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# Disease Alert

## प्रकोप चेतावनी

**Monthly Surveillance Report**  
**From**  
**Integrated Disease Surveillance Programme**  
**National Health Mission**

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**FINAL INVESTIGATION REPORT OF ACUTE DIARRHEA DISEASE OUTBREAK**  
**RAJPURA TEHSIL, DISTRICT PATIALA, PUNJAB**

## BACKGROUND

Rajpura Tehsil of Patiala district has total population of 391,011 as per the Census 2011. Out of which 206,801 are males while 184,210 are females. In 2011 there were total 75,699 families residing in Rajpura Tehsil. The Average Sex Ratio of Rajpura Tehsil is 891. The Child Sex Ratio of Rajpura Tehsil is 837 and the total literacy rate of Rajpura Tehsil is 77.25%.



***Fig.1 Tehsil Map of Patiala***

Diarrhea is a leading cause of illness and death among children in developing countries, where an estimated 1.3 thousand million episodes and 4 million deaths occur each year in under-fives. About 80% of deaths due to diarrhea occur in the first two years of life. The main cause of death from acute diarrhea is dehydration, which results from the loss of fluid and electrolytes in diarrheal stools.

Diarrhea is defined as the passage of three or more loose or watery stools in a 24-hour period, a loose stool being one that would take the shape of a container. The most important causes of acute watery diarrhea in developing countries are Rotavirus, Enterotoxigenic Escherichia Coli, Shigella. In some areas, Vibrio

Cholerae and Salmonella are also important causes. The infectious agents that cause diarrhea are usually spread by the faecal-oral route, which includes the ingestion of fecal contaminated water or food, person-to-person transmission, and direct contact with infected faeces.

- a. Person reporting outbreak: Senior Medical Officer, SDH Rajpura
- b. Date of outbreak start: 04/11/2021 (on Diwali day)
- c. Date of reporting to health system: 04/11/2021
- d. Date of investigation started: 04/11/2021
- e. Person(s) carrying out investigation: State Surveillance Officer Dr Gagandeep Singh Grover, District Epidemiologist Patiala (IDSP) Divjot Singh, District Epidemiologist Dr Sumeet Singh, Staff Nurse Bhupinder Kaur.

#### **DETAILS OF INVESTIGATION:**

- Three deaths and few cases of loose stools / vomiting were reported from Dheha Basti, Mirch Mandi, Rajpura area by SMO of civil hospital Rajpura to district surveillance unit (DSU) on November 4, 2021 afternoon (Diwali festival day) through telephonic call.
- Rapid Response Team (RRT) supervised by Epidemiologist IDSP rushed to site. Chlorine pellets and ORS/Zinc was distributed immediately.



- Medical Camp was established in area for managing diarrhea cases.

- Immediately house-to-house survey was started. During house-to-house visits residents were advised to use boil or tanker water or chlorinated water for drinking / cooking purpose and to maintain hand hygiene before eating anything. It was observed that all residents in area are ragpickers/Daily wagers and residing in Jhuggis (KachaMakaan). No one having legal sewerage and water connections. One large garbage dump in the area was also their.



- House to house teams include ANMs and ASHAs. IEC activities done regarding prevention and Chlorine pellets distributed by teams in affected area.
- Announcements in Mandir was initiated regarding prevention.
- Immediately alternate water supply through tankers was arranged by SDO water supply. It was observed in area, all water connections were illegal. Plastic/rubber pipes are connected to dead water pipeline of water supply and taking water by tullu pumps.
- 7 Stool samples and 6 water samples taken. Stool Samples sent to Department of Microbiology, Govt Medical College Patiala for investigation and Water Samples sent to State Public Health Lab, Kharar for investigation.
- On Nov 5, 2021 State Program Officer, IDSP Dr Gagandeep Singh Grover joined the investigation with the objective to confirm and describe the outbreak, to determine the risk factors and to provide the recommendations for control and prevention. 4 more stool samples and 3 water samples were taken and sent for further investigations.

Total Number of cases: 58

Total Number of deaths: 6

Total Population affected: 1537

Total number of houses surveyed: 213

Total number of chlorine tabs distributed: 13000

ORS Packet Distributed: 1065

Group Meetings: 57

A line listing was prepared from the data received during survey and medical camp, which is analyzed and interpreted in this report.

### **LABORATORY INVESTIGATION:**

We took following samples for the confirmation of an outbreak:

1) Stool sample taken for pyrogenic growth. (GMC Patiala)

2) Water sample were taken and sent for bacterial examination to the State Public Health Lab (SPHL) Kharar, Mohali.

### **Results:**

It was confirmed from the stool culture result obtained from the GMC Microbiology Lab that the acute diarrhea outbreak was due to the E.Coli.

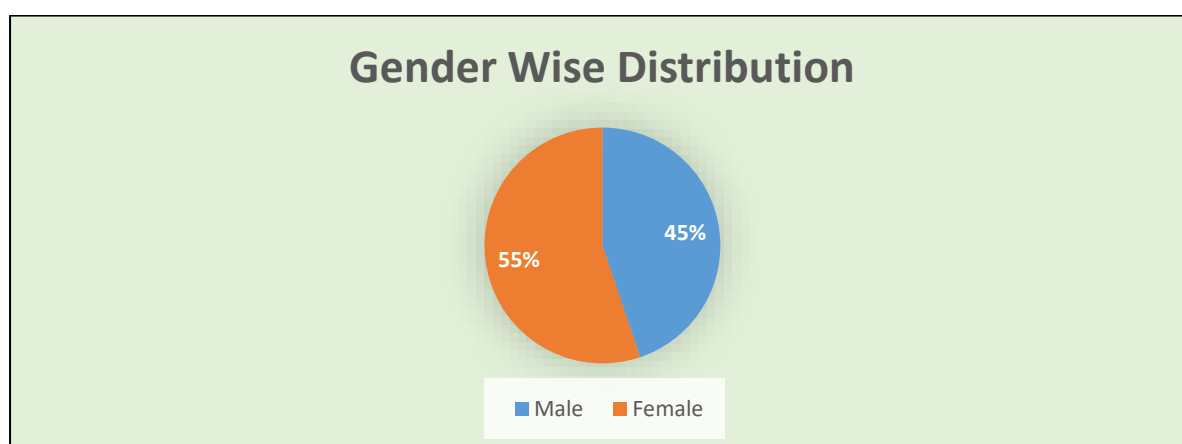
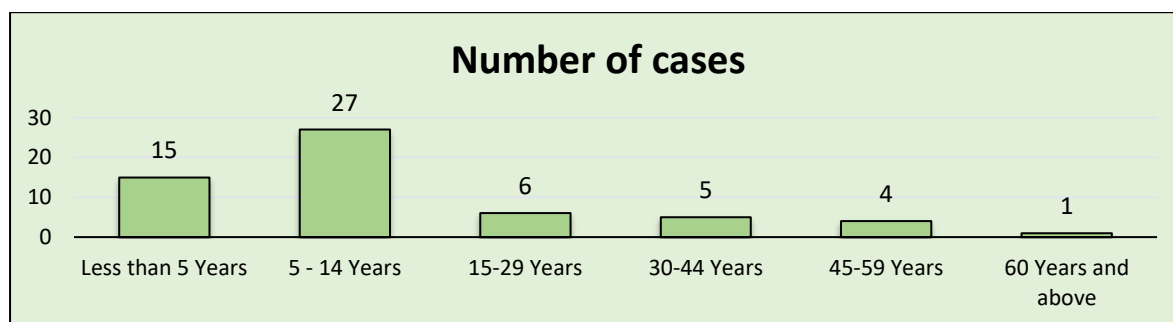
S.No	Name of Sample sent	Laboratory	Number of samples Tested	Results
1	Stool sample for Pyrogenic growth	Department of Microbiology, Govt Medical College Patiala	7+4 11 samples	All 11 positive with E.Coli.
2	Water samples	State Public health lab. (SPHL)	6+3 9 samples	Out of 9 samples, 7 samples failed with Bacterial contamination.

**DESCRIPTIVE EPIDEMIOLOGY:**

**Clinical case definition:** Acute Watery diarrhea (passage of 3 or more loose or watery stools in the Past 24 hours) with or without dehydration

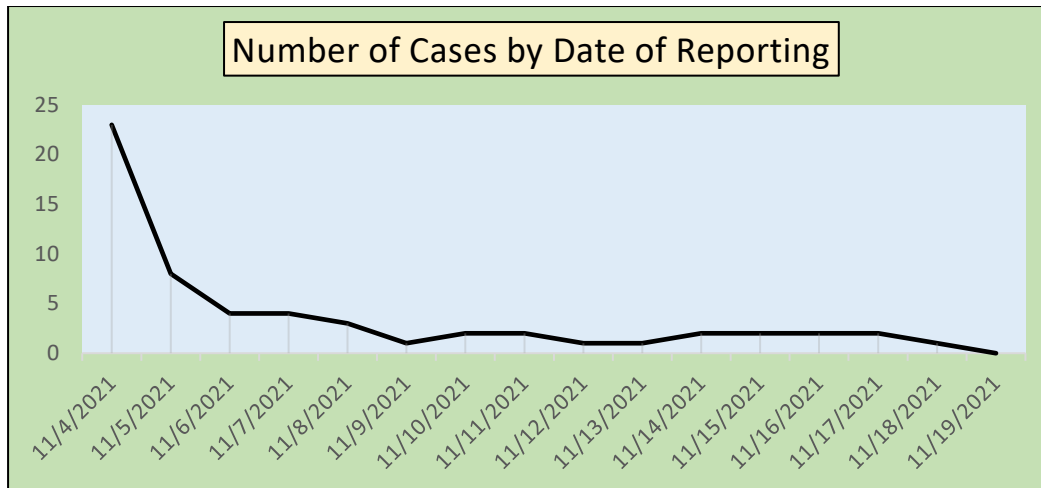
Person aged over 5 years with severe dehydration from acute watery diarrhea.

Person aged over 2 years with acute watery diarrhea in outbreak area.

**EPIDEMIOLOGICAL RESULTS:****1. Person wise analysis:**

### 2. Time wise analysis:

Outbreak started on 4/11/2021 (Maximum No. of cases were reported on 04/11/2021), after that there was a fall in the number of cases gradually.



### 3. Place wise analysis:

It was observed that all residents in area are ragpickers/Daily wagers and residing in Jhuggis (Kacha Makaan). No one having legal sewerage and water connections. Plastic/rubber pipes are connected to dead water pipeline of water supply and taking water by tullu pumps. One large garbage dump in the area was also their.



**Fig. 2 Spot Map of Dheha Basti, Mirch Mandi Rajpura(Outbreak Site)**

**CONTROL MEASURES TAKEN:**

- a. Survey: House to house active survey was started and line listing of all the cases was prepared and free treatment was provided to all the patients who were suffering with the mild symptoms of diarrhea.
- b. Medical Camp was established in area for managing diarrhea cases and free medicines and ORS packets was given to the affected patients.



- c. Alternate water was supplied through water tankers to the affected locality by Water supply and sewerage board. After 10 days of outbreak taps were installed in the area.
- d. Temporary toilets were placed in the area and removal of garbage from dump was done by water supply and sewerage board.



- e. Chlorine pellets were distributed by the health workers in the affected locality.
- f. IEC activities were done for sanitation and hygiene through announcements in religious places (Mandir), miking in area and through small group meetings.
- g. Nearby private practitioners were sensitized about the disease outbreak and instruct them to report cases to health department teams.
- h. We intimated Respected Deputy Commissioner, Patiala and SDM Rajpura regularly about the situation in the affected area.



**CONCLUSIONS:**

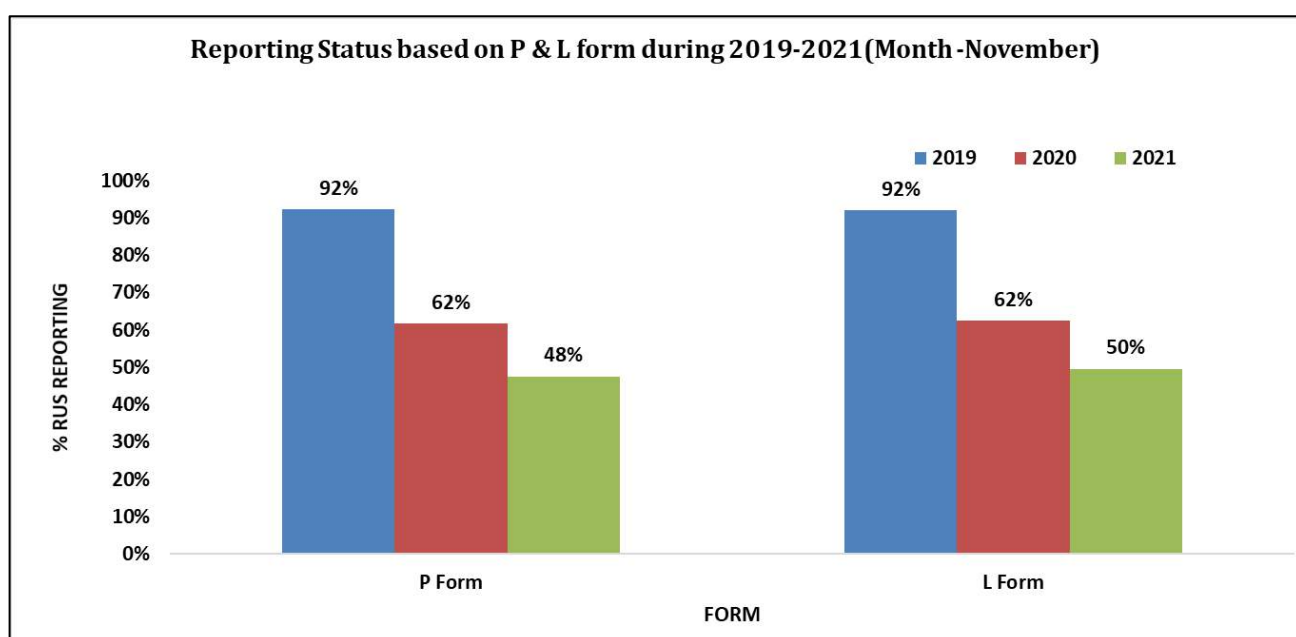
ADD outbreak affected in Dheha Basti, Mirch Mandi, Rajpura, District Patiala. The main cause behind the disease outbreak was mixing of Sewerage water with the drinking water. It was due to unauthorized water and sewerage connections by plastic/rubber pipelines. Secondly another cause is, unhygienic practices by residents and unhygienic conditions in the area (Large Garbage Dump).

**RECOMMENDATIONS:**

- Involvement of Public Health Department and Water Supply & Sewerage Departments is to be done in order to get the repair of the all distribution points and to provide alternate potable drinking water to the residents.
- Health Education (IEC) given to all the inhabitants of the area. Information was shared about the effectiveness of ORS, the benefits of early reporting for prompt treatment, hygienic food habits and eating practices, hand washing before and after eating, benefits of cooked food and safe drinking water practices by chlorination and boiling of water.
- Rigorous steps to be taken to avoid open field defecation.
- Remove the garbage and nuisance material from the residential area regularly

Surveillance data of Enteric Fever, Acute Diarrhoeal Disease, Viral Hepatitis A & E, Dengue Leptospirosis, Dengue, Chikungunya, Leptospirosis and Seasonal Influenza A (H1N1) During November 2019 - 2021\*

**Fig. 3: RU-wise reporting based on P & L forms during November 2021**



As shown in Fig 3, in November 2019, 2020 and 2021, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 92 %, 62% and 49% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 91%, 63% and 52% 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 decreased in *November* 2021 compared to the same month in previous years for both P and L forms, thereby compromising on the quality of surveillance data.

Fig. 4: State/UT wise P form completeness % for November 2021

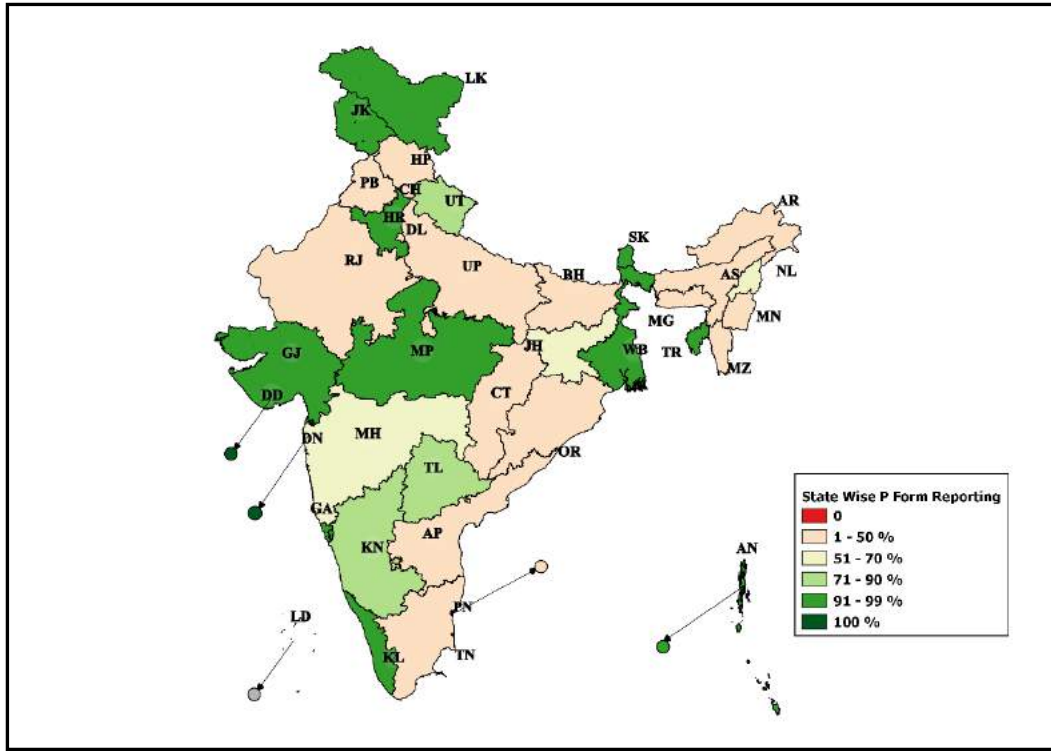
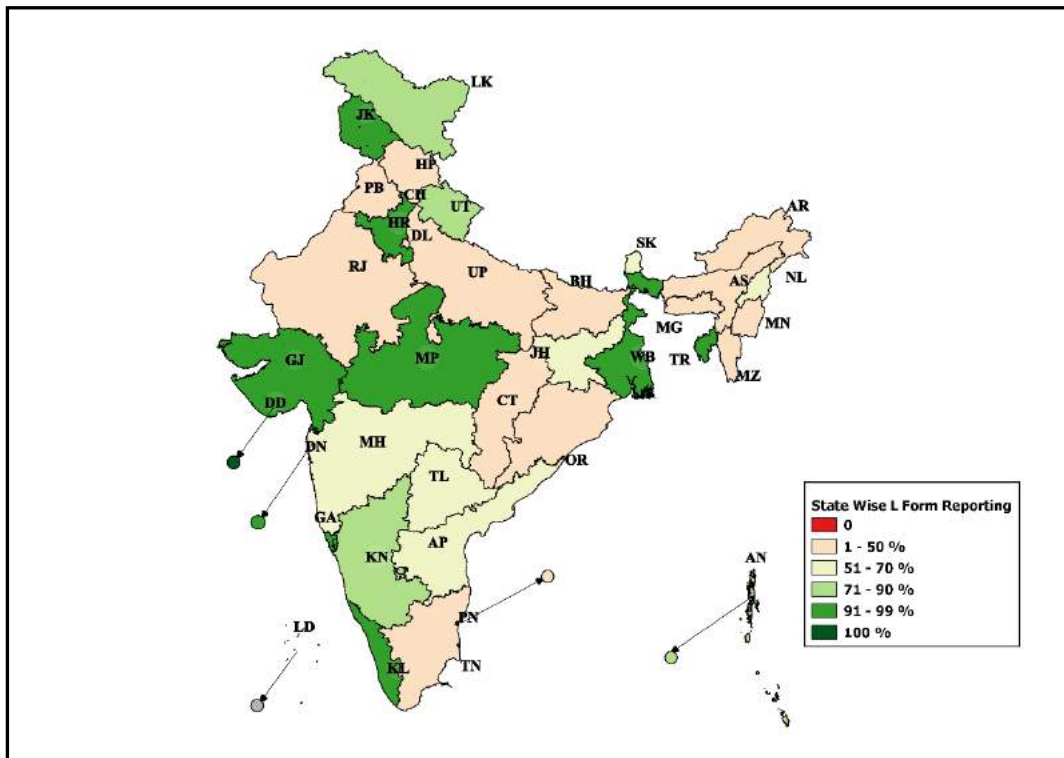
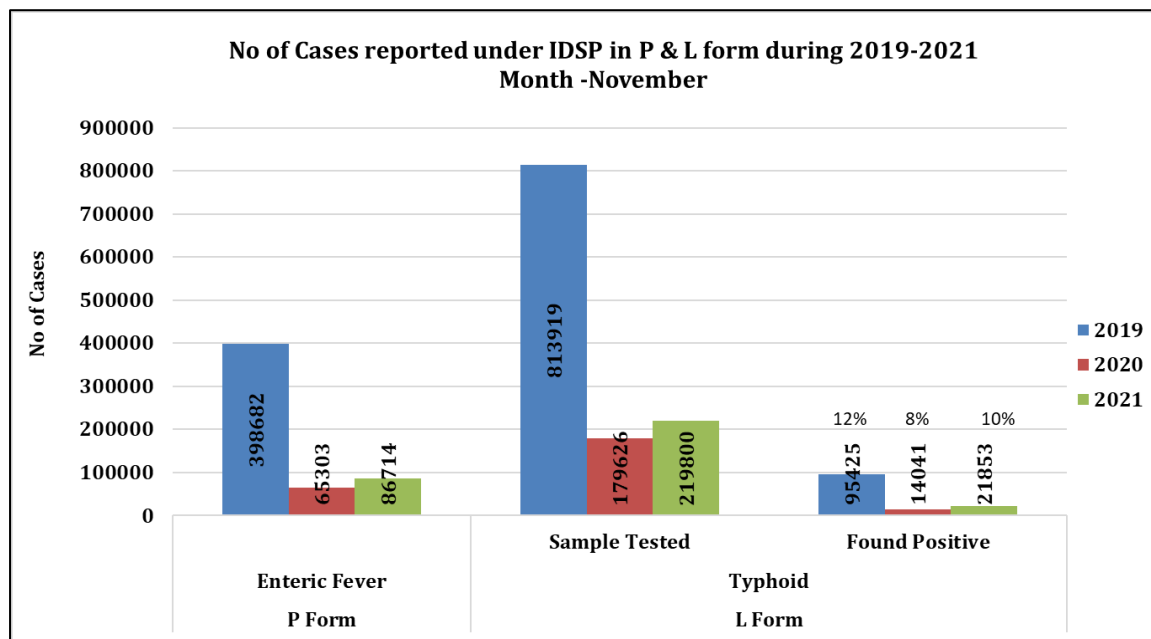


Fig. 5: State/UT wise L form completeness % for November 2021



*Fig. 6: No. of Enteric Fever Cases reported under P & L form during November 2019 - 2021*



As shown in Fig 6, number of presumptive enteric fever cases, as reported by States/UTs in ‘P’ was 524056 in November 2019; 98195 in November 2020 and 89676 in November 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in November 2019; 1137835 samples were tested for Typhoid, out of which 138324 were found positive. In November 2020; out of 247860 samples, 21613 were found to be positive and in November 2021, out of 253728 samples, 27192 were found to be positive and in November 2021, out of 280579 samples, 21901 were found to be positive.

Sample positivity has been 12%, 9% and 1% in November month of 2019, 2020 & 2021 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. 7: State/UT wise Presumptive Enteric fever cases & outbreaks for November 2021

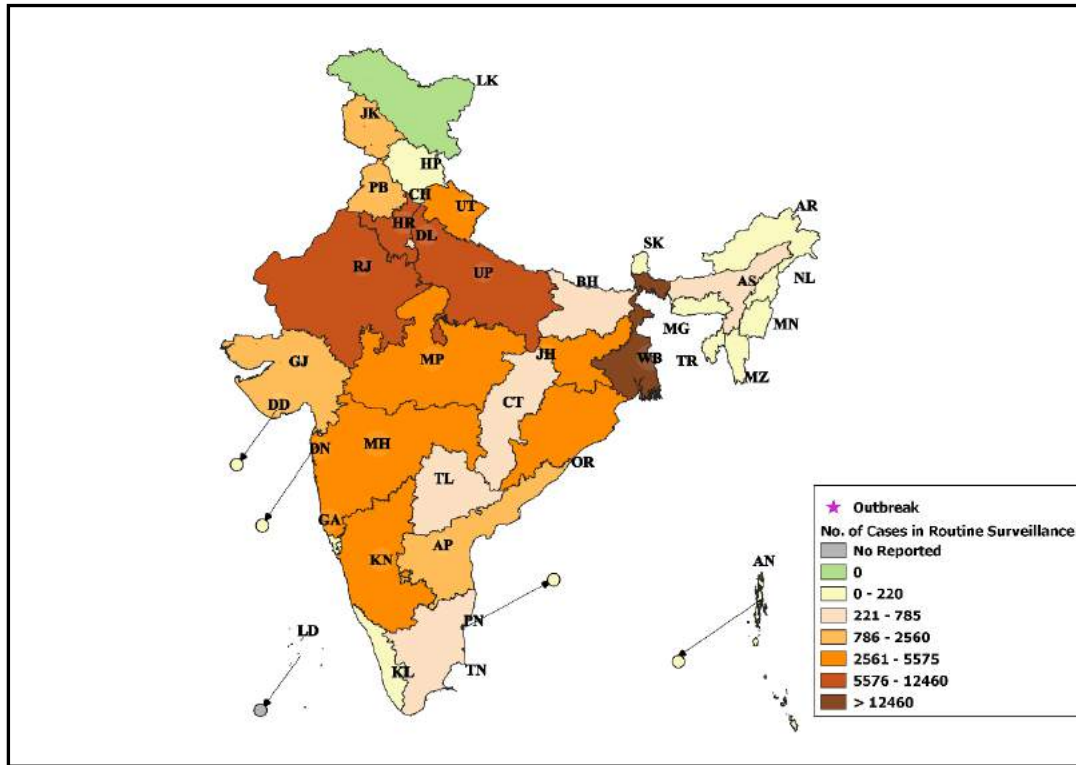
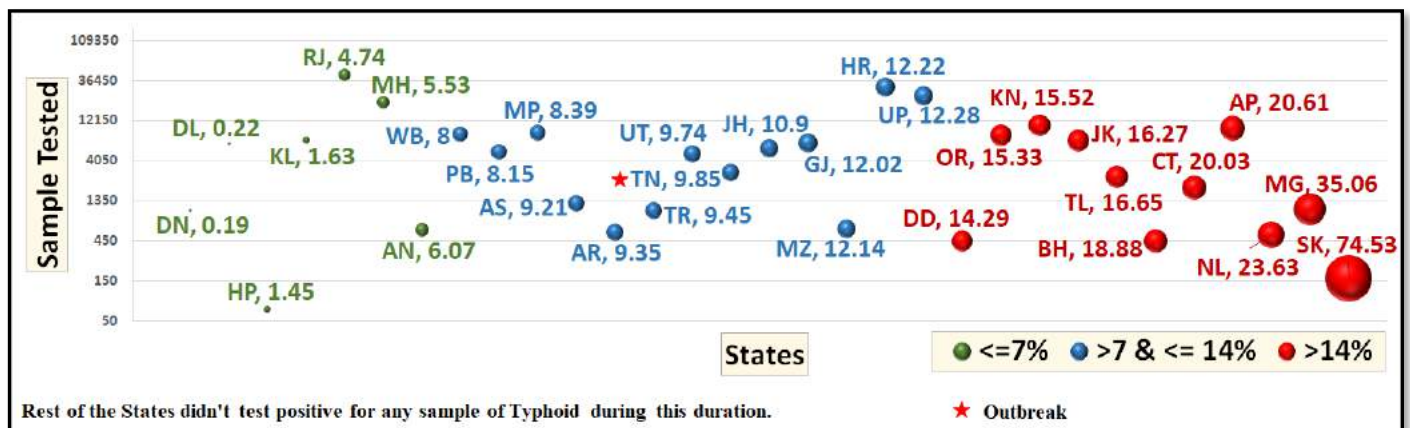
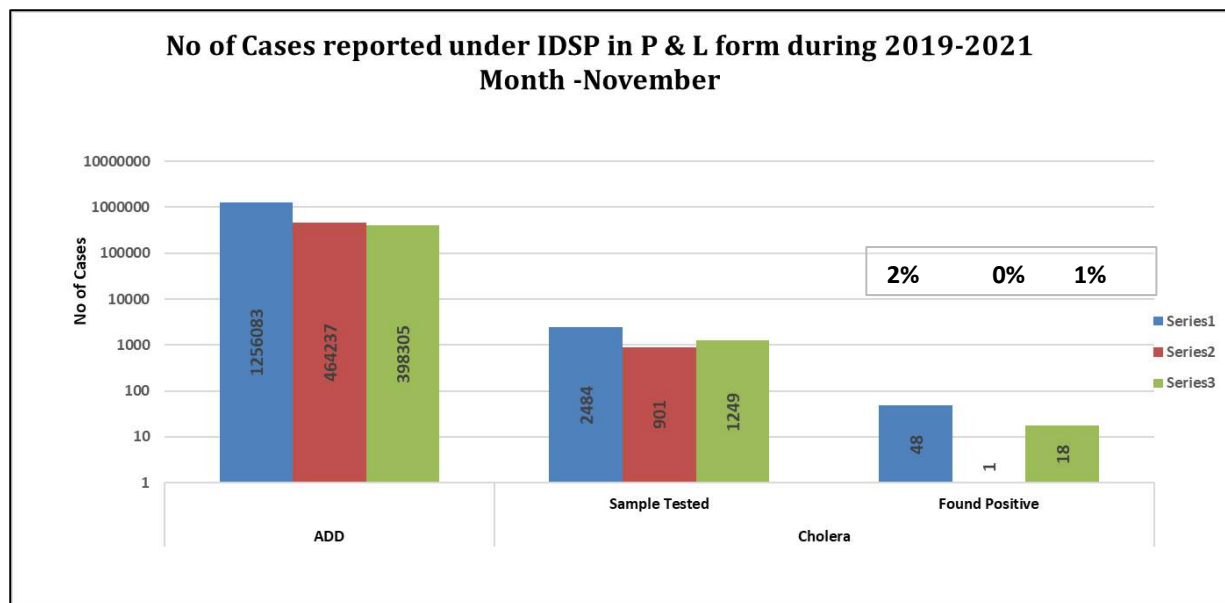


Fig. 8: State/UT wise Lab Confirmed Typhoid cases and outbreaks for November 2021



**Fig. 9: No. of ADD Cases reported under IDSP in P Form & Lab confirmed Cholera cases in L form during November 2019 - 2021**



As shown in Fig 9, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in 'P' was 1618477 in *November 2019*, 591330 in *November 2020* and 340358 in *November 2021*. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in *November 2019*, 2883 samples were tested for Cholera out of which 50 tested positive; in *November 2020*, out of 1328 samples, 8 tested positive for Cholera and in *November 2021*, out of 551 samples, 7 tested positive.

Sample positivity of samples tested for Cholera has been 2%, 1% and 3% in *November* month of 2019, 2020 & 2021 respectively.

Fig. 10: State/UT wise Presumptive ADD cases and outbreaks for November 2021

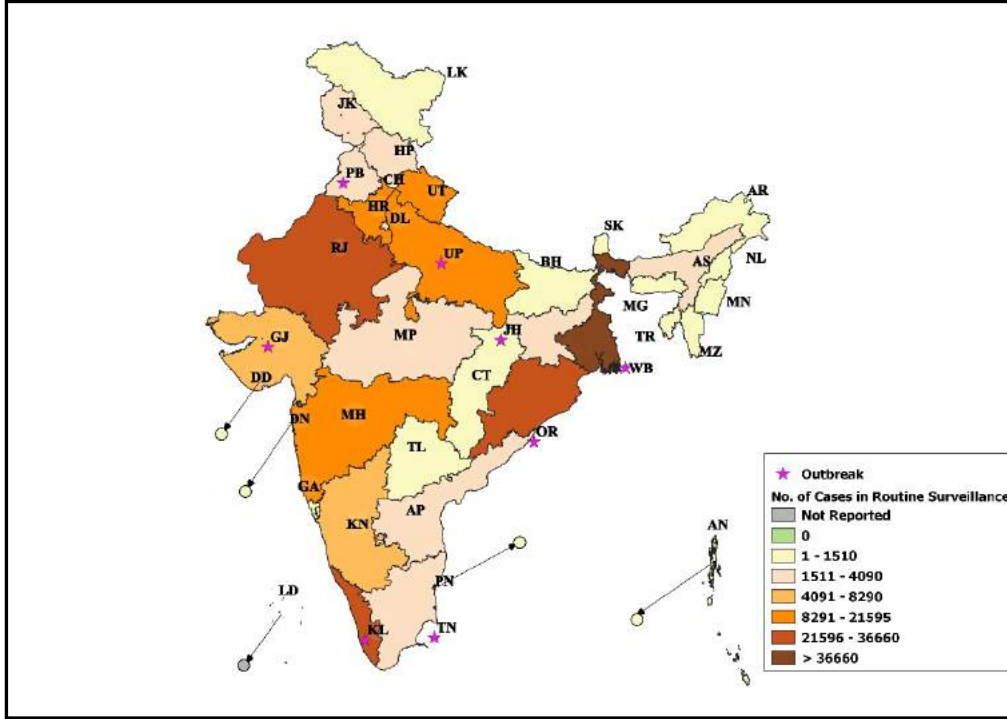
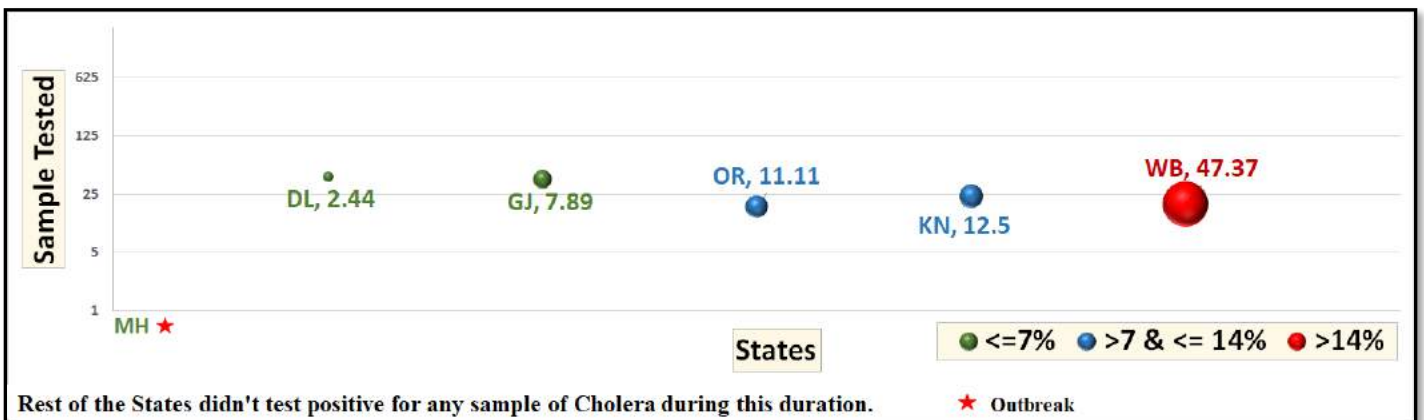
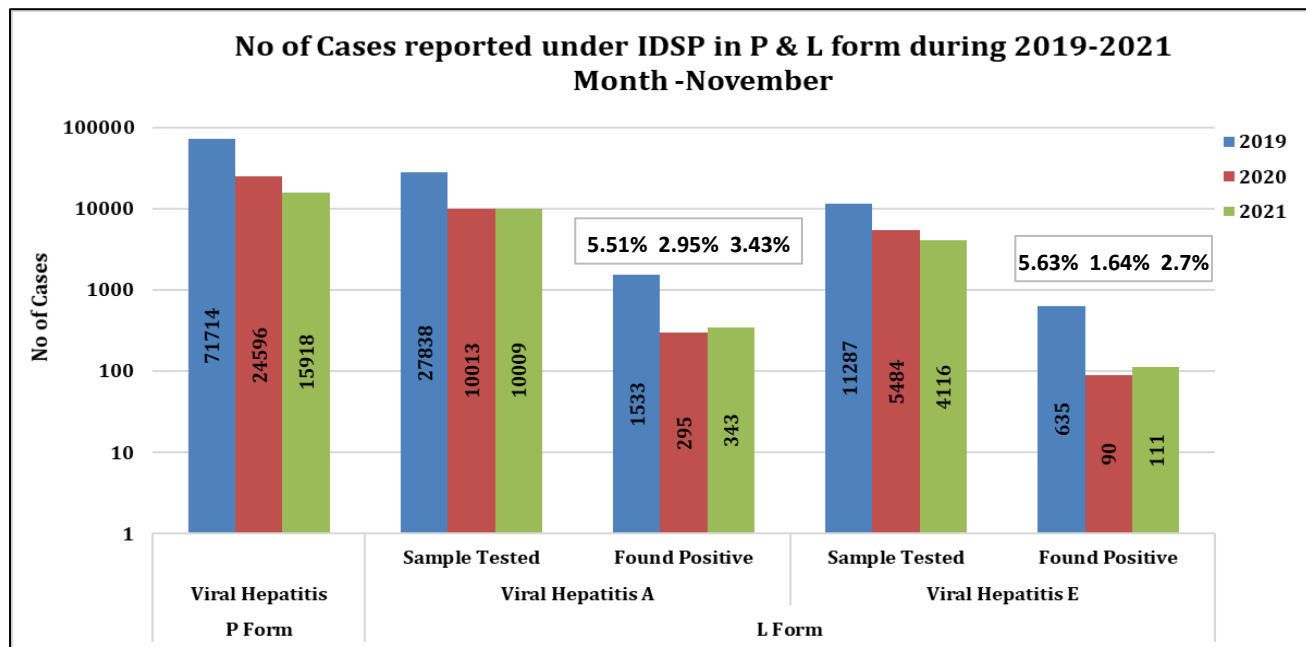


Fig. 11: State/UT wise Lab Confirmed Cholera cases and outbreaks for November 2021



**Fig. 12: No. of Viral Hepatitis Cases reported under IDSP in P form & Viral Hepatitis A & E cases reported under L form during November 2019 - 2021**



As shown in Fig 12, number of presumptive Viral Hepatitis cases was 71715 in November 2019, 31485 in November 2020 and 14852 in November 2021. These presumptive cases were diagnosed on the basis of case definitions provided under IDSP.

As reported in L form for Viral Hepatitis A, in November 2019; 33519 samples were tested out of which 2293 were found positive. In *November 2020* out of 10746 samples, 356 were found to be positive and in *November 2021*, out of 6673 samples, 175 were found to be positive.

Sample positivity of samples tested for Hepatitis A has been 6%, 6% and 5% in November month of 2019, 2020 & 2021 respectively.

As reported in L form for Viral Hepatitis E, in November 2019; 14504 samples were tested out of which 850 were found positive. In November 2020; out of 6392 samples, 109 were found to be positive and in November 2021, out of 2545 samples, 57 were found to be positive.

Sample positivity of samples tested for Hepatitis E has been 6%, 2% and 2% in November month of 2019, 2020 & 2021 respectively.



Fig. 13: State/UT wise Presumptive Viral Hepatitis cases and outbreaks for November 2021

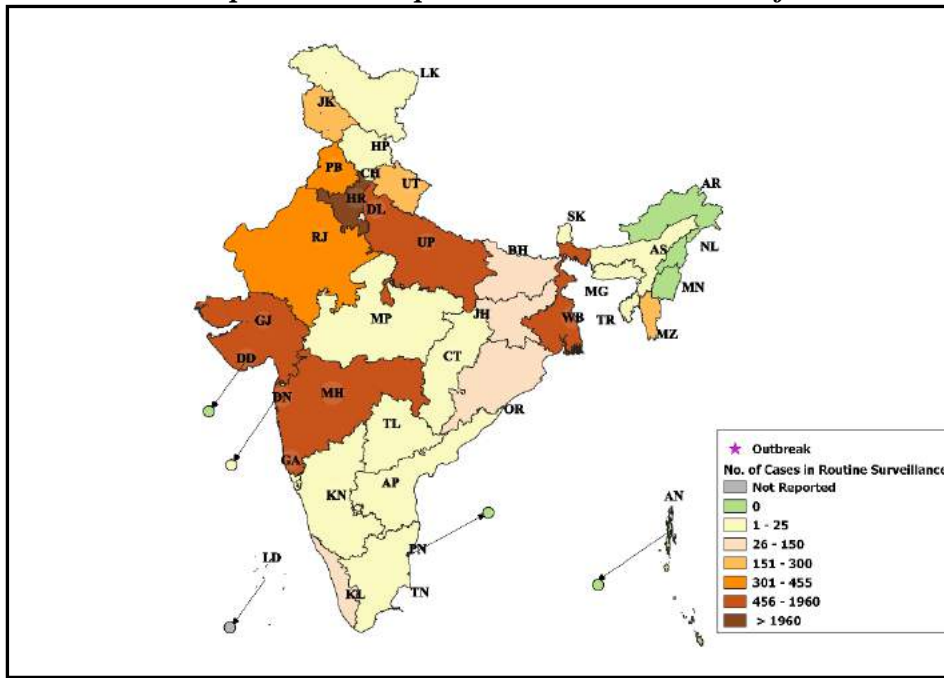


Fig. 14: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for November

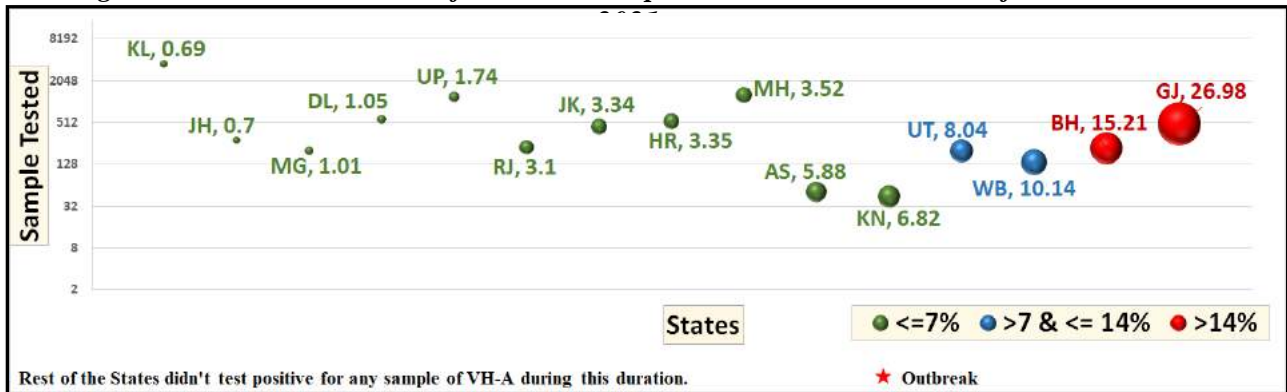


Fig. 15: State/UT wise Lab Confirmed Viral Hepatitis E cases and outbreaks for November 2021

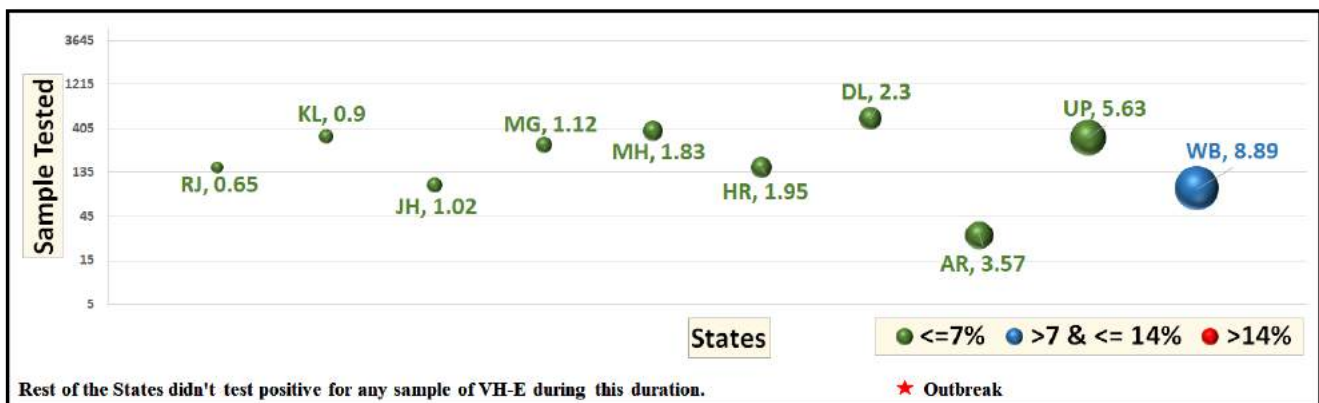
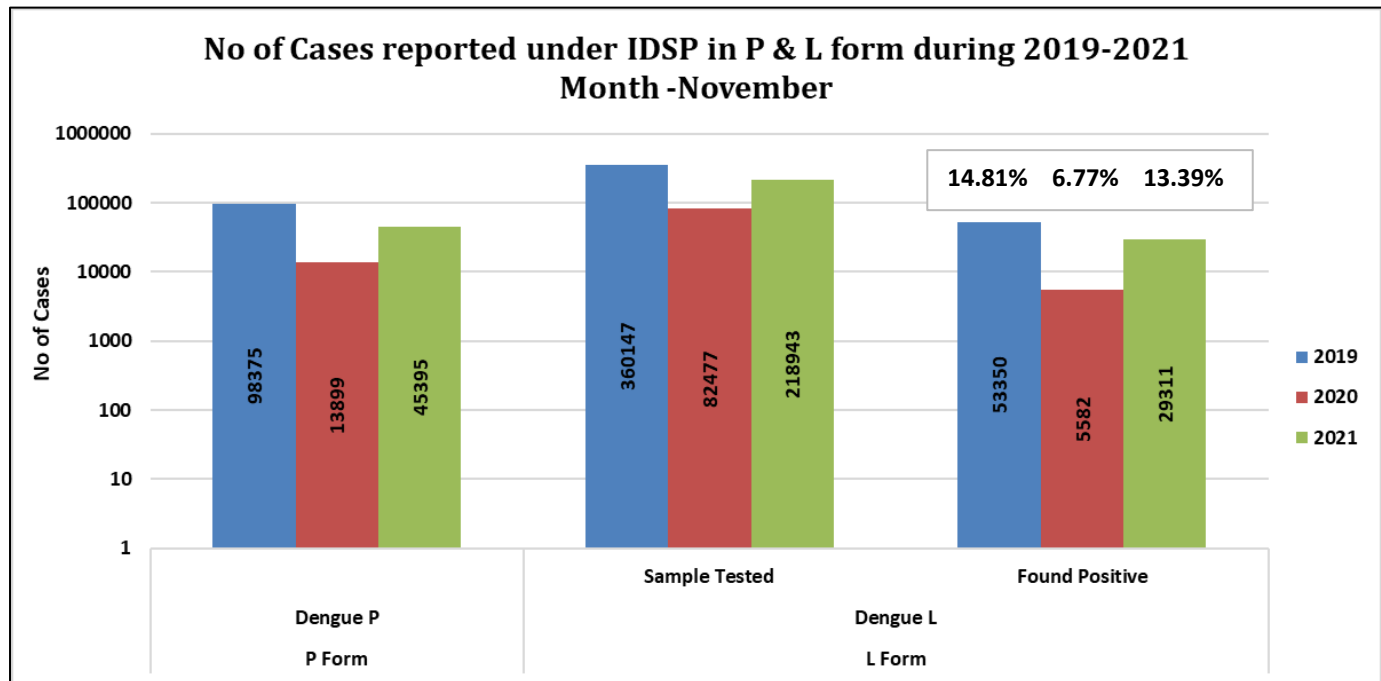


Fig. 16: No. of Dengue cases reported under IDSP in P & L form during November 2021



As shown in Fig 16, number of presumptive Dengue cases, as reported by States/UTs in ‘P’ form was 127825 in *November 2019*; 17061 in *November 2020* and 53406 in *November 2021*. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in *November 2019* 468721 samples were tested for Dengue, out of which 74464 were found positive. In *November 2020*; out of 89106 samples, 7241 were found to be positive and in *November 2021*, out of 226807 samples, 35160 were found to be positive.

Sample positivity of samples tested for Dengue has been 13%, 5% and 9% in *November* month of 2019, 2020 & 2021 respectively.

Fig. 17: State/UT wise Presumptive Dengue cases and outbreaks for November 2021

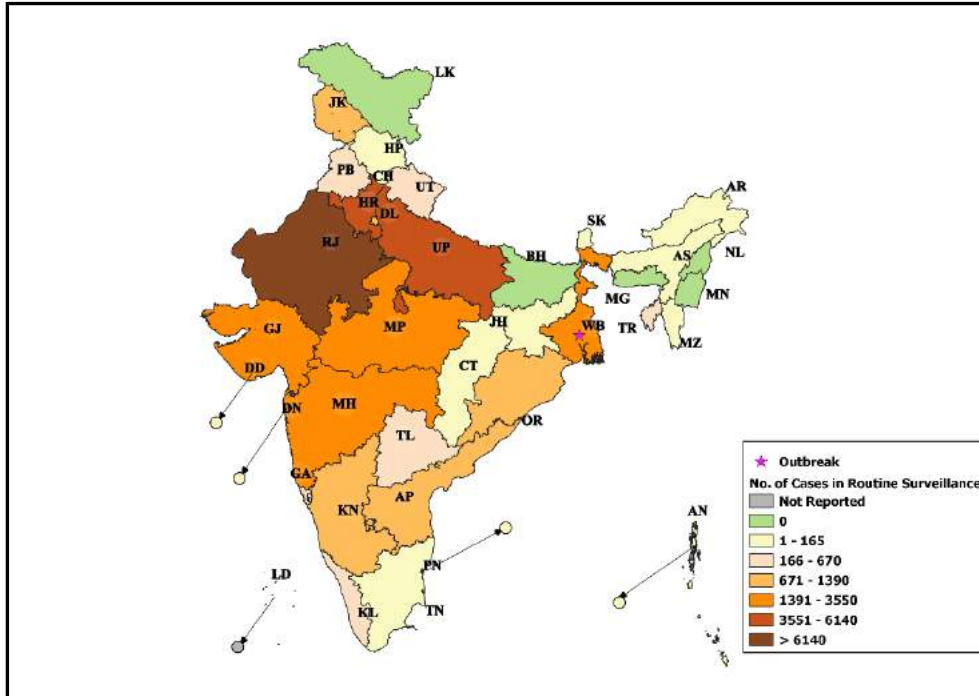
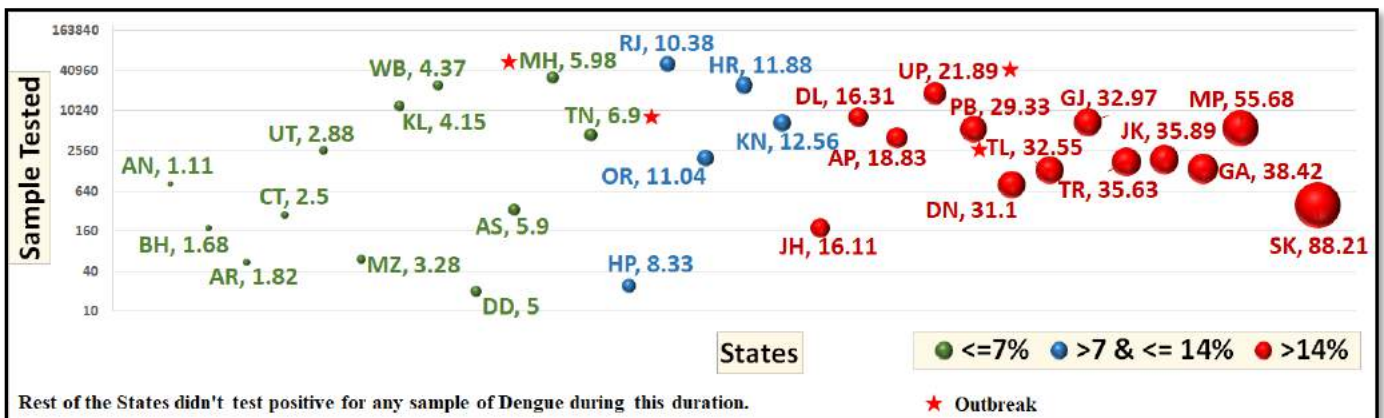
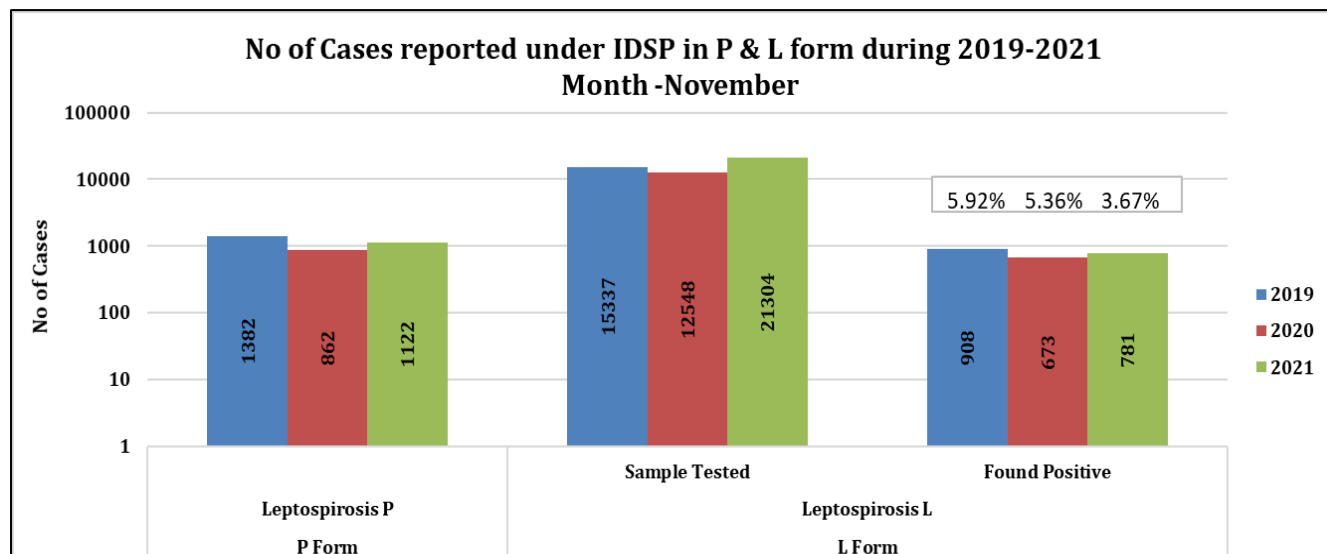


Fig. 18: State/UT wise Lab Confirmed Dengue cases and outbreaks for November 2021



**Fig. 19: No. of Leptospirosis Cases reported under IDSP in P & L form during November 2019 - 2021**



As shown in Fig 19, number of presumptive Leptospirosis cases, as reported by States/UTs in ‘P’ form was 2298 in *November 2019*; 890 in *November 2020* and 1043 in *November 2021*. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in *November 2019*; 21736 samples were tested for Leptospirosis, out of which 1182 were found positive. In *November 2020*; out of 15808 samples, 726 were found to be positive and in *November 2021*, out of 24028 samples, 1070 were found to be positive.

Sample positivity of samples tested for Leptospirosis has been 5%, 5% and 4% in *November* month of 2019, 2020 & 2021 respectively.

Fig. 20: State/UT wise Presumptive Leptospirosis cases and outbreaks for November 2021

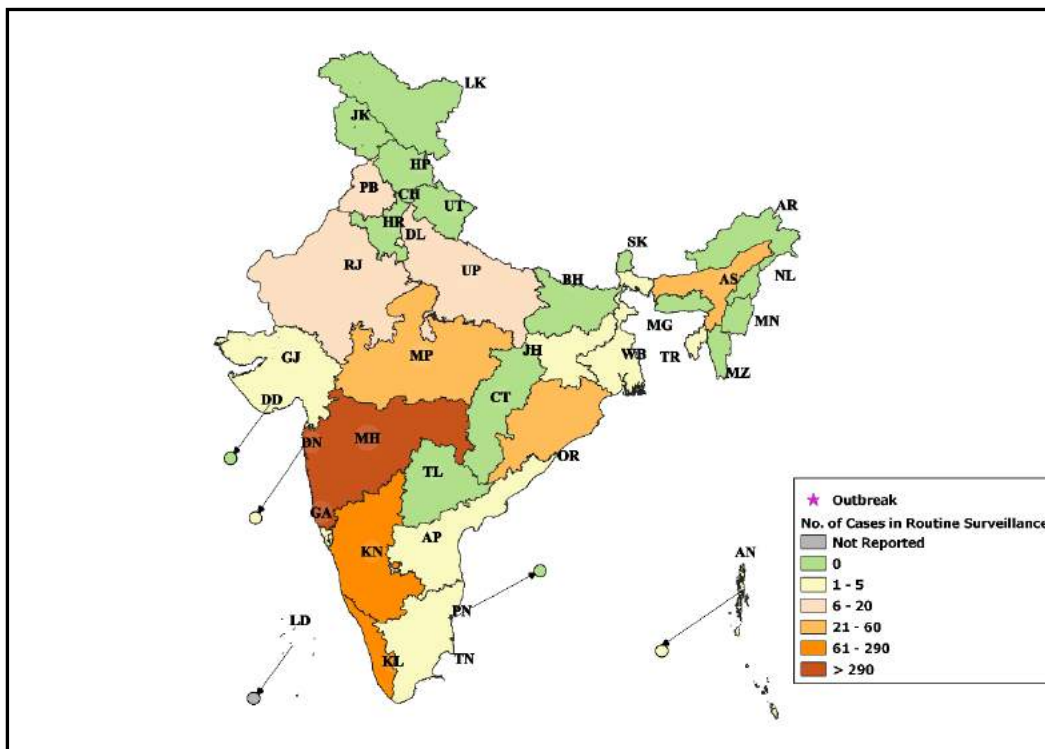
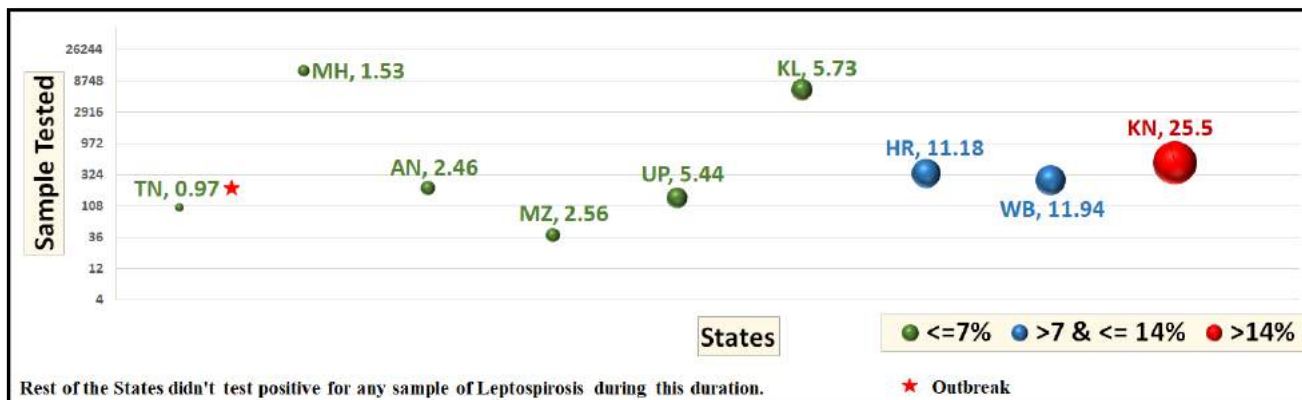
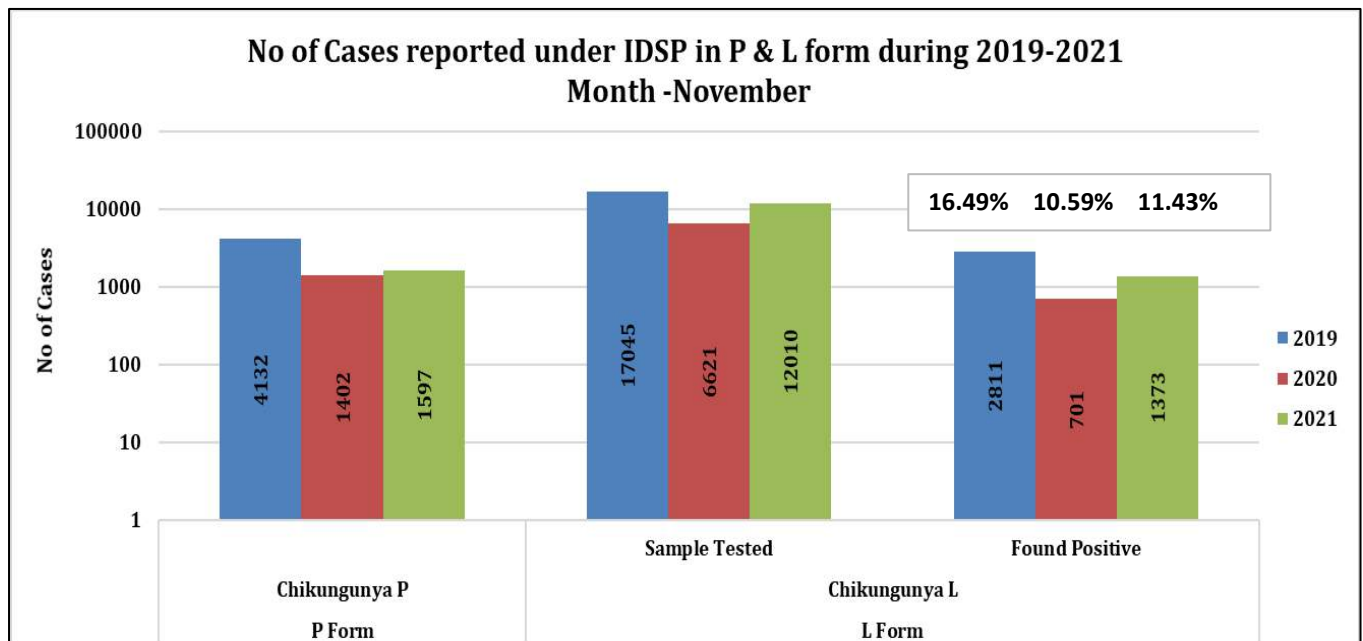


Fig. 21: State/UT wise Lab Confirmed Leptospirosis cases and outbreaks for November 2021



**Fig. 22: No. of Chikungunya Cases reported under IDSP in P & L form during November 2019 - 2021**



As shown in Fig 22, number of presumptive Chikungunya cases, as reported by States/UTs in ‘P’ form was 4888 in *November 2019*; 2390 in *November 2020* and 1415 in *November 2021*. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in *November 2019*; 21050 samples were tested for Chikungunya, out of which 3166 were found positive. In *November 2020*; out of 8973 samples, 1215 were found to be positive and in *November 2021*, out of 11618 samples, 1147 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 15%, 14% and 10% in *November* month of 2019, 2020 & 2021 respectively.

Fig. 23: State/UT wise Presumptive Chikungunya cases and outbreaks for November 2021

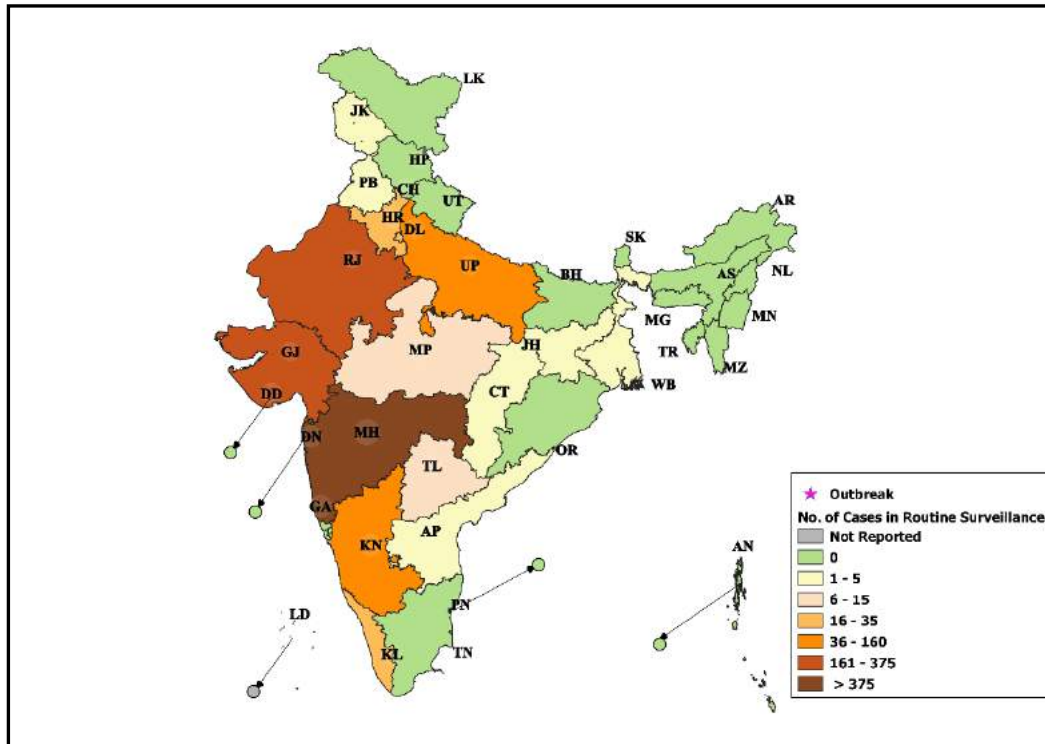
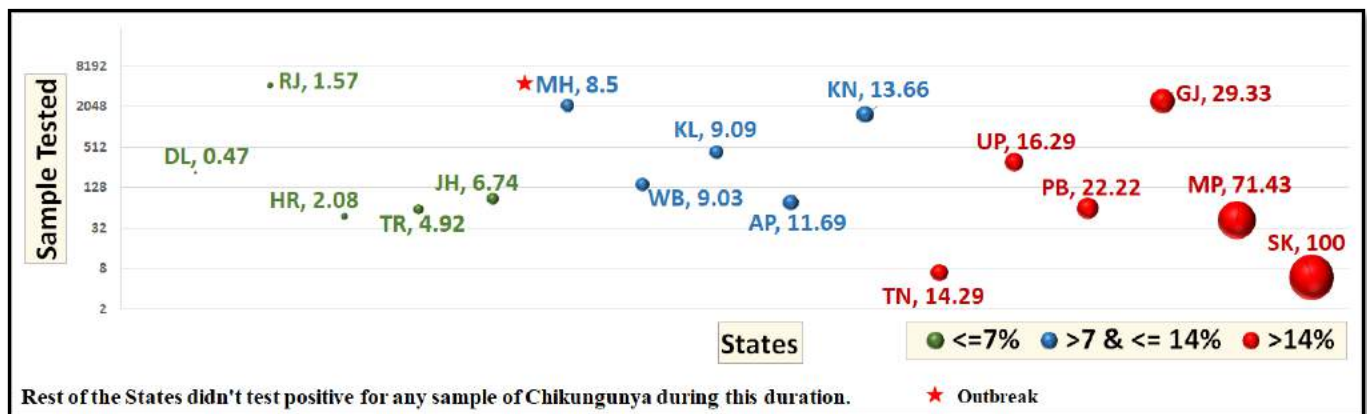
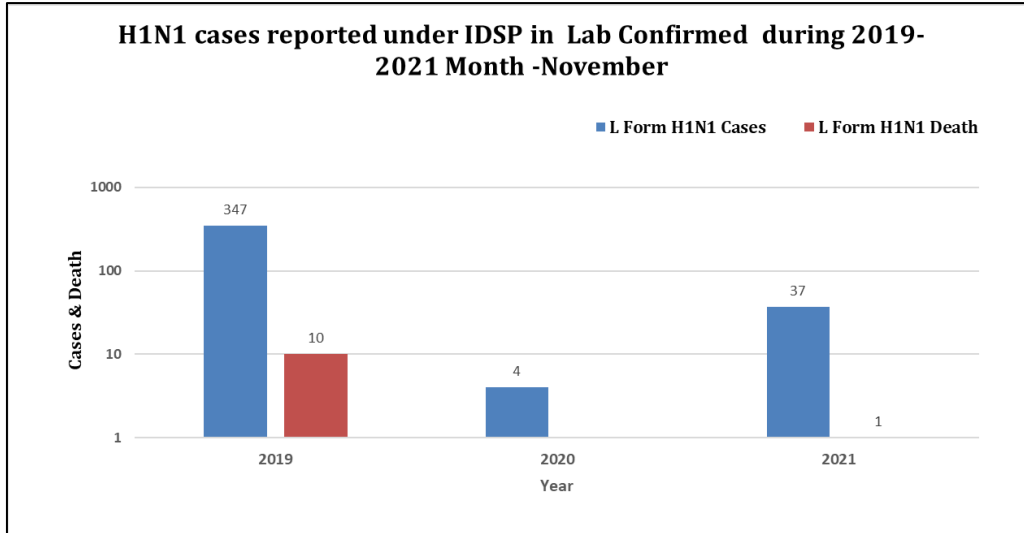


Fig. 24: State/UT wise Lab Confirmed Chikungunya cases and outbreaks for November 2021

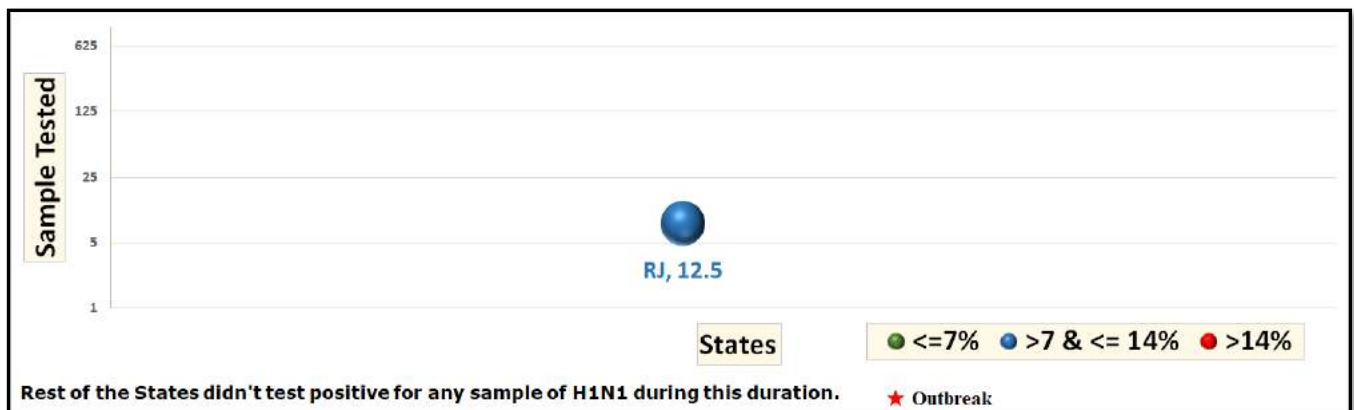


**Fig. 25: H1N1 cases reported under IDSP in L Form during 2019-2021 in November 2021**



As shown in Fig. 25, as reported in L form, in November 2019, there were 247 cases and 18 deaths. In *November 2020*, there were 15 cases and 0 deaths; and in *November 2021*, there were 28 cases and 1 death. Case fatality rate for H1N1 were 7.3%, 0.00% and 3.6 % in November month of 2018, 2019 & 2020 respectively.

**Fig. 26: State/UT wise H1N1 cases and outbreaks for November 2021**





## 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.

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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: [dinricd@nic.in](mailto:dinricd@nic.in) & [idsp-npo@nic.in](mailto:idsp-npo@nic.in)

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

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