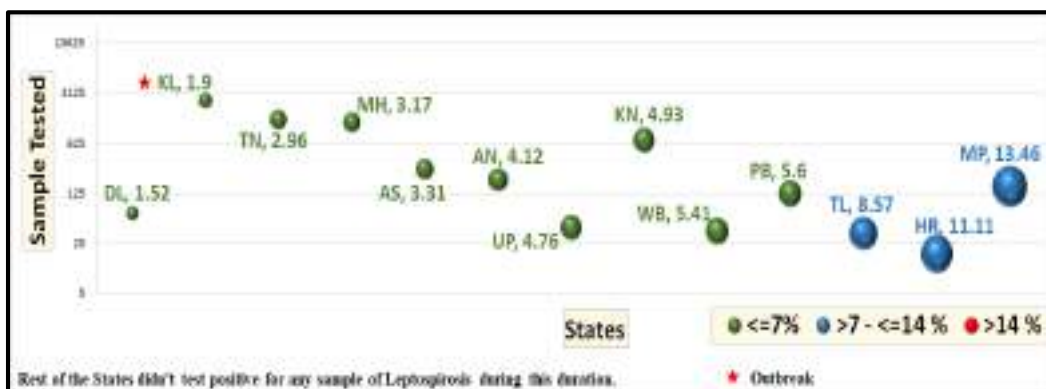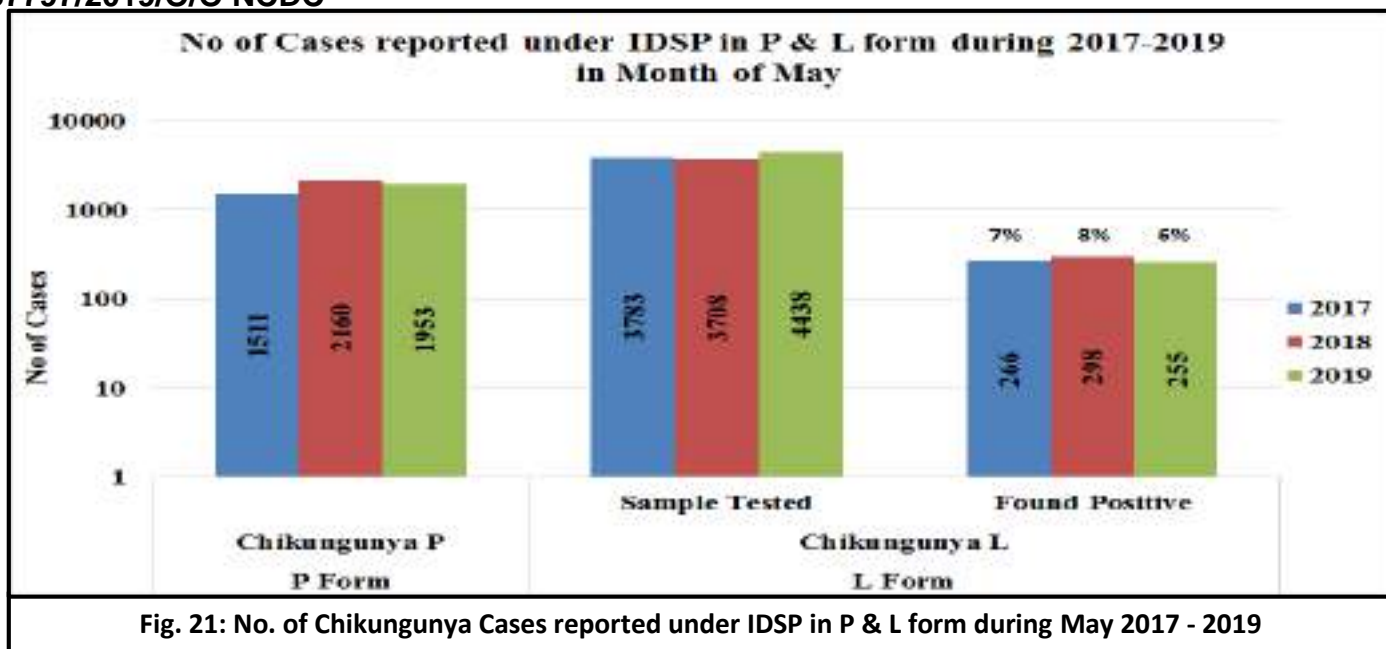

Fig 20: State/UT wise Lab Confirmed Leptospirosis cases and outbreaks for May 2019

Fig. 21: No. of Chikungunya Cases reported under IDSP in P & L form during May 2017 - 2019

As shown in Fig 21, number of presumptive Chikungunya cases, as reported by States/UTs in 'P' form was 1511 in May 2017; 2160 in May 2018 and 1953 in May 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2017; 3783 samples were tested for Chikungunya, out of which 266 were found positive. In May 2018; out of 3708 samples, 298 were found to be positive and in May 2019, out of 4438 samples, 255 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 7.03%, 8.04% and 5.75% in May month of 2017, 2018 & 2019 respectively.
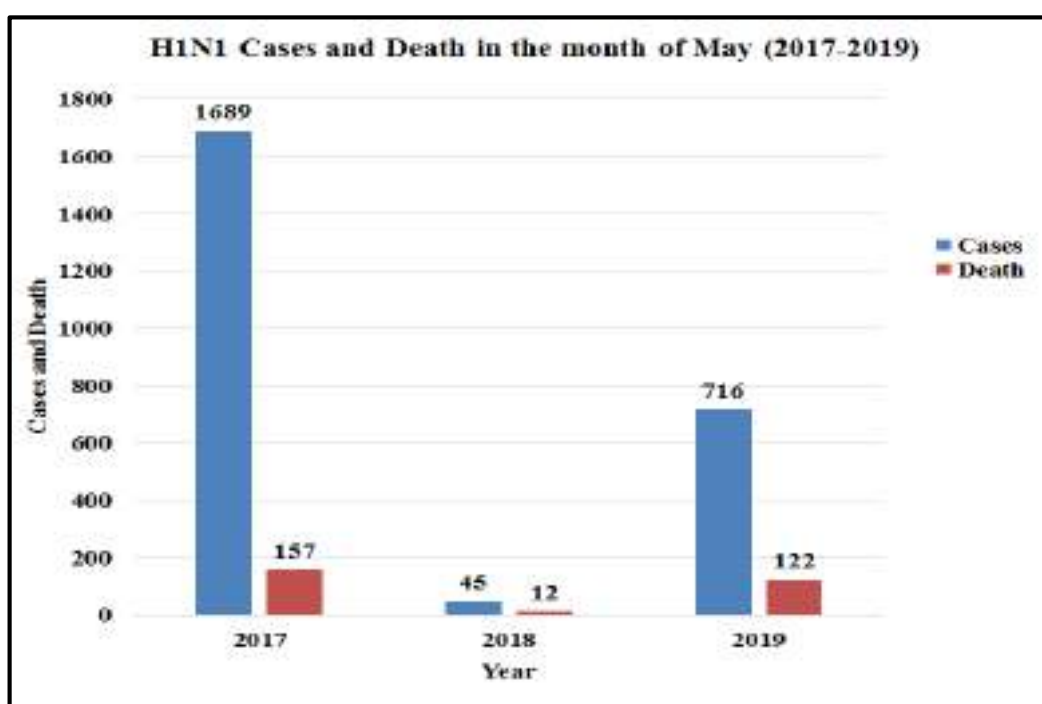
Fig 22: State/UT wise Presumptive Chikungunya cases and outbreaks for May 2019
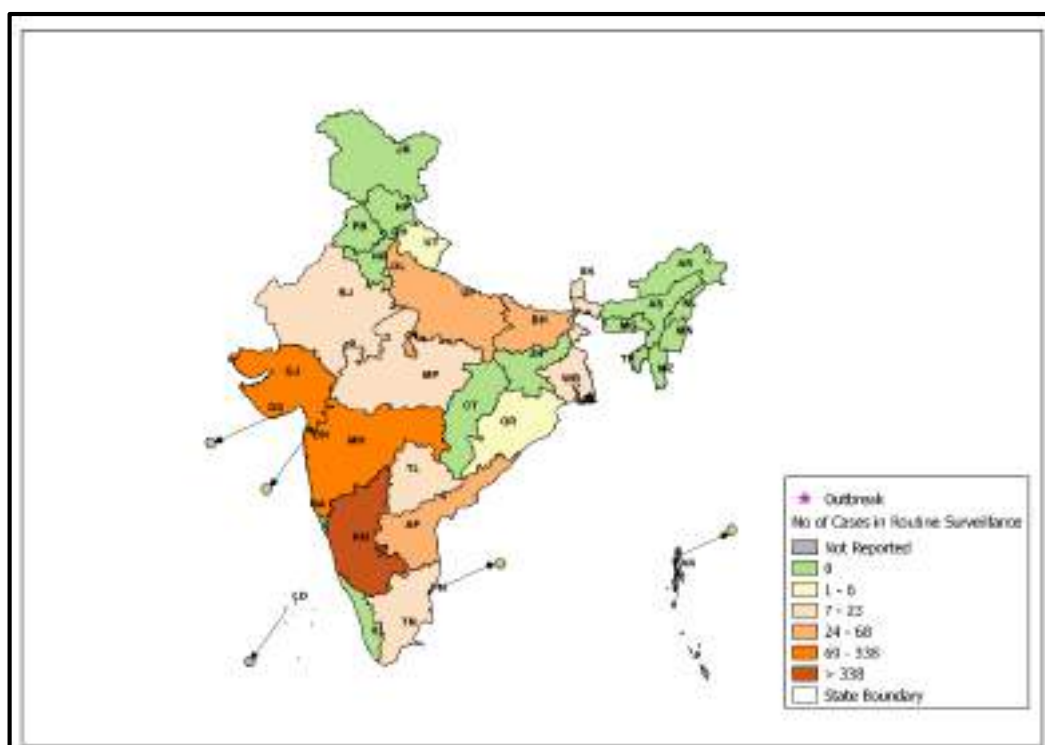
Fig 23: State/UT wise Lab Confirmed Chikungunya cases and outbreaks for May 2019

Fig 24: H1N1 cases reported under IDSP in L Form during 2017-2019 in May 2019

As reported in L form, in May 2017; there were 1689 cases and 157 deaths. In May 2018; there were 45 cases and 12 deaths and in May 2019, there were 716 cases and 122 deaths.

Case fatality rate for H1N1 were 9.29%, 26.67% and 17.04% in May month of 2016, 2017 & 2018 respectively

Fig 25: State/UT wise H1N1 cases and outbreaks for May 2019

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**: The acute illness characterized by persistent high fever with any of the following clinical features: Headache, nausea, loss of appetite, toxic look, Constipation or sometimes diarrhoea, splenomegaly and/or significant titre in 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 (Including Acute Gastroenteritis): Presumptive:** Passage of 3 or more loose watery stools (with or without vomiting) in the past 24 hours.
- **Confirmed Cholera**: A presumptive Acute Diarrheal case with Culture OR Polymerase chain reaction (PCR) test.
- **Viral Hepatitis**: **Presumptive**: Any person having clinical evidence of jaundice with signs and symptoms of acute hepatitis like malaise, fever, vomiting and bio-chemical criteria of serum bilirubin of greater than 2.5mg/dl, AND more than tenfold rise in ALT/SGPT.
- **Lab Confirmed Hepatitis A:** A presumptive case with IgM antibodies to hepatitis A(anti HAV IgM) in serum/plasma.
- **Lab Confirmed Hepatitis E:** A presumptive case with IgM antibody to hepatitis E virus (anti HEV IgM) in serum/plasma.
- **Dengue**: **Presumptive**: Acute febrile illness of 2-7 days with any one of the following:

  - Nausea, vomiting, rash, headache, retro orbital pain, myalgia or arthralgia, or Non-ELISA based NS1 antigen/IgM positive. (RDT reports are considered as probable due to poor sensitivity and specificity of currently available RDTs).

  Lab Confirmed: A presumptive case with:
  - Demonstration of dengue virus antigen in serum sample by NS1-ELISA OR
  - Demonstration of IgM antibody titre by ELISA in single serum sample OR
  - IgG seroconversion in paired sera after 2 weeks with four fold increase of IgG titres OR
  - Detection of viral nucleic acid by polymerase chain reaction (PCR) OR
  - Isolation of the virus (Virus culture positive) from serum, plasma or leucocytes.)

- **Leptospirosis Case Definition**: **Presumptive Leptospirosis**: A person having 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:
  - Calf muscle tenderness
  - Conjunctival suffusion
  - Anuria or oliguria and/or proteinuria

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- Jaundice
- Hemorrhagic manifestations
- Meningeal irritation
- Nausea, Vomiting, Abdominal pain, Diarrhoea

Lab Confirmed Leptospirosis: A presumptive case with -
- IgM ELISA positive OR
- Isolation of leptospires from clinical specimen OR
- Four fold or greater rise in the MAT titer between acute and convalescent phase serum specimens run in parallel OR
- PCR test

- **Chikungunya case definition: Presumptive Case Definition**: Any person:
  - With or without history of travel to or having left a known endemic area 15 days prior to the onset of symptoms AND Meeting the following clinical criteria:
  - Acute onset of fever
  - Arthralgia / arthritis
  - With or without skin rash.

  Lab confirmed: A presumptive case with

  - MAC ELISA- Presence of virus specific IgM antibodies in a single serum sample collected in acute or convalescent stage. Four-fold increase in IgG values in samples collected at least three weeks apart OR
  - Virus isolation OR
  - Presence of viral RNA by RT-PCR.

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

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