



Vol. 6 / Issue 02 / 2021

# Disease Alert

## प्रकोप चेतावनी

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

### In This Issue:

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**Gastroenteritis Outbreak, PTU, Kapurthala, Punjab**

02

**Surveillance Data (Maps & Charts)**

07

**Action from the Field**

22

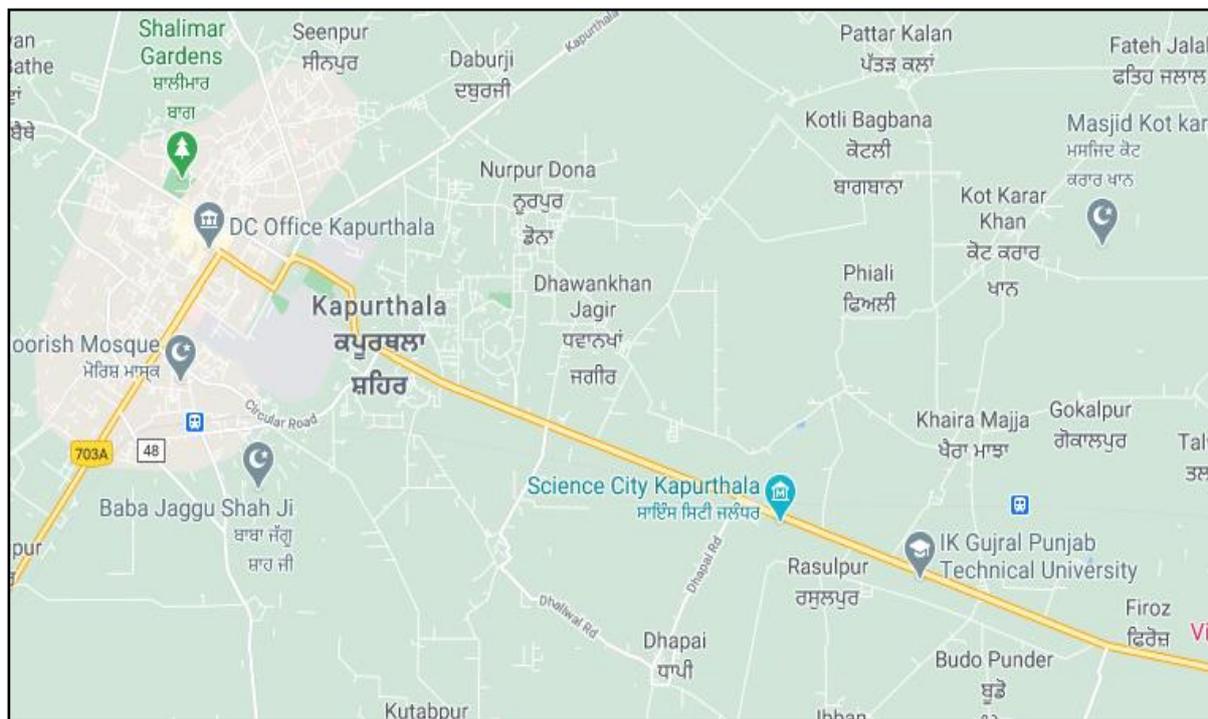
**Glossary**

22

**GASTROENTERITIS OUTBREAK****PUNJAB TECHNICAL UNIVERSITY, KAPURTHALA DISTRICT, PUNJAB****BACKGROUND:**

Kapurthala is a district in State of Punjab which is headquartered in Kapurthala town. It is one of the smallest districts of Punjab in terms of both area and population, with 8,15,168 people as per 2011 census.

*Fig. 1: Geographical location of Gastroenteritis outbreak, Kapurthala (Feb-March 2021)*

**DETAILS OF INVESTIGATION:**

On 25 February' 2021, the district epidemiologist of Kapurthala was informed by senior medical officer, district hospital, Kapurthala regarding the admission of around 29 students in the emergency department with complaints of pain in abdomen, vomiting and loose stools. All the students were

from the boy's hostel of Punjab Technical University (PTU). State programme office (IDSP) was informed about the outbreak and epidemic intelligence service officer (EISO) was deputed on 27 February 2021 to investigate the outbreak.

#### **CONFIRMATION OF OUTBREAK:**

Punjab Technical University is located in the block Kala Sanghian of district Kapurthala. Weekly cases of acute diarrheal disease (ADD) for the block Kala Sanghian were available with the IDSP department for last three years i.e. 2018-2020. Threshold was calculated using mean + 2SD of the cases in previous three years. For the confirmation of the outbreak, cases from January–March 2021 were compared to the threshold of similar weeks.

#### **CASE DEFINITION AND ACTIVE CASE SEARCH:**

In PTU campus, there is a local dispensary which provided initial treatment to the patients and serious patients were referred. After reviewing the OPD records of the dispensary, a suspect case definition was formulated. A suspect case was “*A person with any one of the three symptoms (pain abdomen, vomiting and loose stools >3 episodes) residing in the boy's hostel of PTU, Kapurthala from 20 February to 5 March 2021*”. Using the suspect case definition, cases were identified in the boy's hostel of PTU, Kapurthala and case investigation forms were filled.

#### **LABORATORY INVESTIGATIONS**

No stool samples were collected because of the short stay of the cases at the district hospital. Laboratory parameters were within normal range except mean white blood cell count (13,128 cells/uL) which was on the higher side, specifically granulocytes (9,867 cells/uL) and mean random blood sugar (87 mg%) which was on the lower side. All the 29 samples tested for Hepatitis A and Hepatitis E and the tests were negative. Two blood samples were taken for culture and both showed no growth. Two urine samples were also taken for culture, one was negative and other showed growth of *Klebsiella*.

#### **ENVIRONMENTAL INVESTIGATIONS**

Hostel's mess inspections and key informant interviews were conducted with hostel warden and mess staff

to understand the process of raw material procurement, their quantity, storage, preparation, storage of cooked food, time and place of preparation and serving, soap and water used for washing vegetables and utensils, type of utensil used and history of infection among food handlers. Food & water sampling was also conducted.

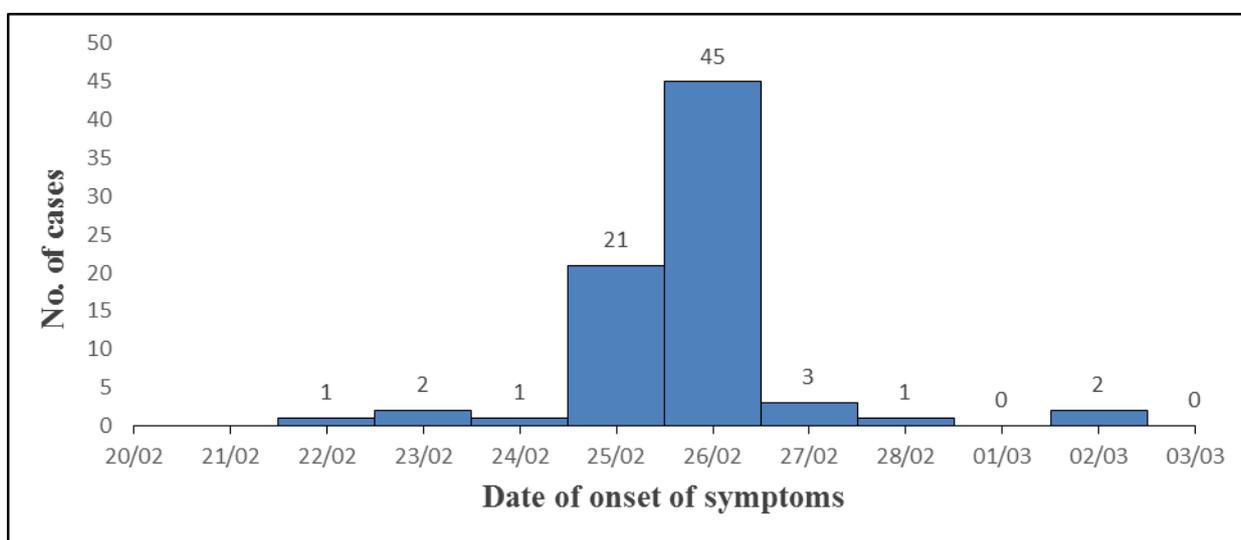
## RESULTS:

From the OPD records of dispensary, total of 74 cases were identified from 20<sup>th</sup> February to 05<sup>th</sup> March 2021. 92% (68 out of 74) cases were students residing in the boy's hostel of PTU, Kapurthala .

Epidemic curve prepared from the OPD data of the campus dispensary showed that there was sudden increase in cases after 24 February 2020. Cases peaked on 26 February 2020 followed by sudden drop in the cases (Figure 2).

Figure 2. Epidemic-curve of gastroenteritis cases in PTU, Kapurthala, 20 February-05 March 2021 (n=74)  
(Data source: OPD registers of campus dispensary)

**Fig. 2: Epidemic-curve of gastroenteritis cases in PTU, Kapurthala, Kapurthala (Feb-March 2021)**



Using the suspect case definition, 68 cases were identified. Time of onset of symptoms was available for 46 students; cases peaked on 25 February between 8pm–10pm (21 cases). First case had symptoms on 25 February 2021 at 10:40 am. He ate aloo parantha in breakfast, in lunch he ate rice, curry & aloo sabzi and

in dinner he ate rice, dal and mix vegetable. Rise in the cases coincided with 1-2 hours after the meals. No death was reported.

Regarding the type of symptoms, 40.4% (21/52) cases had two symptoms i.e. pain abdomen & loose stools and 26.9% (14/52) cases had three symptoms i.e. pain abdomen, loose stools & vomiting. On an average, cases had three episodes of vomiting and five episodes of loose stools

Regarding the treatment of admitted cases, intravenous fluids (ringer lactate/normal saline) and metronidazole were given to all 100% (31/31) cases, 96.8% (30/31) received ondansetron, 90.3% (28/31) received ceftriaxone, 71% (22/31) received both dicyclomine and diclofenac.

#### **ACTIONS TAKEN:**

All the cases were treated in the campus dispensary and the district hospital, Kapurthala. Hostel warden was instructed to refer the case directly to the district hospital and inform the district health authorities for new cases. The administration of PTU was instructed to maintain the cleanliness and hygiene in the hostel mess along with the proper storage of raw and cooked food. Chlorination of the water tanks supplying the drinking water to the hostel was conducted. Health department had conduct the medical examination of food handlers in the hostel mess of PTU, Kapurthala.

#### **LIMITATIONS:**

The investigation fell short of laboratory confirmation because stool samples and food sample of cooked potatoes were not collected for testing. Also, no microbiological testing of the food samples was done. The cases for which blood and urine culture sample was collected, cases already had antibiotics before the sample collection.

#### **CONCLUSIONS:**

Descriptive analysis suggests that it was a point source food borne outbreak of gastroenteritis which happened in the boy's hostel of PTU, Kapurthala, Punjab. Three-fourth of the cases belonged to the age

group 16-20 years and most (40%) of the cases had pain abdomen and loose stools, while one-fourth cases had all the three symptoms (pain abdomen, vomiting and loose stools). Laboratory investigations show raised W.B.C., especially granulocytes suggesting acute infective pathology and one of the two urine sample positive for *Klebsiella*. Environmental findings suggest that the hygiene and sanitation of the hostel's mess was poor. There was no proper storage of raw and cooked food. On the day outbreak started, various preparations of potatoes were served in all the three meals and students also complained of abnormal taste of aloo sabzi served in the lunch. From the literature search, it was found that *Klebsiella* grow rapidly on the potatoes and also implicated as a cause of food-borne gastroenteritis. From the descriptive analysis, we can hypothesize that eating infected potatoes or drinking contaminated water might be the reason for the outbreak of gastroenteritis in the boy's hostel of PTU, Kapurthala.

## **RECOMMENDATIONS:**

### **Short term**

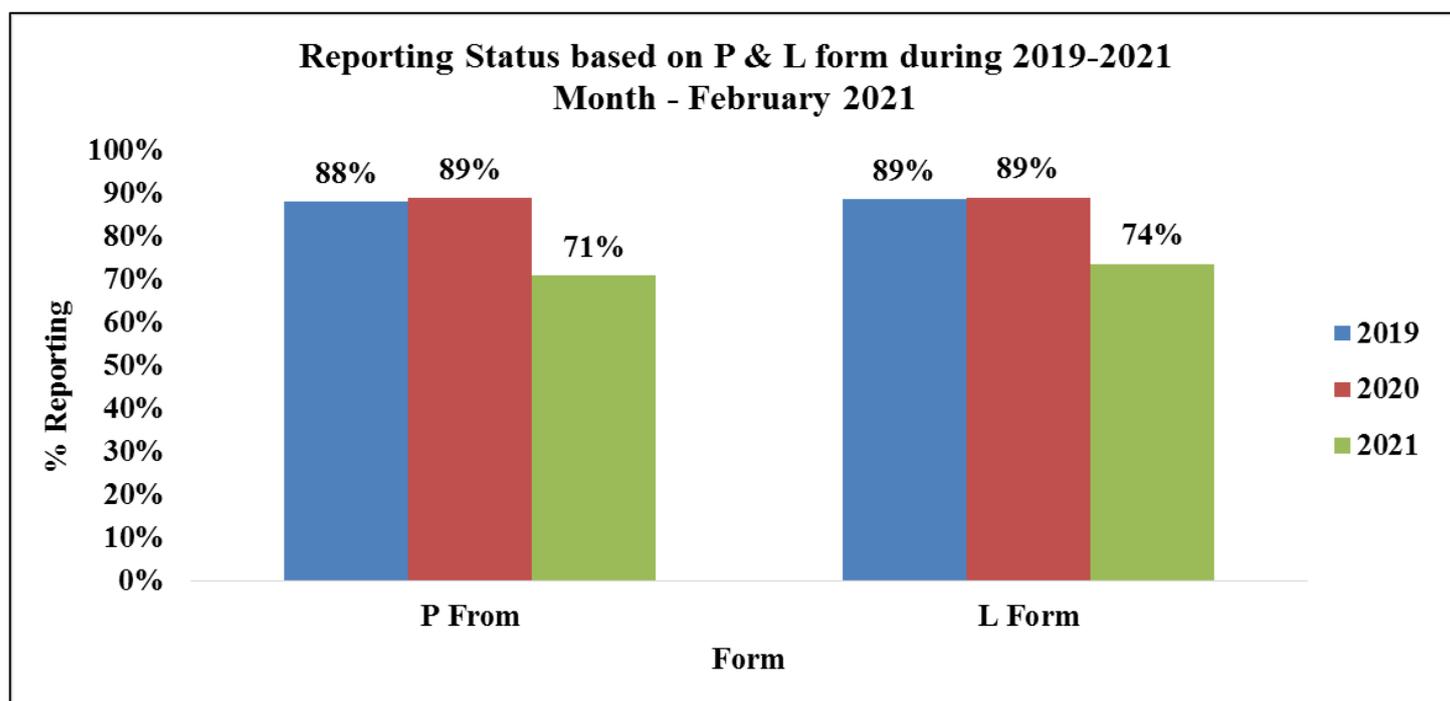
1. Prioritize food safety and good hygiene practices in the hostel's mess area with provision of cold storage for both raw and cooked food items
2. Training of food handlers regarding the safe practices during food preparation
3. Access to safe drinking water by chlorinating the drinking water supply

### **Long term**

1. Pre-employment and regular medical examination of the food handlers
2. Periodic IEC activities to increase the awareness among food handlers regarding the personal hygiene, effective food handling, cleaning and sanitation in the kitchen area.
3. Regular water testing for chlorination and contamination of drinking water
4. Regular visits of food safety officer to ensure the compliance with food safety standards
5. During any outbreak of gastroenteritis, stool samples and all the suspected food samples should be collected and tested on priority basis
6. Ensure microbiological testing of food samples and timely sharing of results to find the source and timely containment of the outbreak.

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

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



As shown in Fig. 3, in February 2019, 2020 and 2021, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 88%, 89% and 71% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 89%, 89% and 74% 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 February 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 February 2021

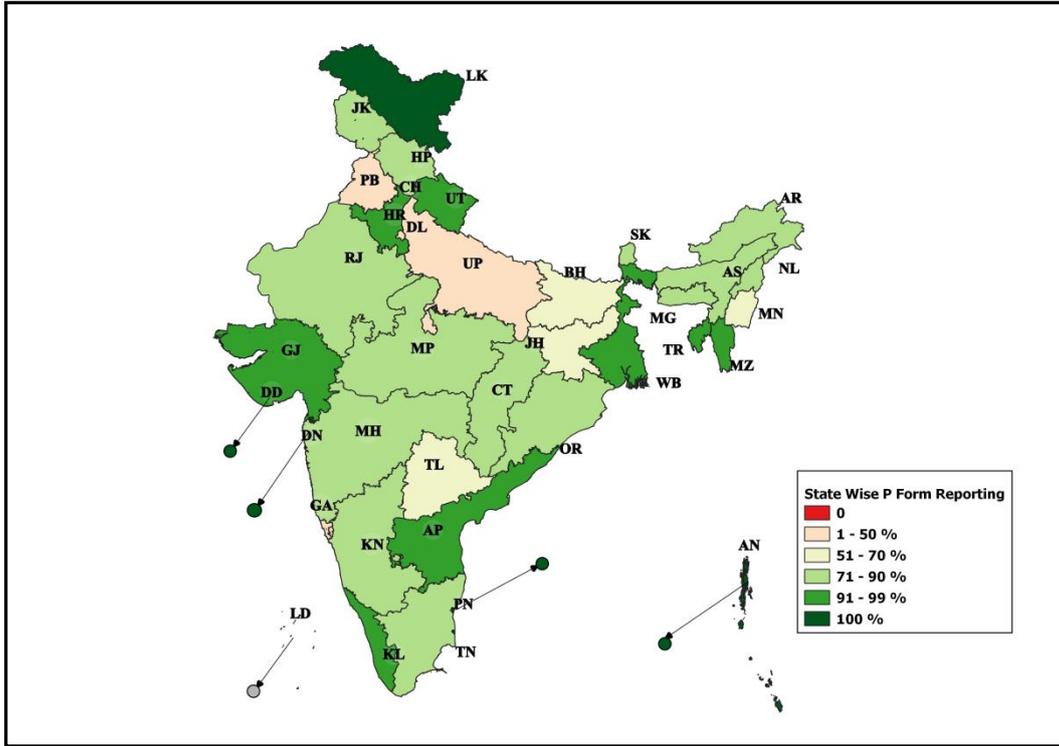
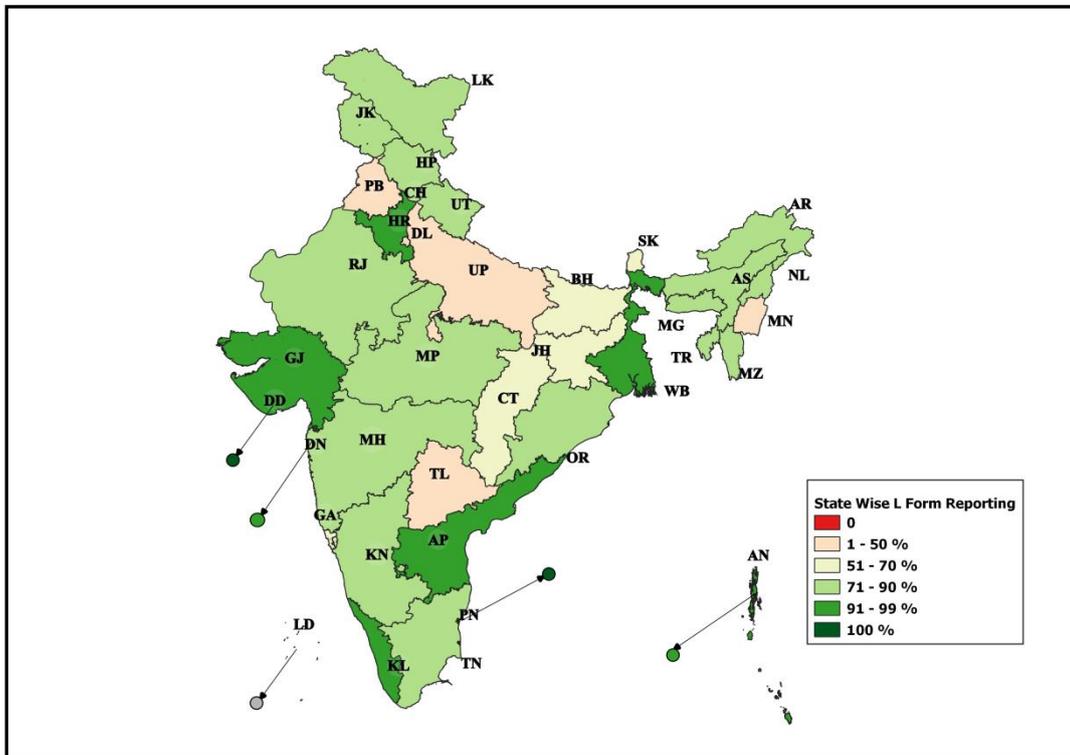
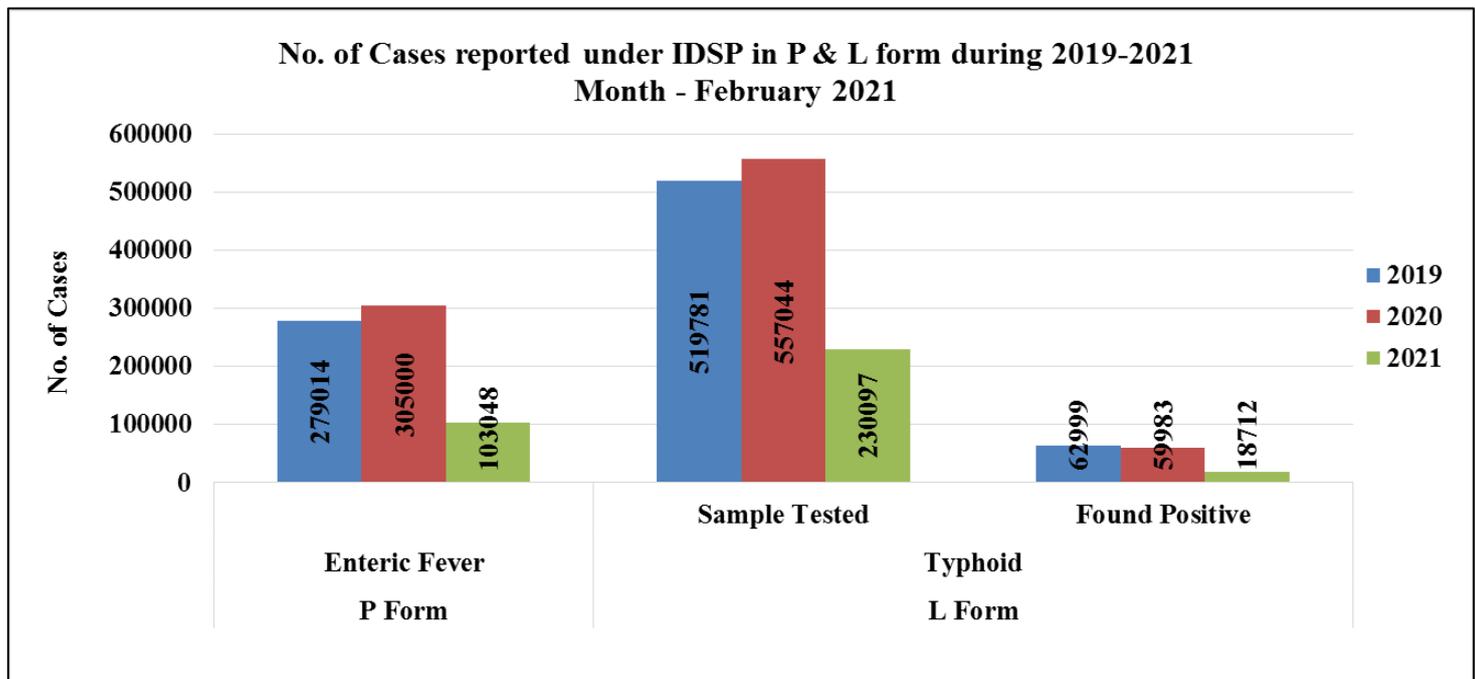


Fig. 5: State/UT wise L form completeness % for February 2021



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



As shown in Fig. 6, number of presumptive enteric fever cases, as reported by States/UTs in 'P' form was 279014 in February 2019; 305000 in February 2020 and 103048 in February 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2019; 519781 samples were tested for Typhoid, out of which 62999 were found positive. In February 2020; out of 557044 samples, 59983 were found to be positive and in February 2021, out of 230097 samples, 18712 were found to be positive.

Sample positivity has been 12.12%, 10.77% and 8.13% in February 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 February 2021

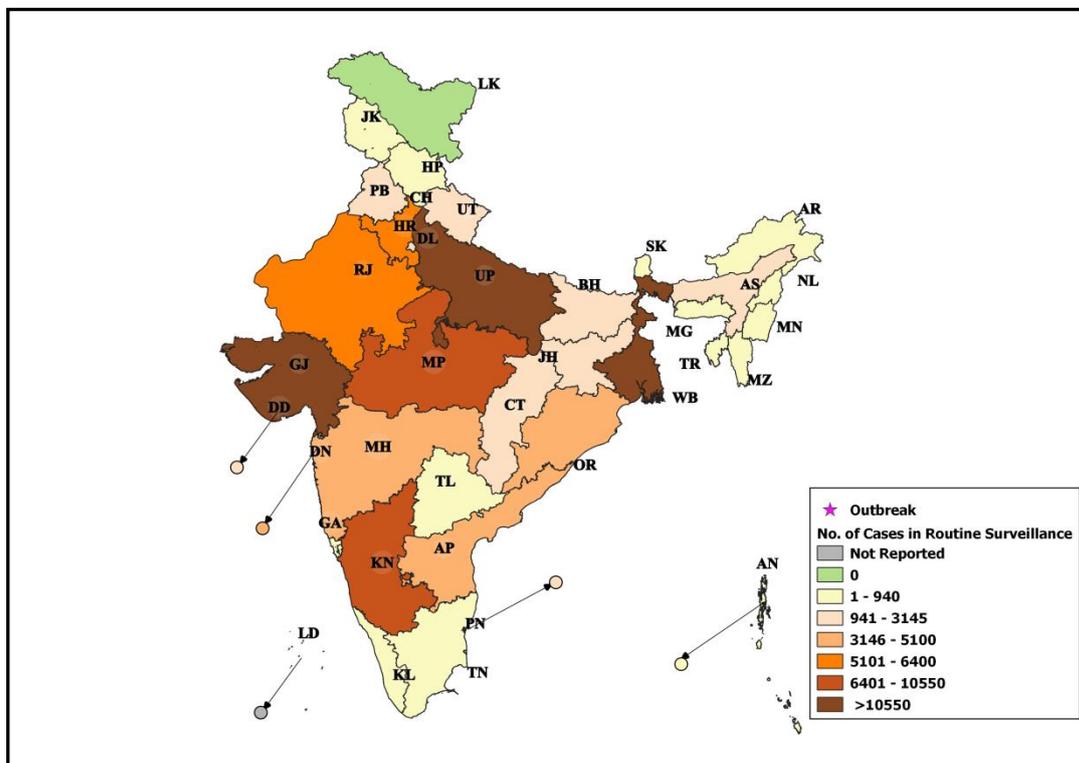
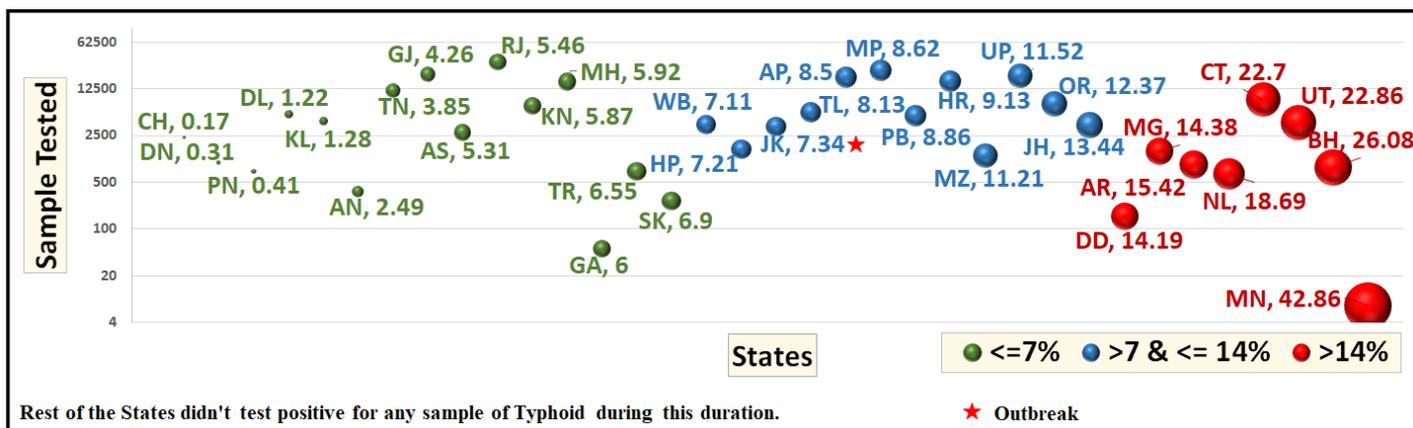


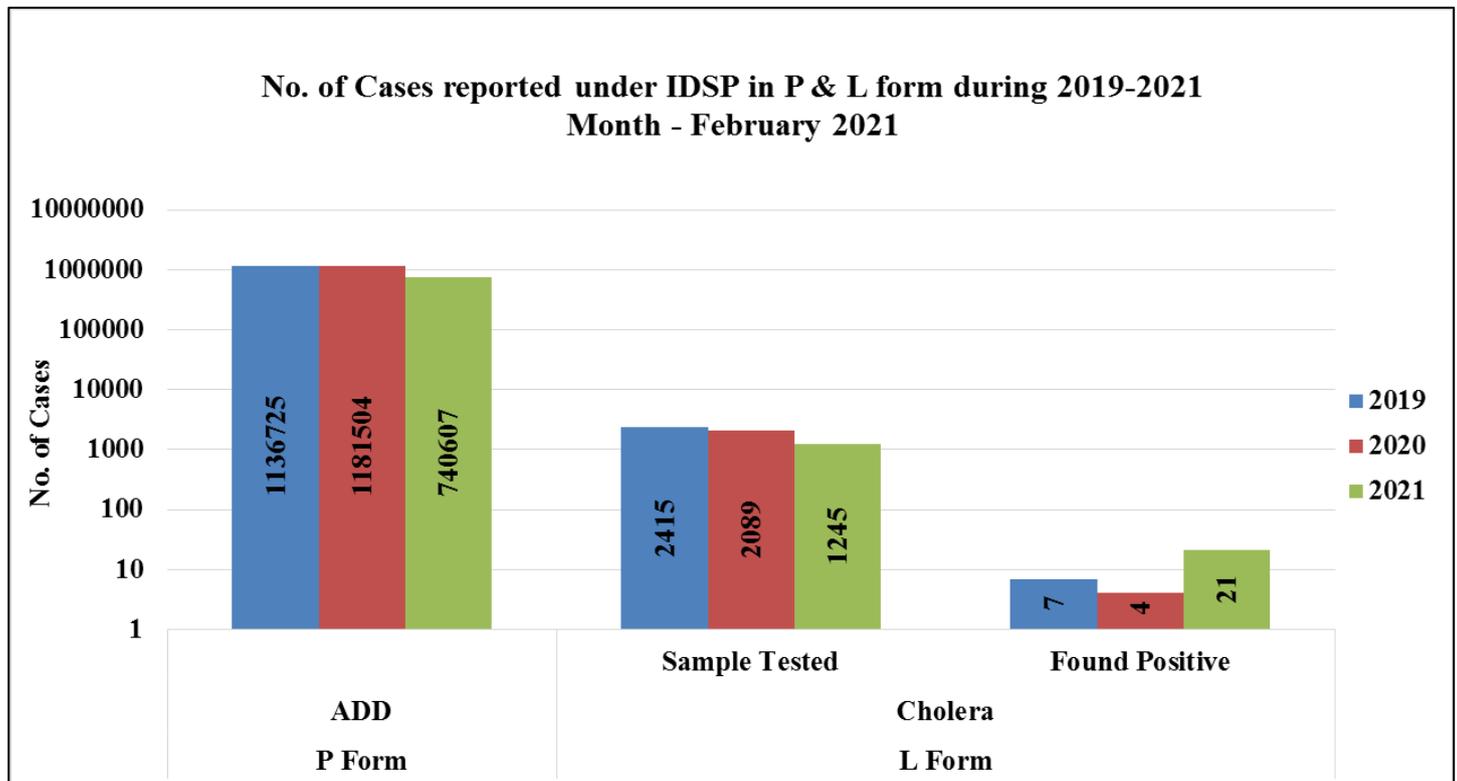
Fig. 8: State/UT wise Lab Confirmed Typhoid cases and outbreaks for February 2021



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

★ Outbreak

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



As shown in Fig. 9, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in 'P' form was 1136725 in February 2019; 1181504 in February 2020 and 740607 in February 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2019, 2415 samples were tested for Cholera out of which 7 tested positive; in February 2020, out of 2089 samples, 4 tested positive for Cholera and in February 2021, out of 1245 samples, 21 tested positive.

Sample positivity of samples tested for Cholera has been 0.29%, 0.19% and 1.69% in February month of 2019, 2020 & 2021 respectively.

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

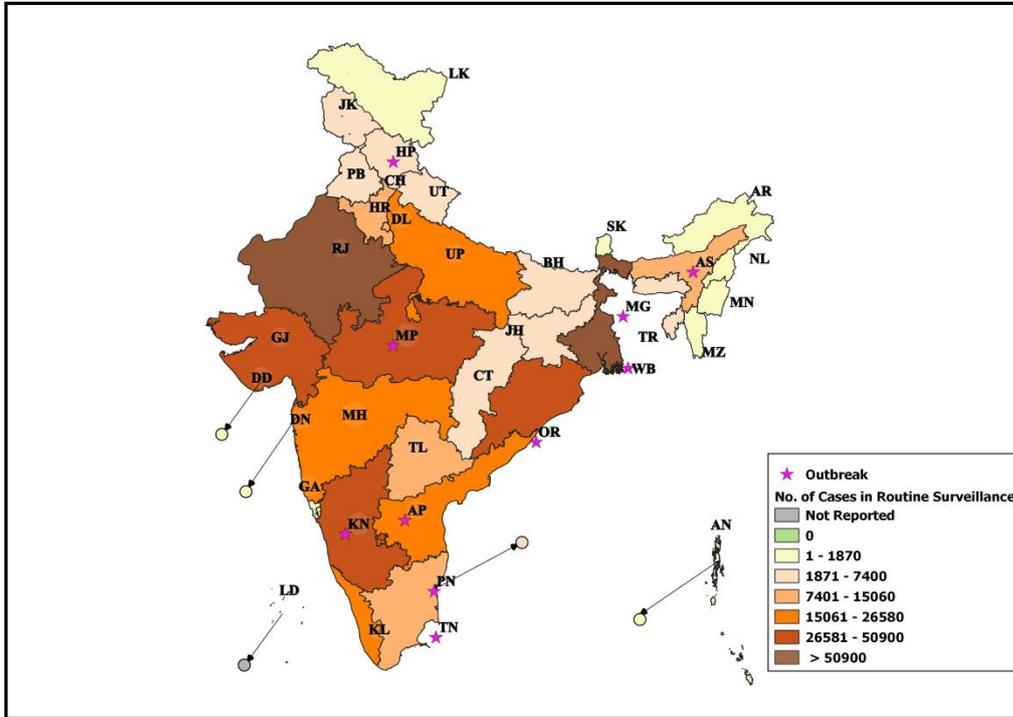
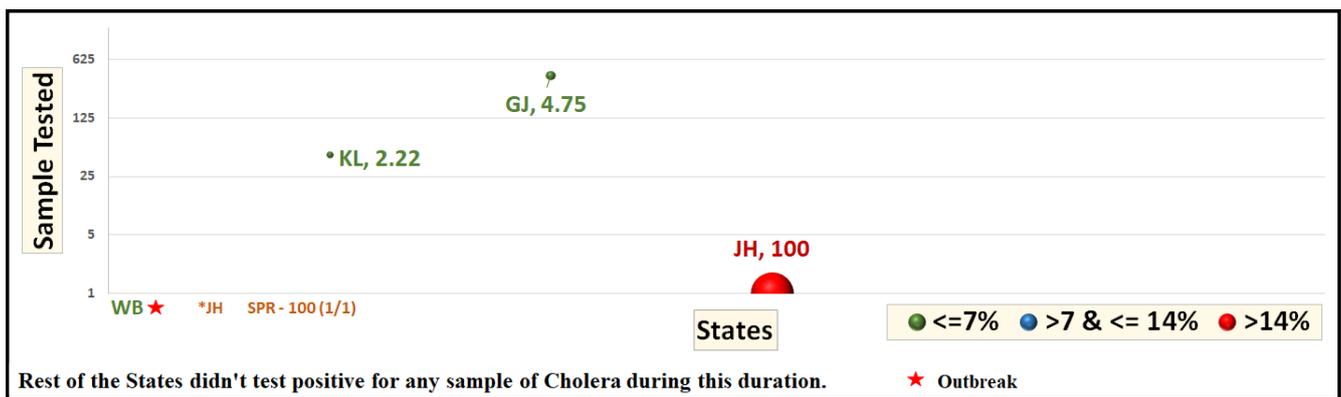
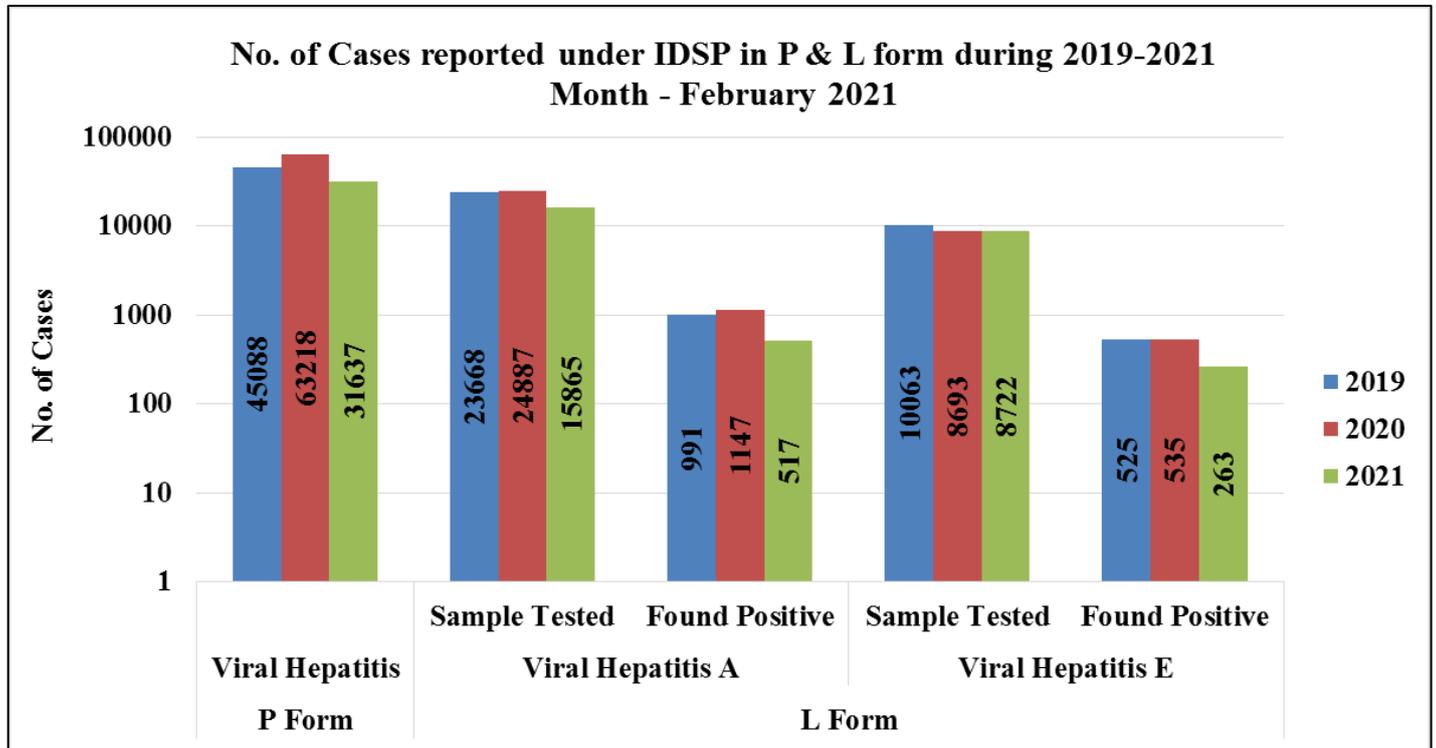


Fig. 11: State/UT wise Lab Confirmed Cholera cases and outbreaks for February 2021



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



As shown in Fig. 12, the number of presumptive Viral Hepatitis cases was 45088 in February 2019, 63218 in February 2020 and 31637 in February 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 February 2019; 23668 samples were tested out of which 991 were found positive. In February 2020 out of 24887 samples, 1147 were found to be positive and in February 2021, out of 15865 samples, 517 were found to be positive. Sample positivity of samples tested for Hepatitis A has been 4.19%, 4.61% and 3.26% in February month of 2019, 2020 & 2021 respectively.

As reported in L form for Viral Hepatitis E, in February 2019; 10063 samples were tested out of which 525 were found positive. In February 2020; out of 8693 samples, 535 were found to be positive and in February 2021, out of 8722 samples, 263 were found to be positive. Sample positivity of samples tested for Hepatitis E has been 5.22%, 6.15% and 3.02% in February month of 2019, 2020 & 2021 respectively.

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

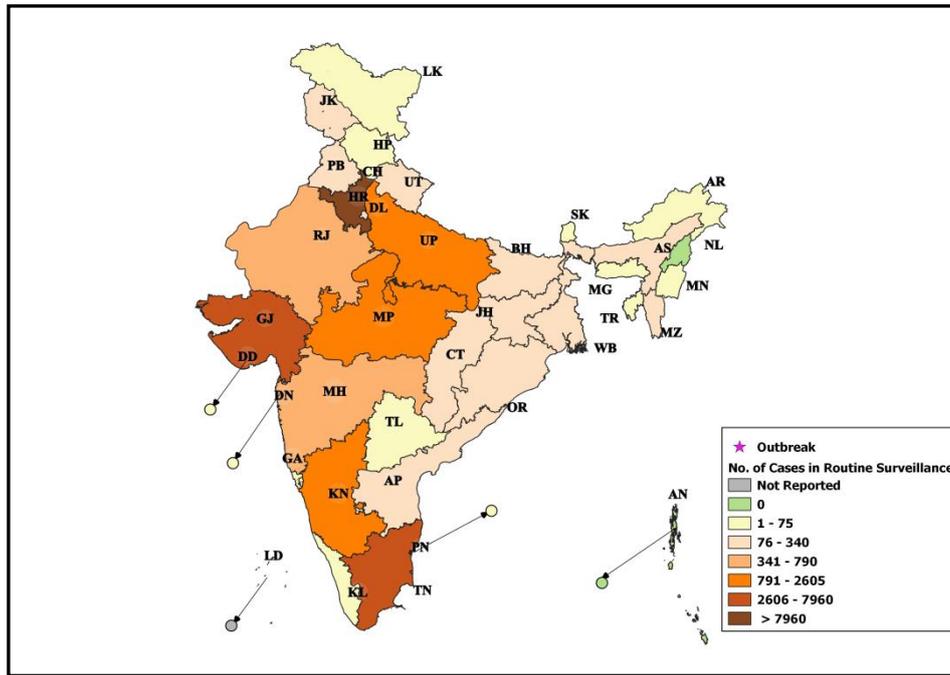


Fig. 14: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for February 2021

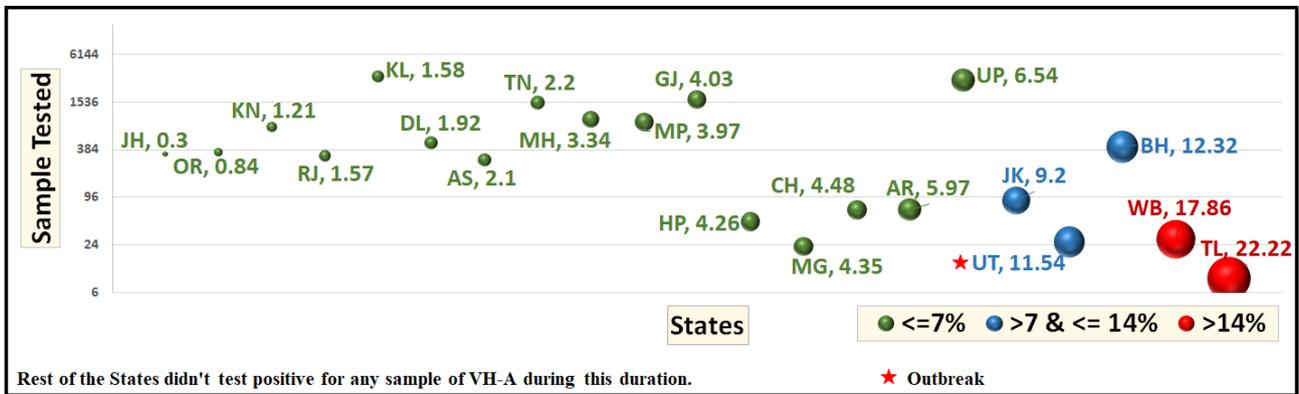
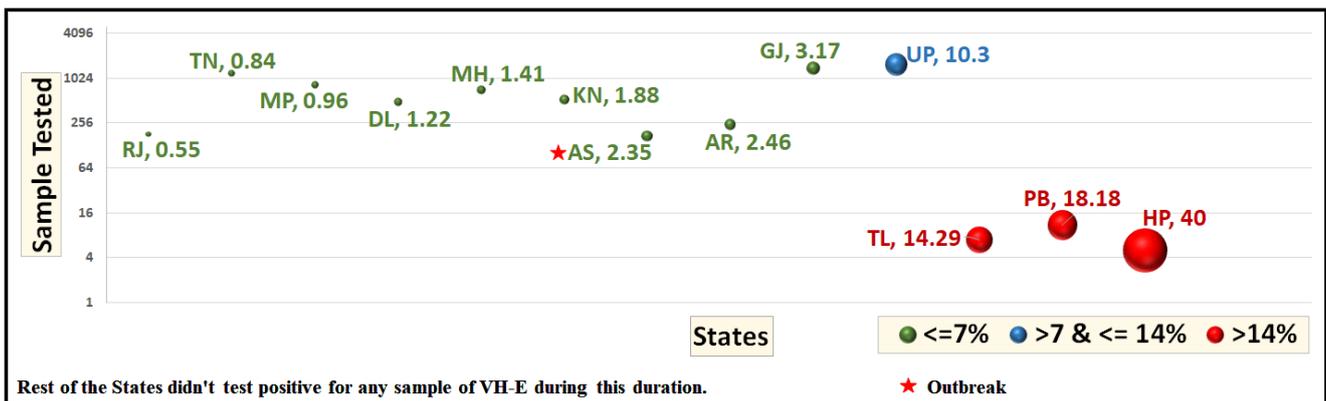
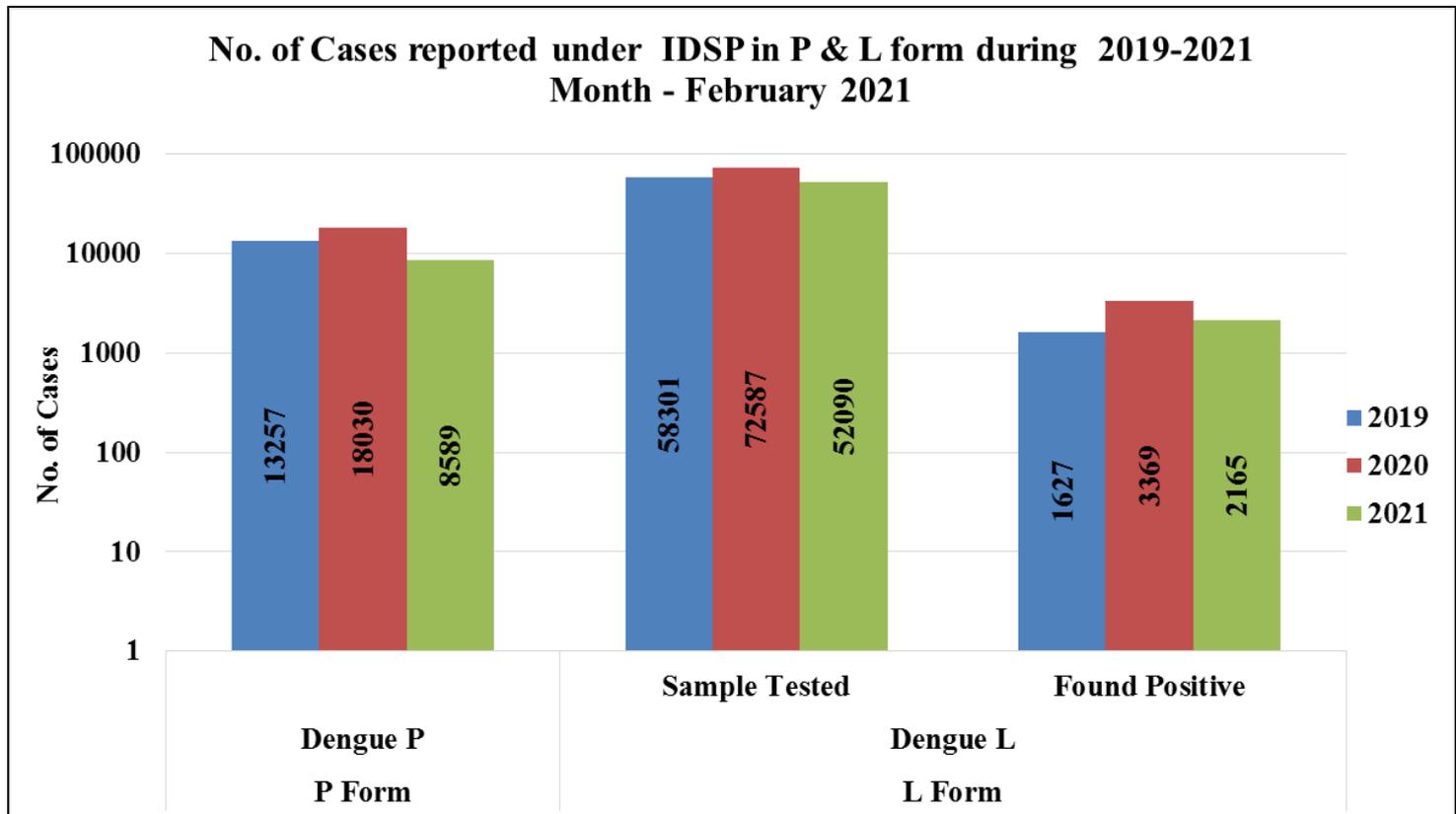


Fig. 15: State/UT wise Lab Confirmed Viral Hepatitis E cases and outbreaks for February 2021



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



As shown in Fig. 16, number of presumptive Dengue cases, as reported by States/UTs in 'P' form was 13257 in February 2019; 18030 in February 2020 and 8589 in February 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2019; 58301 samples were tested for Dengue, out of which 1627 were found positive. In February 2020; out of 72587 samples, 3369 were found to be positive and in February 2021, out of 52090 samples, 2165 were found to be positive.

Sample positivity of samples tested for Dengue has been 2.79%, 4.64% and 4.16% in February month of 2019, 2020 & 2021 respectively.

Fig. 17: State/UT wise Lab Confirmed Dengue cases and outbreaks for February 2021

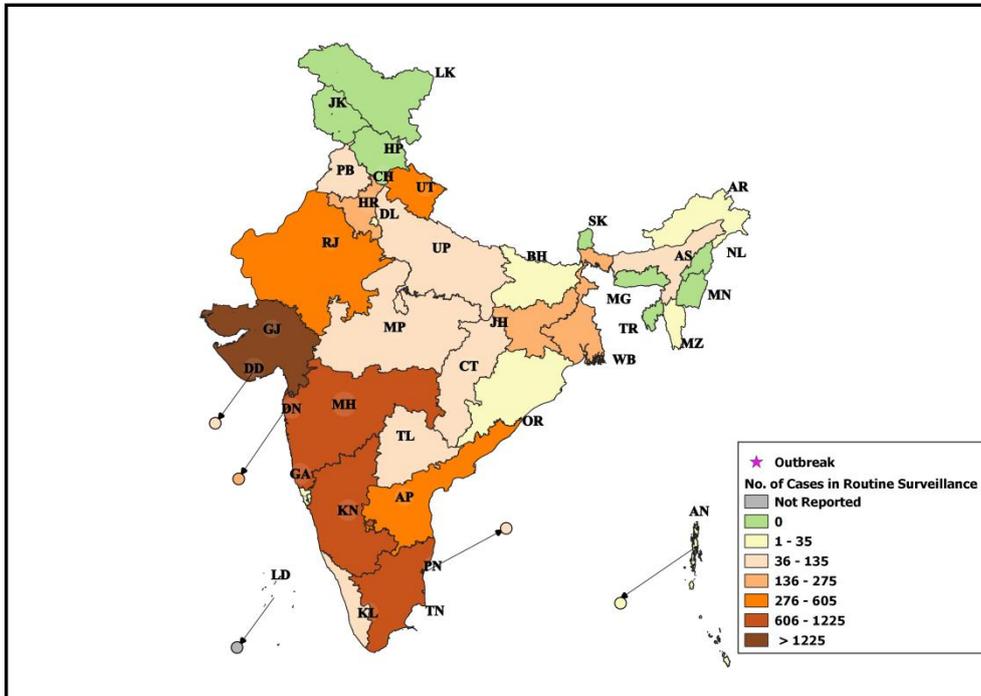
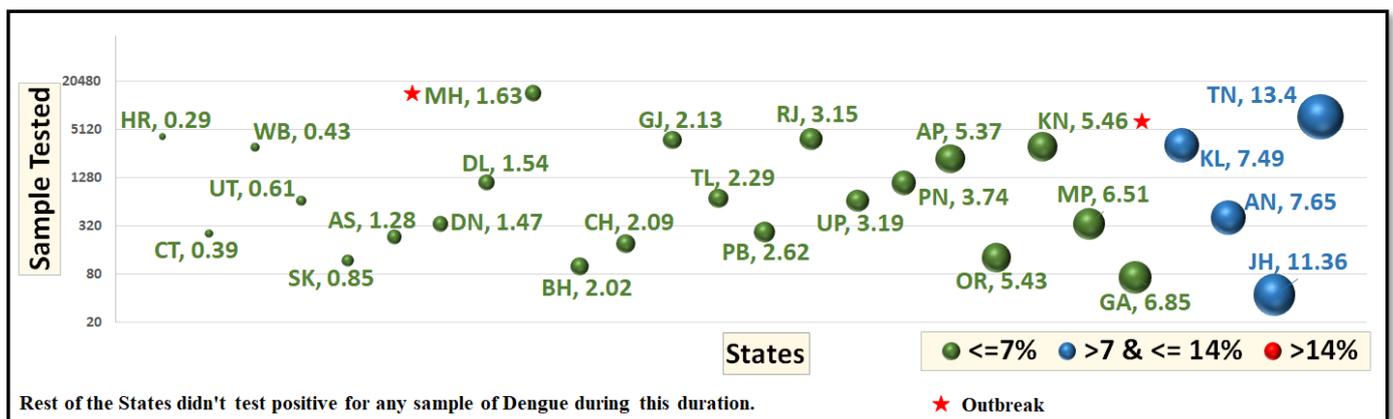
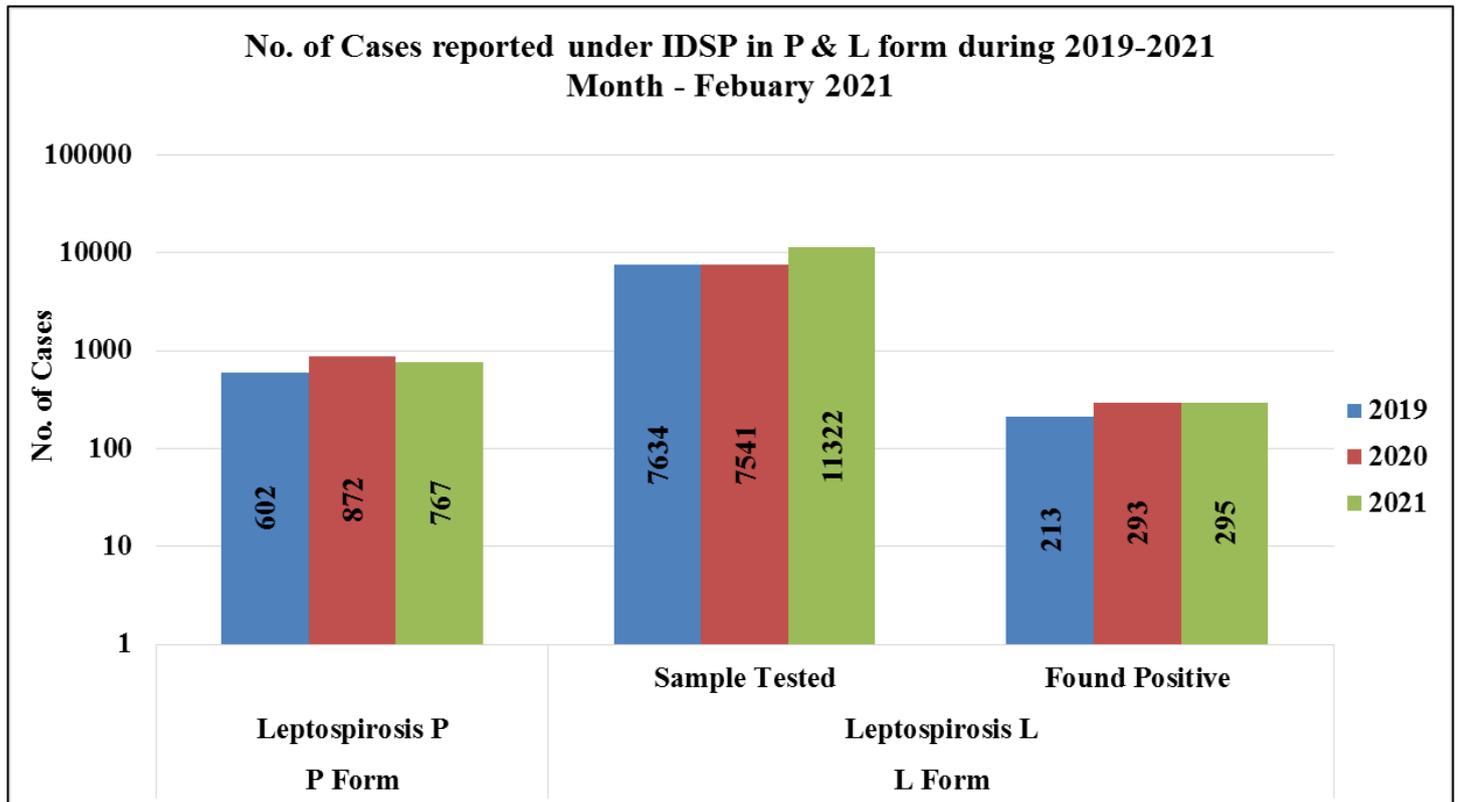


Fig. 18: State/UT wise Presumptive Dengue cases and outbreaks for February 2021



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



As shown in Fig. 19, number of presumptive Leptospirosis cases, as reported by States/UTs in 'P' form was 602 in February 2019; 872 in February 2020 and 767 in February 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2019; 7634 samples were tested for Leptospirosis, out of which 213 were found positive. In February 2020; out of 7541 samples, 293 were found to be positive and in February 2021, out of 11322 samples, 295 were found to be positive.

Sample positivity of samples tested for Leptospirosis has been 2.79%, 3.89% and 2.61% in February month of 2019, 2020 & 2021 respectively.

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

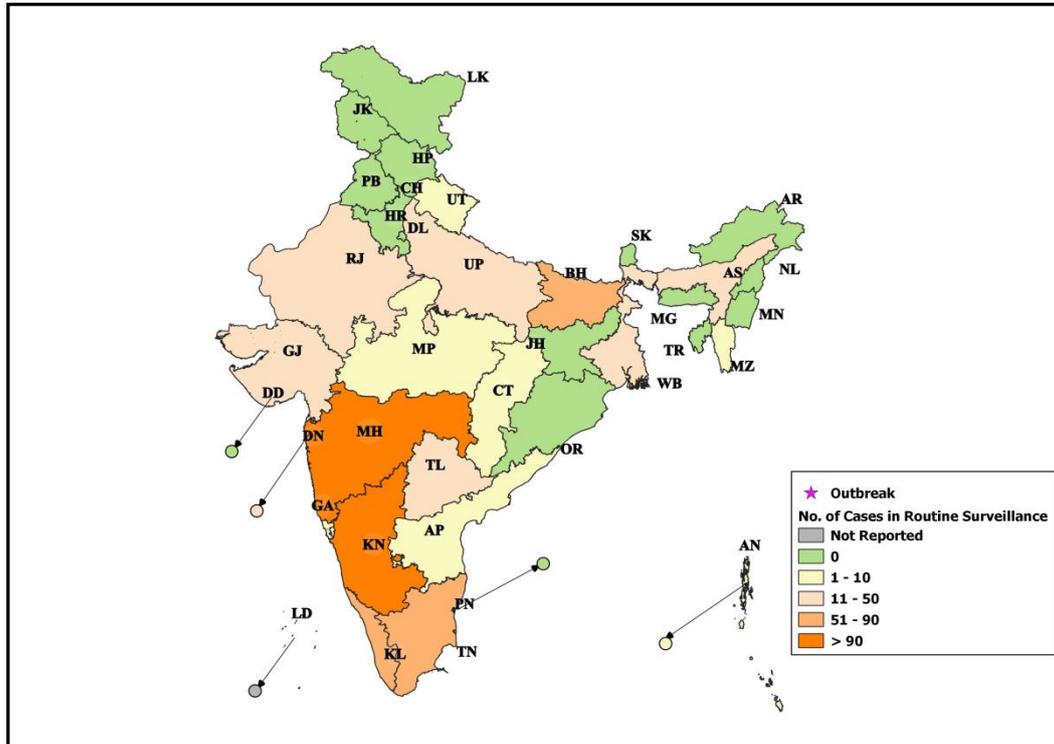
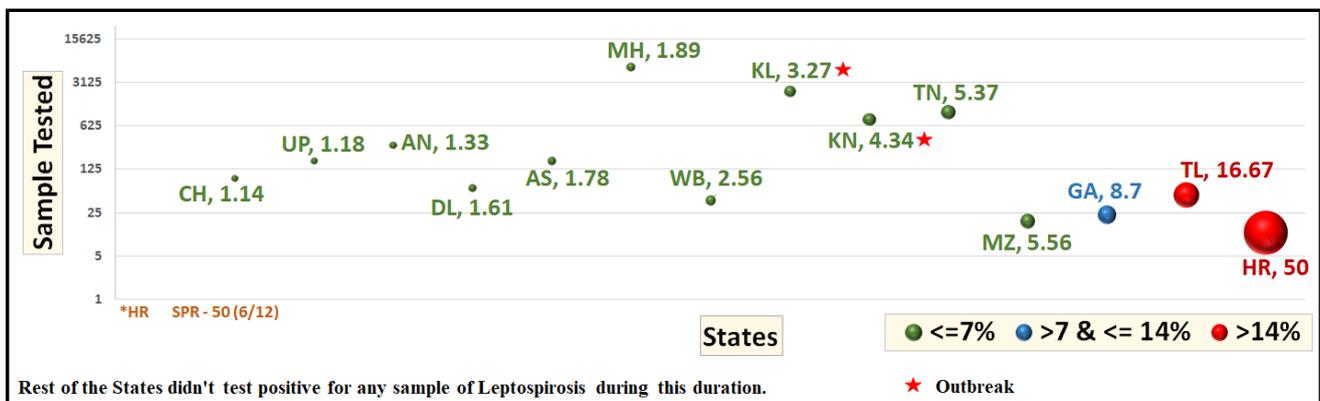
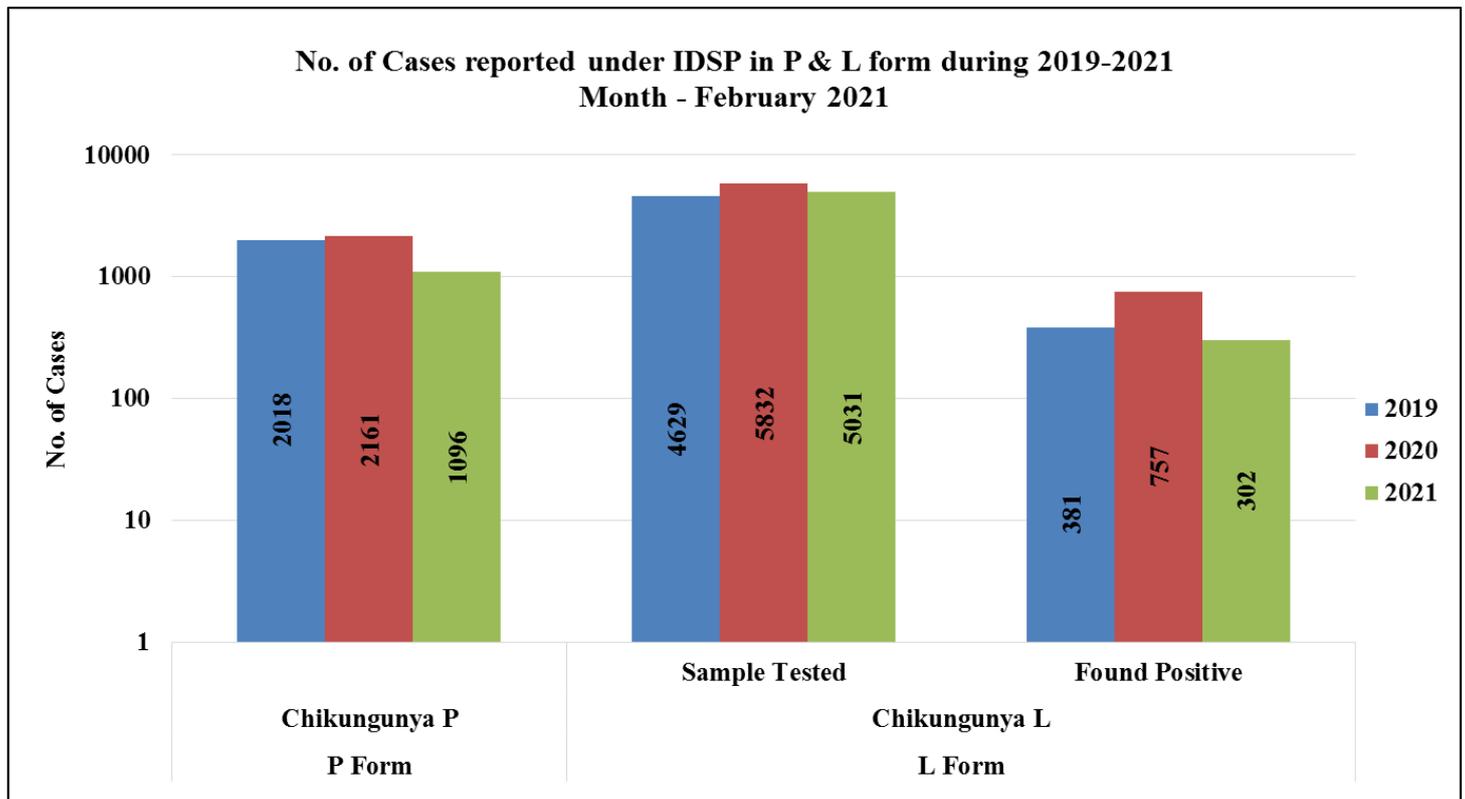


Fig. 21: State/UT wise Lab Confirmed Leptospirosis cases and outbreaks for February 2021



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



As shown in Fig. 22, number of presumptive Chikungunya cases, as reported by States/UTs in ‘P’ form was 2018 in February 2019; 2161 in February 2020 and 1096 in February 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2019; 4629 samples were tested for Chikungunya, out of which 381 were found positive. In February 2020; out of 5832 samples, 757 were found to be positive and in February 2021, out of 5031 samples, 302 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 8.23%, 12.98% and 6.00% in February month of 2019, 2020 & 2021 respectively.

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

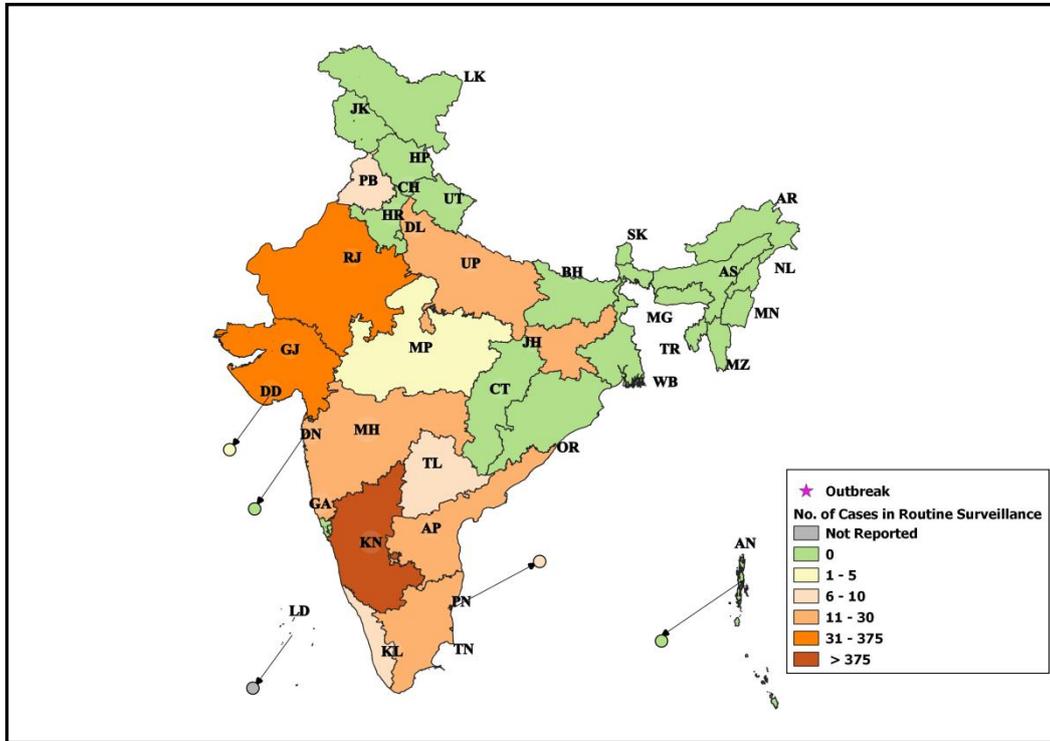


Fig. 24: State/UT wise Lab Confirmed Chikungunya cases and outbreaks for February 2021

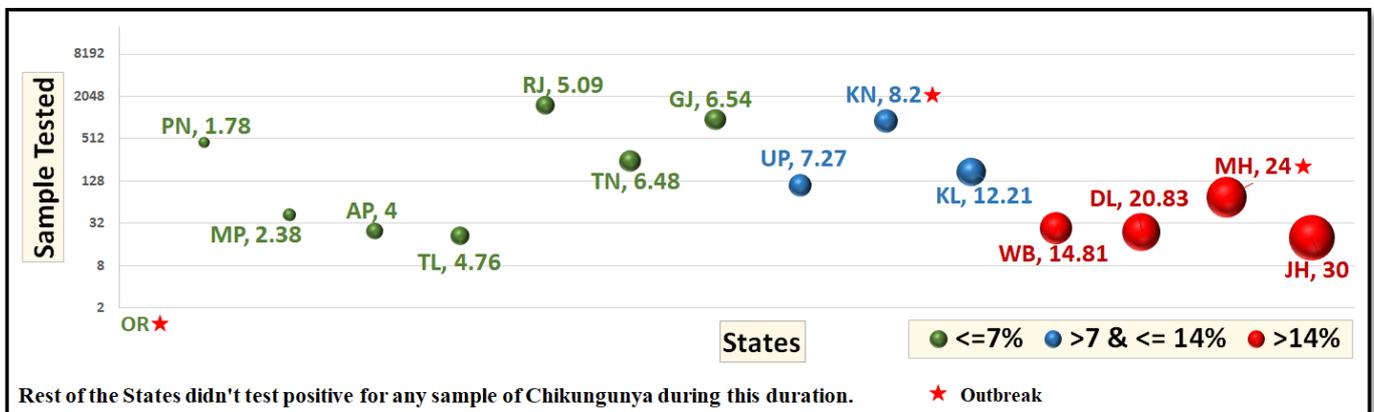
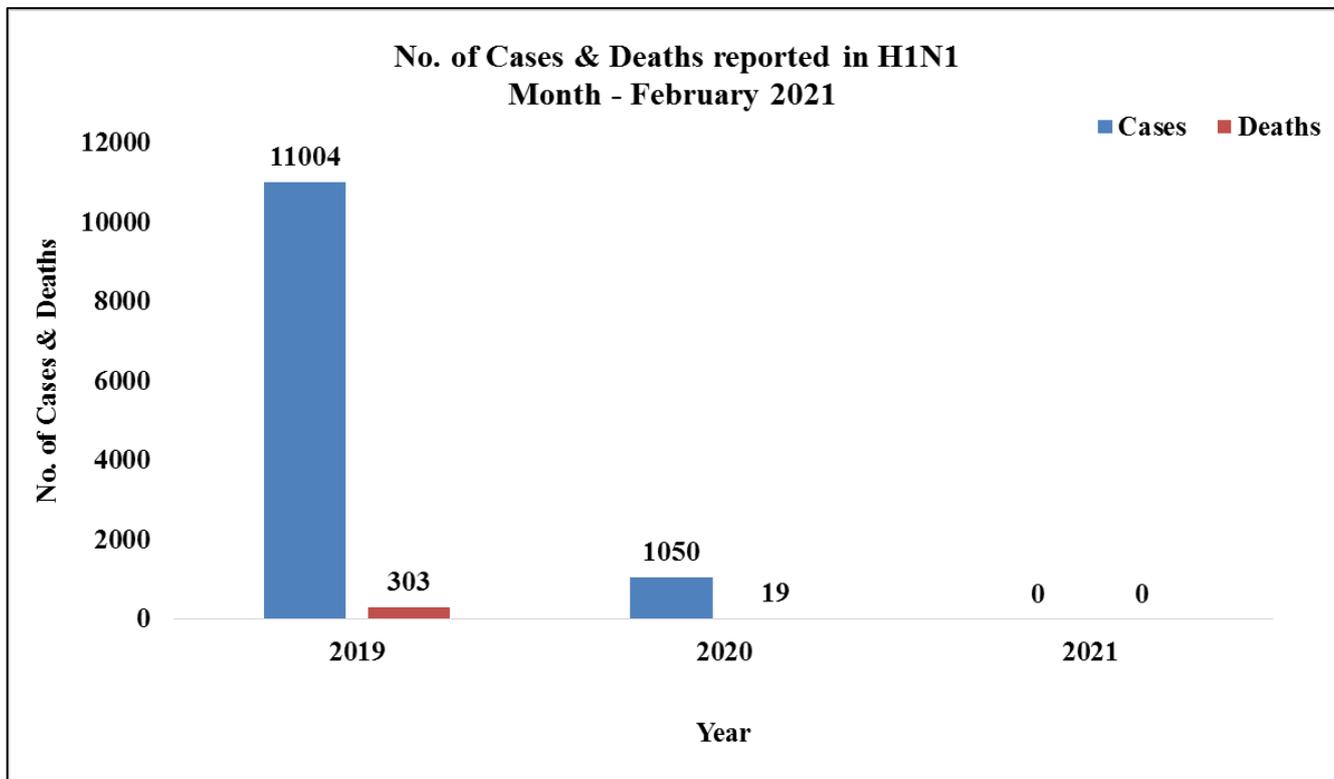


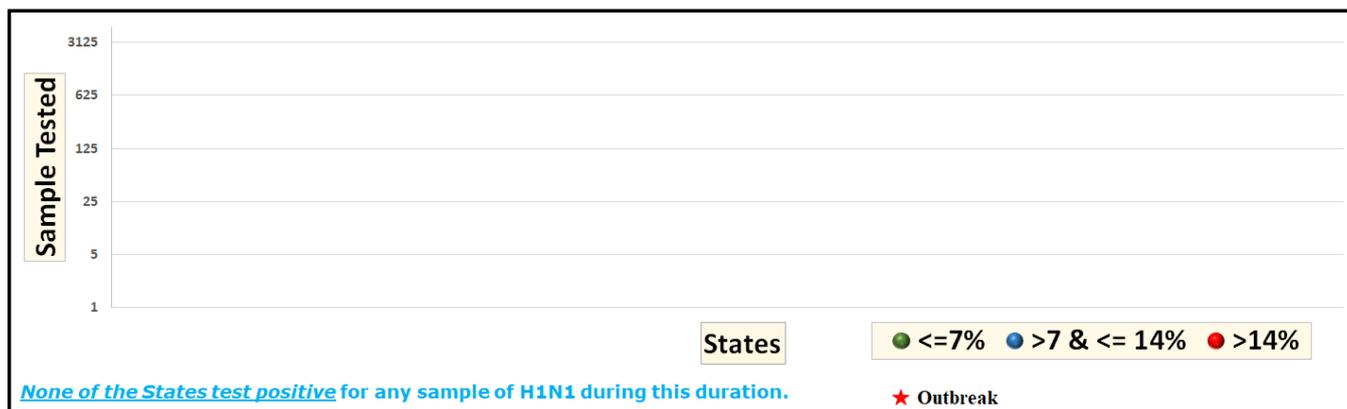
Fig. 25: H1N1 cases reported under IDSP in L Form during 2019-2021 in February 2021



As shown in Fig. 25, as reported in L form, in February 2019, there were 11004 cases and 303 deaths. In February 2020, there were 1050 cases and 19 deaths; and in February 2021, there were 0 cases and 0 deaths.

Case fatality rate for H1N1 were 2.75%, 1.80% and 0.00% in February month of 2018, 2019 & 2020 respectively.

Fig. 26: State/UT wise H1N1 cases and outbreaks for February 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)

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