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राष्ट्रीय ग्रामीण स्वास्थ्य मिशन
(2005–2012)

Disease Alert

प्रकोप चेतावनी

Monthly Surveillance Report

From

Integrated Disease Surveillance Programme

National Health Mission

In This Issue:

ACUTE DIARRHEAL DISEASE OUTBREAK INVESTIGATION

BANGA TOWN, BLOCK SUJJON, DISTRICT SBS NAGAR, PUNJAB

BACKGROUND

Banga is a town and Municipal council in Shahid Bhagat Singh Nagar district of Punjab, India. It has population of 20906, male population is 10712 and female population is 10194 as per the Census 2011 data. Population of Children under the age of 0-6 is 2154, male child population under the age of six is 1095 and female child population under the age of six is 1059. Total literacy rate of Banga is 84.68%, male literacy rate is 87.68% and female literacy rate is 81.53%. Total number of house hold in Banga is 4401.

Fig. 1: Location Map of Banga town

Diarrhoea 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 diarrhoea occur in the first two years of life. The main cause of death from acute diarrhoea is dehydration, which results from the loss of fluid and electrolytes in diarrhoeal stools.

Diarrhoea 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 diarrhoea 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 diarrhoea are usually spread by the faecal-oral route, which includes the ingestion of faecal contaminated water or food, person-to-person transmission, and direct contact with infected faeces.

DETAILS OF INVESTIGATION

- Information of the outbreak was received from SMO, Banga telephonically on 10.5.21 in which few (19) suspected cases of diarrhea were reported in the Balmiki Mohalla**,** Banga town.
- MPHS (m) & MPHW (M & F) of the concerned area were sent for preliminary survey of the area and for confirmation of reported news.
- After confirmation of the outbreak as an outbreak of diarrhea, district epidemiologist visited the area. Residents of local area from where first cases started being reported were met and few houses were visited for ascertaining the situation and cause of diarrhea and for inquiring about the condition of water being supplied in the houses.
- Nearly all the houses were being supplied the water from the piped water distribution by the municipality of Banga town. On enquiring many houses complained that water coming through taps in the houses was polluted (visibly dirty and foul smelling). It was more polluted sometimes ago than now. Now the condition has improved.
- Line-listing of the suspected patients was started on the format by house to house survey by team of MPHW (F & M) and MPHS (M) of the area. The data was gathered by verbal interviews, observations & survey formats.
- Water sampling was done from houses from where diarrhoea cases were reported and from houses which complained about polluted water and were sent to SPHL, Kharar, Punjab for testing. Majority samples were non potable (bacterial contamination)
- Later on, 3 blood samples (for testing by ELISA for Hepatitis A & E) and 2 stool samples for stool culture from houses were collected for lab confirmations of the cause of diarrhoea.
- The affected patients were educated about the mode of water borne diseases including diarrhoea and preventive measures and health education was imparted regarding these diseases. Patients had already been taking treatment from local alternative medicine practitioners or from private

practitioners. Few cases lately were reported to government health institutions.

- Municipal committee of Banga and sewerage board officials met and they were aware of situation and they briefed about the situation. It was told to them that there was some blockage at few points in underground sewerage system due to which sewerage overflow was there and that must have led to mixing with drinking water through piped water supply (there must be some leakage points in the water distribution system/pipes). The blockage points were cleaned up and now the sewerage was flowing normally and also the condition of the drinking water supply has improved to households.

- An appeal was being made for arranging alternate water supply through tankers to the affected areas and afterwards tankers were arranged for water supply in the affected areas and it continued for few days.

- Total of 33 diarrhoea cases were found during survey. All the patients were from Balmiki Mohalla, Banga town.

- Repeat water sampling was done from houses from where previous samples have failed. Majority samples were again found non potable (bacterial contamination)

- Stool cultures from houses were collected for lab confirmations of the cause of diarrhoea.

- The affected patients were educated about the mode of water borne diseases including diarrhoea and preventive measures and health education was imparted regarding these diseases. Patients had already been taking treatment from local alternative medicine practitioners or from private practitioners.

METHODS OF INVESTIGATION

Case definition: A standard case definition of Acute Diarrhoeal Disease case was followed according to IDSP case definitions: *"Acute watery diarrhoea (passage of three or more loose or watery stools in the past 24 hours) with or without dehydration."*

Laboratory methods: Laboratory confirmation by stool culture (as per Laboratory criteria for diagnosis i.e. **"stool culture positive for pathogenic organisms after 48 hours of incubation"** in the present outbreak) was done from DPHL (District priority health lab) District Hospital, Nawanshehar. Samples of

drinking water on two separate occasions (during and after outbreak) were sent for testing at SPHL, Kharar, Punjab.

S. No.	Type of Samples sent	Testing Laboratory	Number of sample Tested	Results
1)	Blood Samples for Hepatitis A or E	DPHL, District Hospital, SBS Nagar	3	**All samples negative** for Hepatitis A and E.
2)	Stool Culture	DPHL, District Hospital, SBS Nagar	2	**Growth of *E Coli* has been observed after 24-48 hrs of incubation and biochemical testing**
3)	Drinking Water sample (during outbreak)	SPHL, Kharar, Punjab	6	**4 failed** (all with bacterial contamination)
4)	Drinking Water sample (after outbreak)	SPHL, Kharar, Punjab	6	**5 failed** (bacterial contamination)

RESULTS

The time place person analysis of the outbreak reveals that the outbreak started in Banga town, block Sujjon, district Shahid Bhagat Singh Nagar.

- The first reported case was having date of onset in 18th week. After that, cases started rising rapidly (24 cases in 18th week). In next week two weeks, cases started declining rapidly (7 and 2 respectively). The last reported case was in the 20th week.
- All Age group were affected with 0-5 years age group slightly higher number of cases total of 33 cases.
- Male and female were affected in ratio being (M 67%: F 33%).
- All the cases have recovered reportedly. No deaths were reported in this outbreak

Time place person analysis:

Epidemic curve of the ADD outbreak: Time distribution

Distribution of cases according to week of onset/date of onset of illness

---Number of cases---

```
30   24
20       7
10           2
 0
```

18th week 19th week 20th week

----------------------------Week of onset/Date of onset of illness----------------------------

Person distribution

Distribution of cases according to age group

---Number of cases---

```
8
7   7
6                           5
5                               4
4           4       3       
3       3           
2           2
1                                   1           1
0                                       0
```

0-5 6 to 14 15-24 25-34 35-44 45-54 55-64 65-74 75-84 85-94

--Age group (Age in years)--
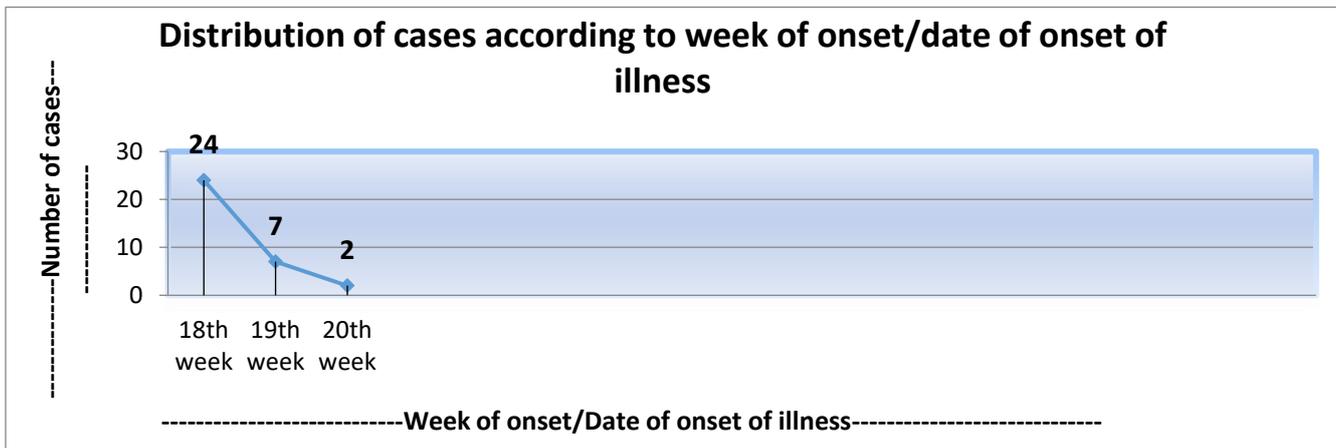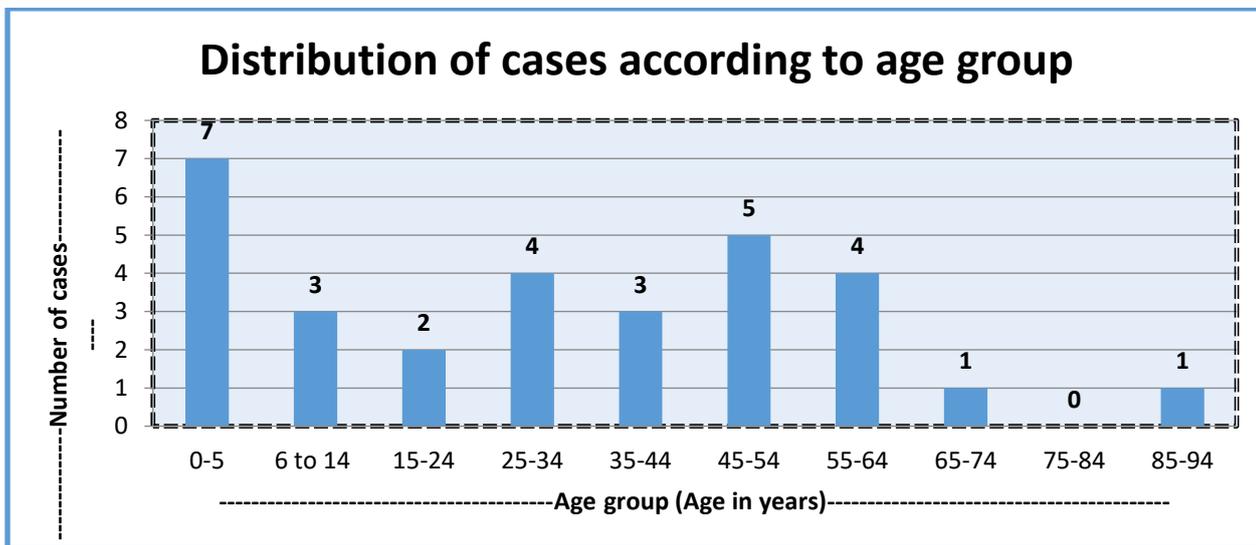
Sex distribution

Distribution of cases according to sex

11; 33%

22; 67%

■ Male
■ Female
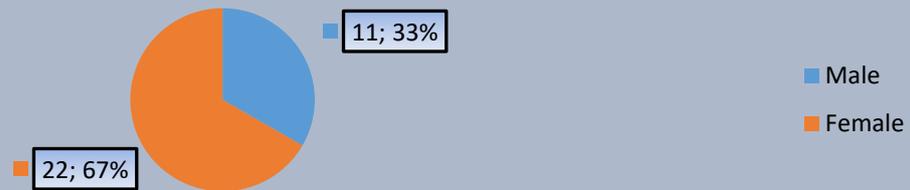
Fig. 2: Health team investigating the outbreak and house to house survey

CONCLUSION

- Total of 33 cases suspected ADD cases were found during survey.

- Growth of *E. coli* was observed on stool culture.

- The cause of outbreak was the overflowed sewerage due to sewerage blockage and then mixing of sewerage through water distribution pipes of the houses.

CONTROL / PREVENTIVE MEASURES UNDERTAKEN

- Rapid Response Team was activated and after confirming the outbreak. Control & prevention measures were started.

- Households were ensured to re-check their water purification systems and regular checking/servicing for their efficiency was stressed.

- Line listing of the suspected cases was done on format for IDSP outbreak line listing format provided to the workers.

- Active search for new cases by door to door survey was started by MPHW (M & F) and ASHA.
  - ✓ Chlorine pellets and ORS packets were distributed to the households. Also, the advice for boiling drinking water was given.
  - ✓ Pamphlets with water borne diseases prevention were distributed.
  - ✓ Identified Patients were referred to medical camp in the area was organized for check-up and treatment.
  - ✓ Water and stool/blood samples were taken to ascertain the cause of illness.

- During home to home survey health education regarding water borne disease prevention was imparted. Following points were highlighted:
  - Proper Hand washing education was given to households.
  - Prohibition of Outside eating/drinking education was given to households.
  - IEC regarding contacting health department in case of any complication(s) was given.

- Department of Local bodies/sewerage board was contacted for alternate water supply measures and repair of leakage points.

RECOMMENDATIONS

- Informing health department at the earliest in the future so that preventive activities may be started at the earliest in the school/households/other concerned areas.
- Sensitizing MOs/health staff by referring to examples of real outbreaks.

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

Fig. 3: RU-wise reporting based on P & L forms during May 2021
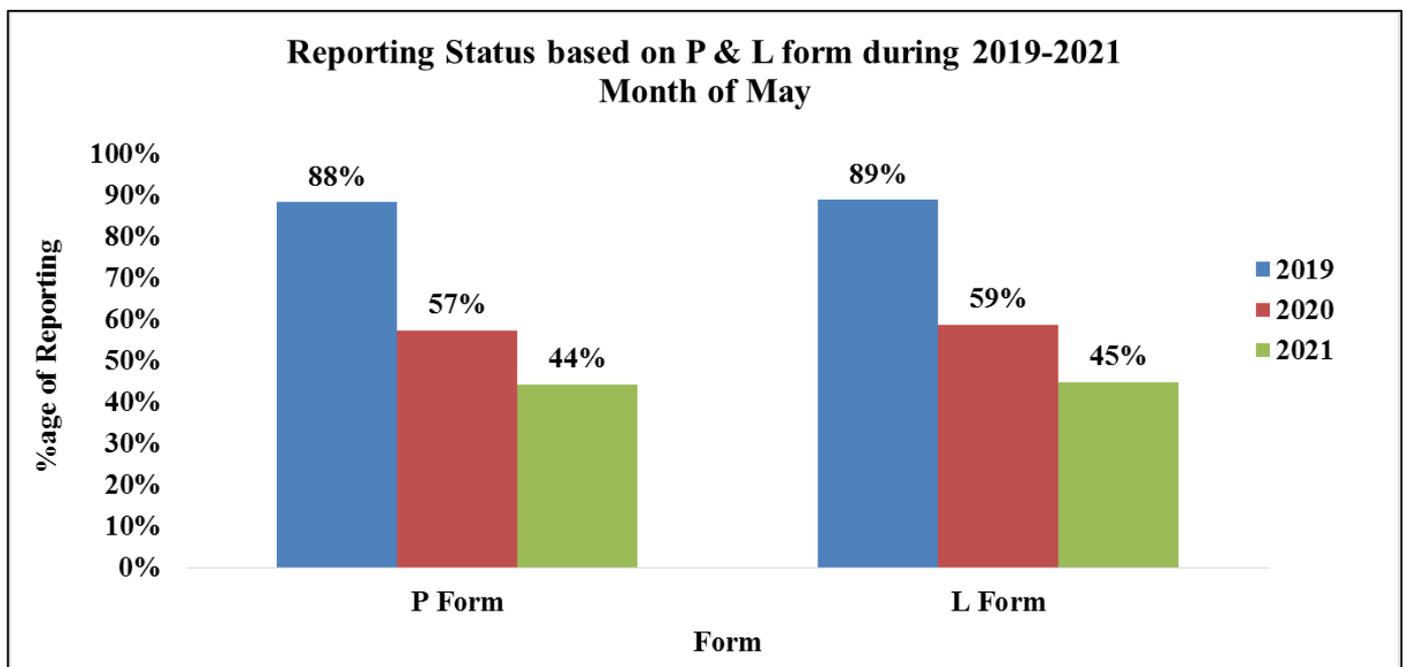
As shown in Fig. 3, in May 2019, 2020 and 2021, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 88%, 57% and 44% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 89%, 59% and 45% respectively 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 May 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 May 2021
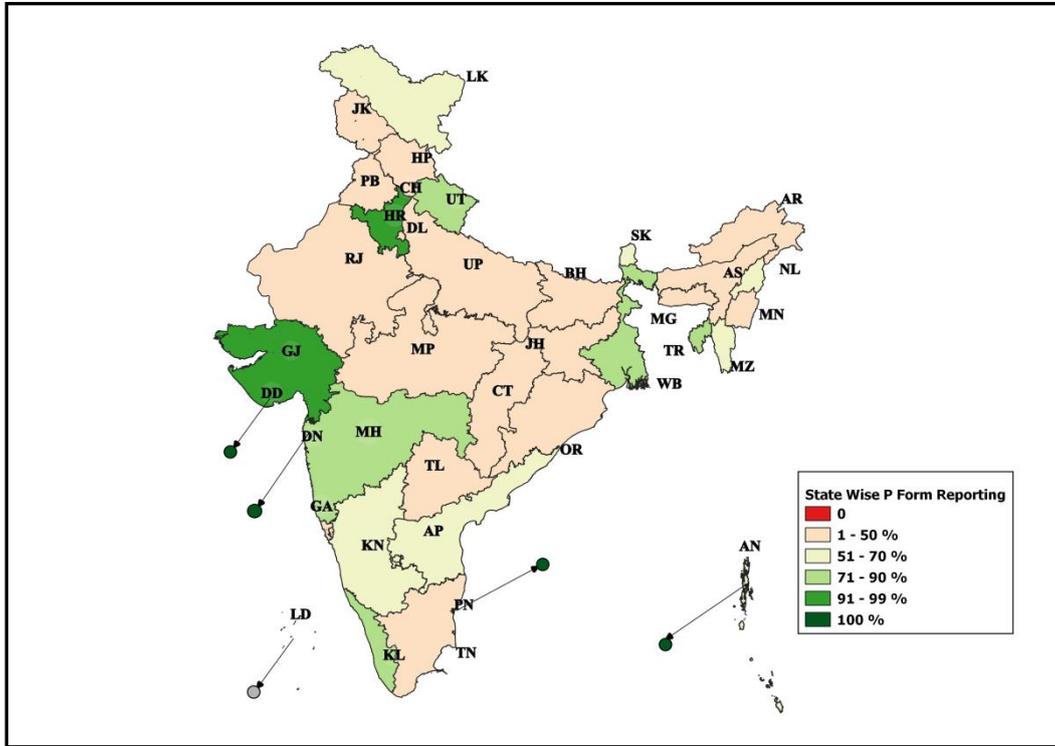
Fig. 5: State/UT wise L form completeness % for May 2021
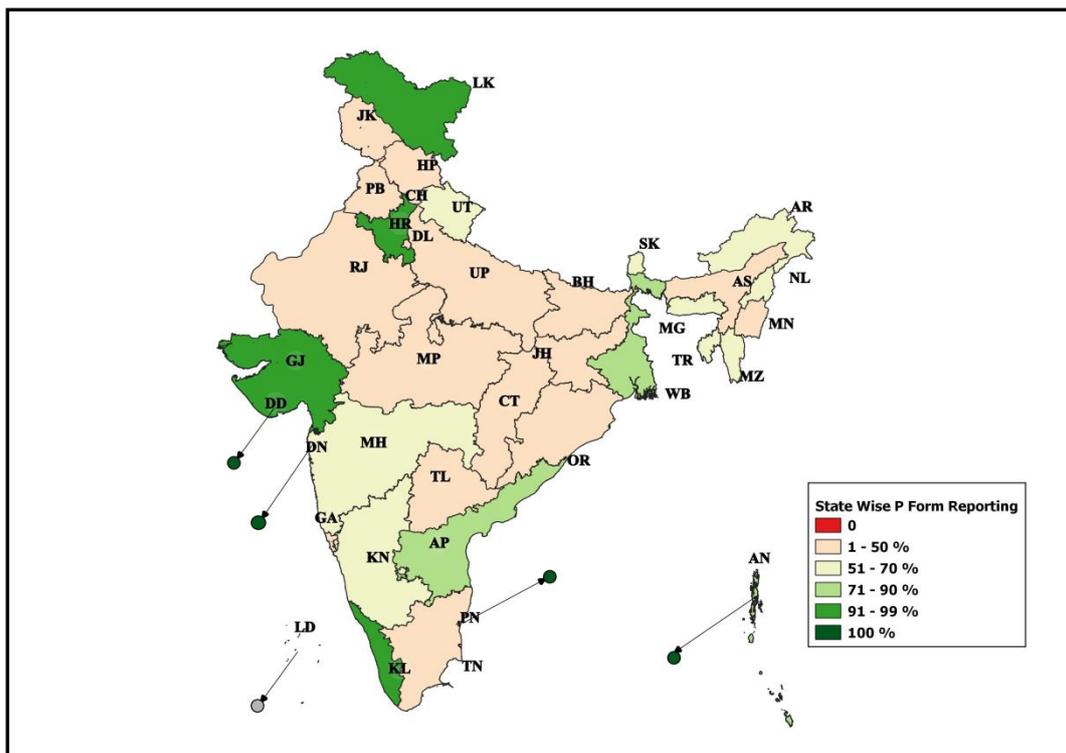
Fig. 6: No. of Enteric Fever Cases reported under P & L form during May 2019 - 2021

No of Cases reported under IDSP in P & L form form during 2019-2021 Month of May
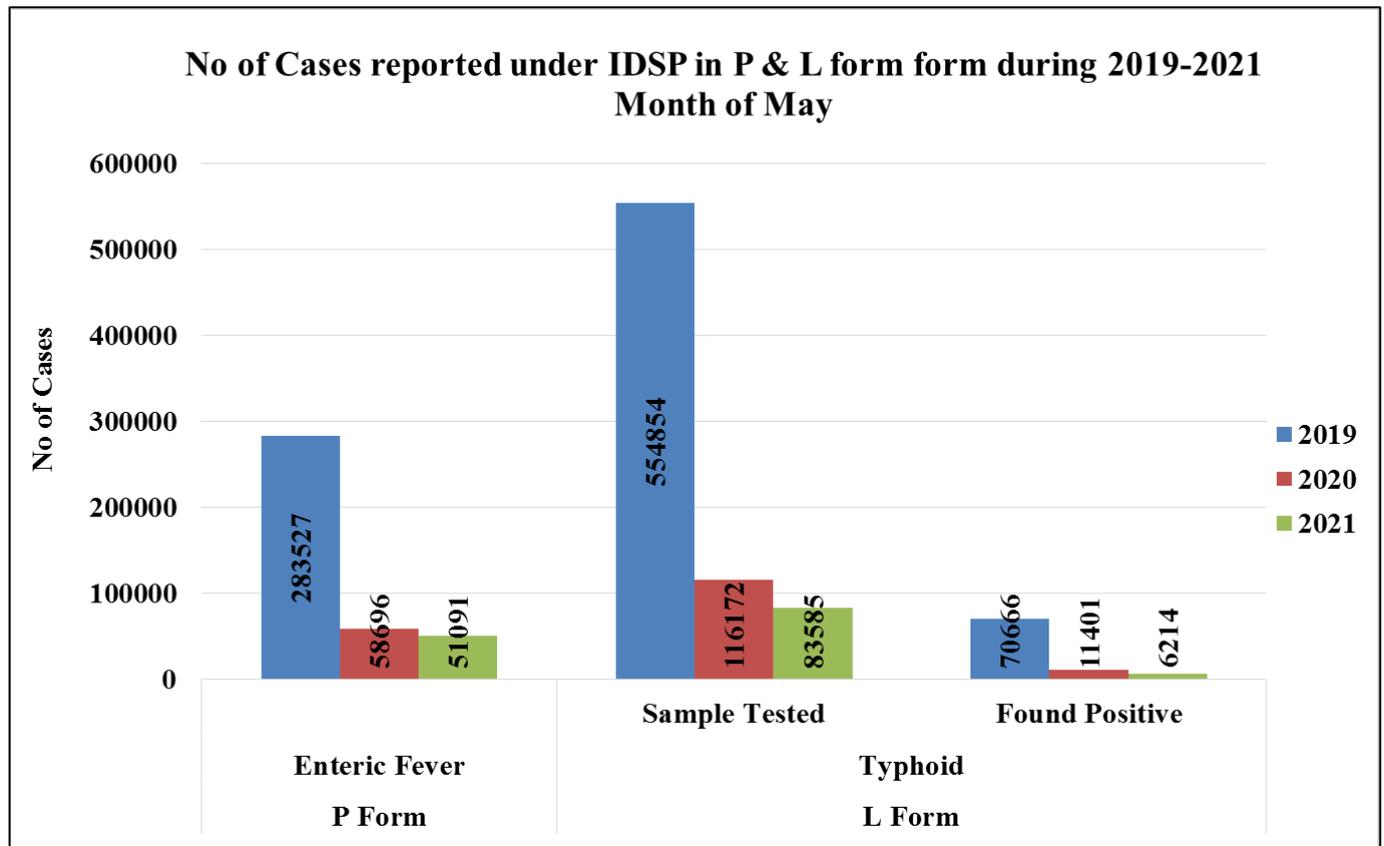
As shown in Fig. 6, number of presumptive enteric fever cases, as reported by States/UTs in 'P' form was 283527 in May 2019; 58696 in May 2020 and 51091 in May 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2019; 554854 samples were tested for Typhoid, out of which 70666 were found positive. In May 2020; out of 116172 samples, 11401 were found to be positive and in May 2021, out of 83585 samples, 6214 were found to be positive.

Sample positivity has been 12.74%, 9.81% and 7.43% in May 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 May 2021
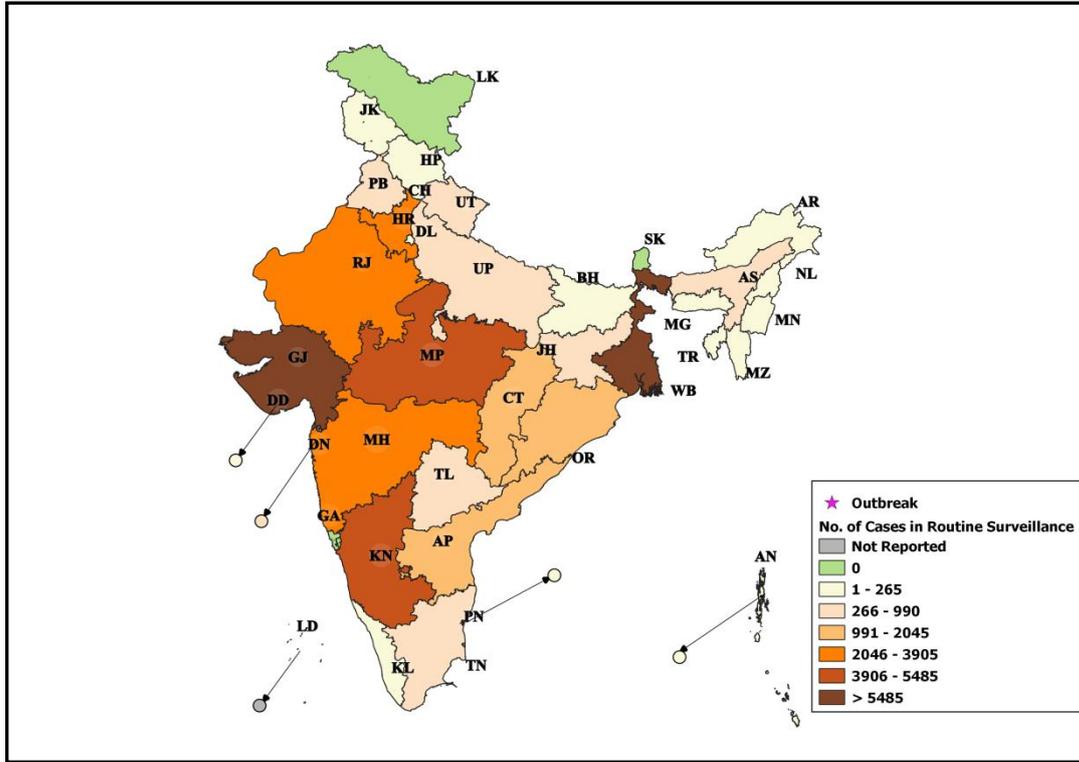
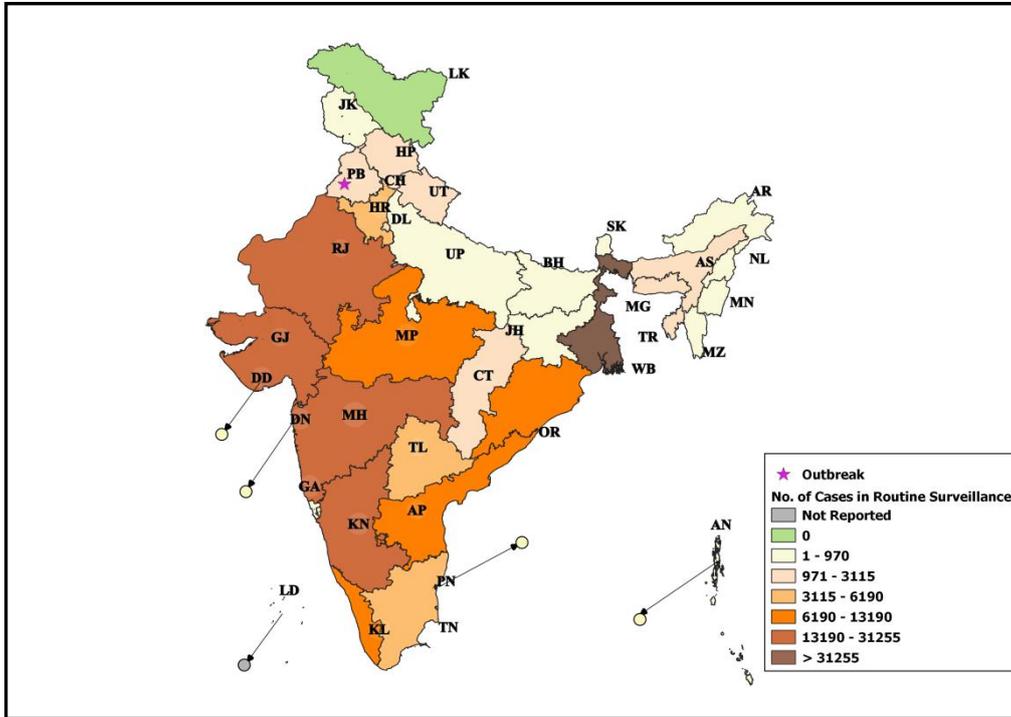*Fig. 8: State/UT wise Lab Confirmed Typhoid cases and outbreaks for May 2021*
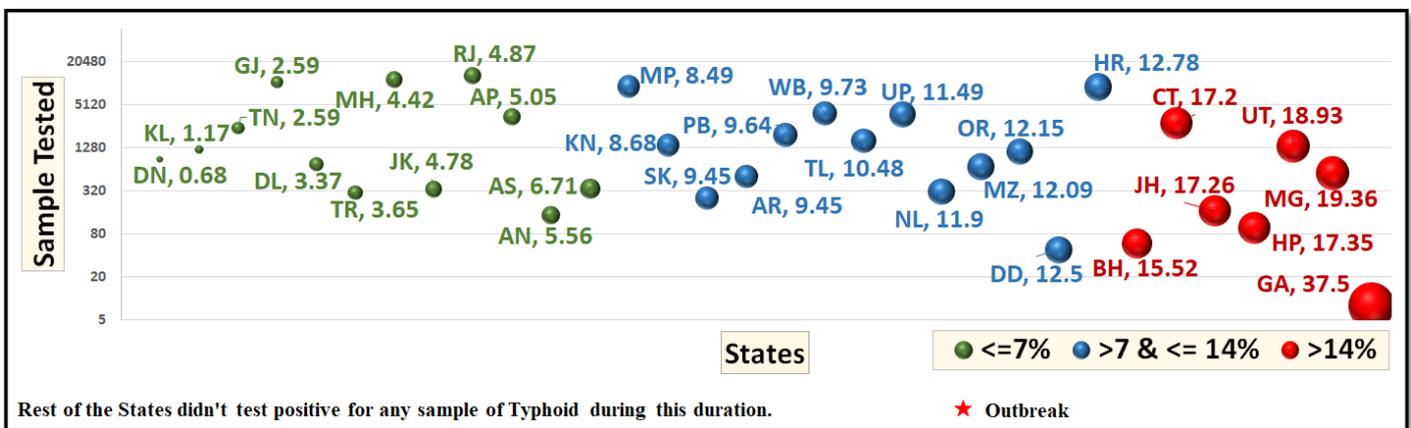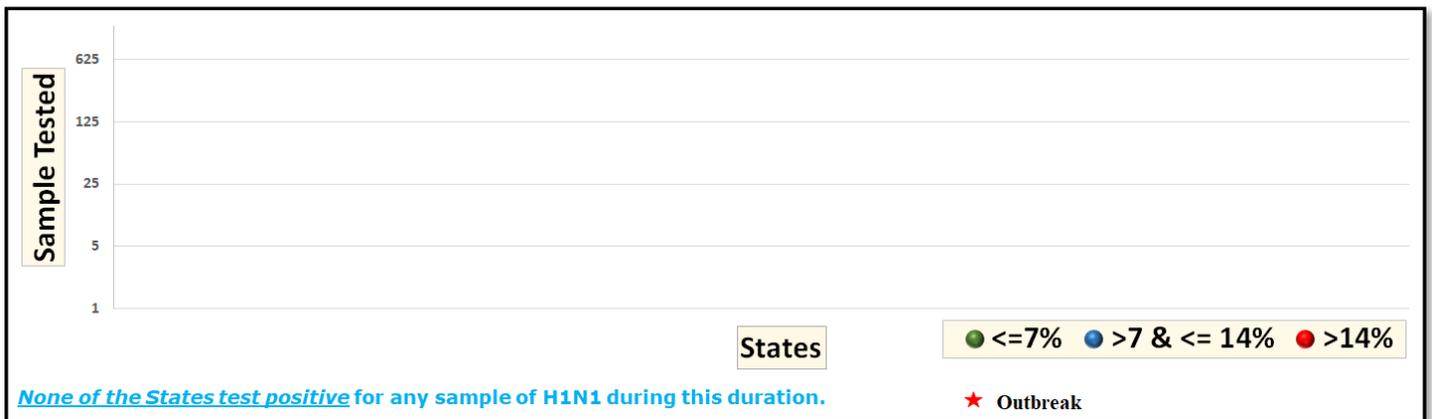
Fig. 9: No. of ADD Cases reported under IDSP in P Form & Lab confirmed Cholera cases in L form during May 2019 - 2021
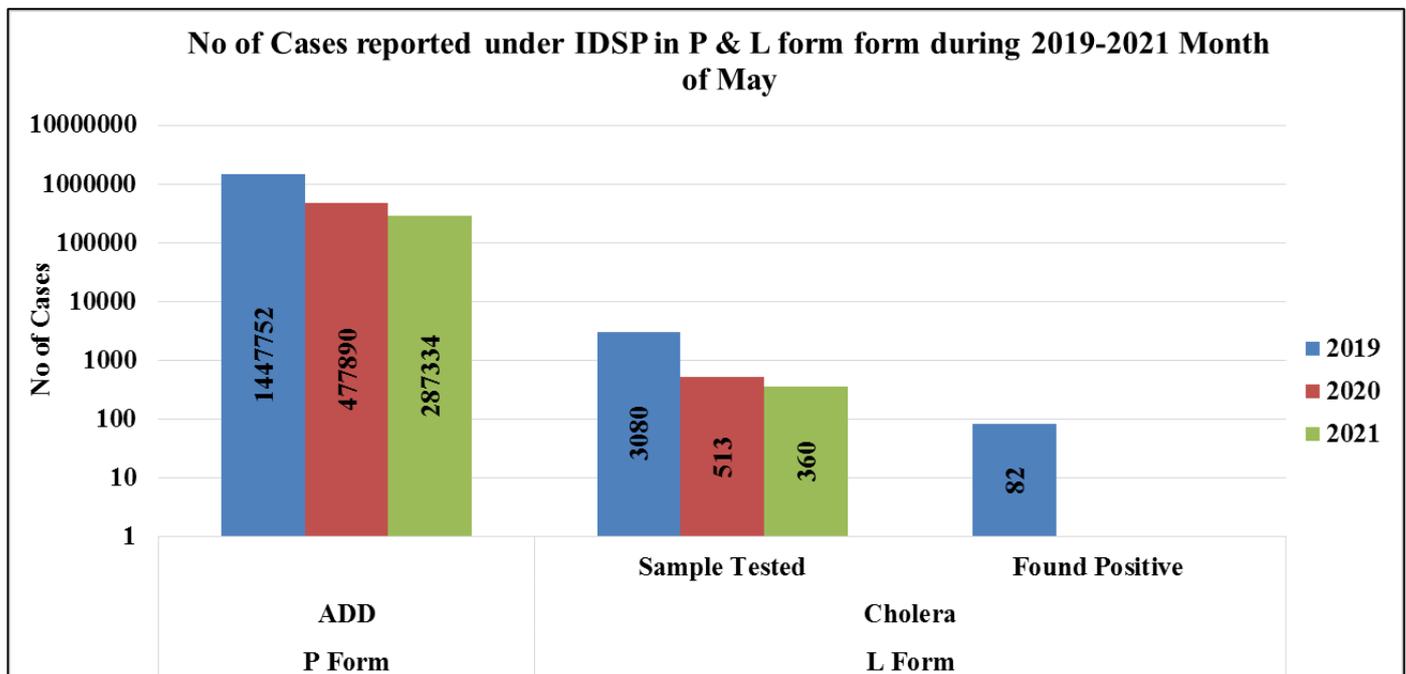
As shown in Fig. 9, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in 'P' form was 1447752 in May 2019; 477890 in May 2020 and 287334 in May 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2019, 3080 samples were tested for Cholera out of which 82 tested positive; in May 2020, out of 513 samples, 0 tested positive for Cholera and in May 2021, out of 360 samples, 0 tested positive.

Sample positivity of samples tested for Cholera has been 2.66%, 0% and 0% in May month of 2019, 2020 & 2021 respectively.

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

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

Fig. 12: No. of Viral Hepatitis Cases reported under IDSP in P form & Viral Hepatitis A & E cases reported under L form during May 2019 - 2021
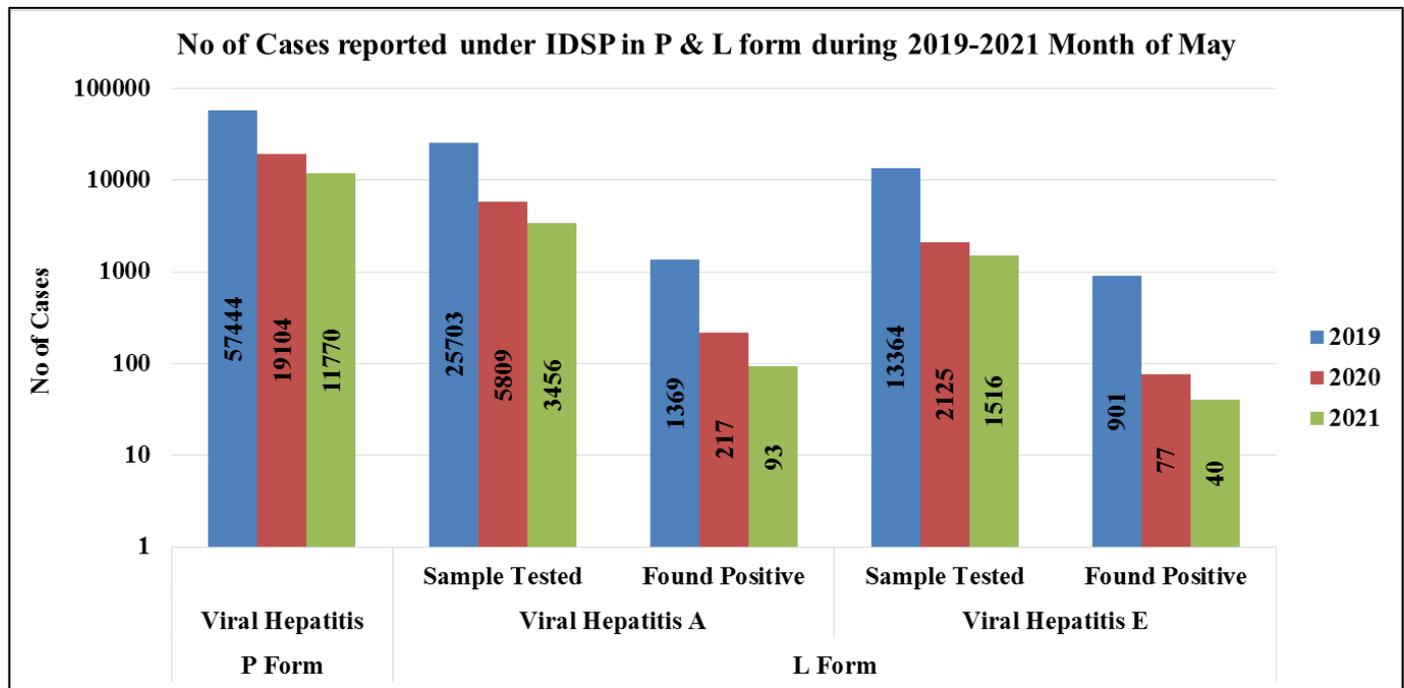
As shown in Fig. 12, the number of presumptive Viral Hepatitis cases was 57444 in May 2019, 19104 in May 2020 and 11770 in May 2021. These presumptive cases were diagnosed on the basis of case definitions provided under IDSP.

As reported in L form for Viral Hepatitis A, in May 2019; 25703 samples were tested out of which 1369 were found positive. In May 2020 out of 5809 samples, 217 were found to be positive and in May 2021, out of 3456 samples, 93 were found to be positive.

Sample positivity of samples tested for Hepatitis A has been 5.33%, 3.74% and 2.69% in May month of 2019, 2020 & 2021 respectively.

As reported in L form for Viral Hepatitis E, in May 2019; 13364 samples were tested out of which 901 were found positive. In May 2020; out of 2125 samples, 77 were found to be positive and in May 2021, out of 1516 samples, 40 were found to be positive.

Sample positivity of samples tested for Hepatitis E has been 6.74%, 3.62% and 2.64% in May month of 2019, 2020 & 2021 respectively.

Fig. 13: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for May 2021
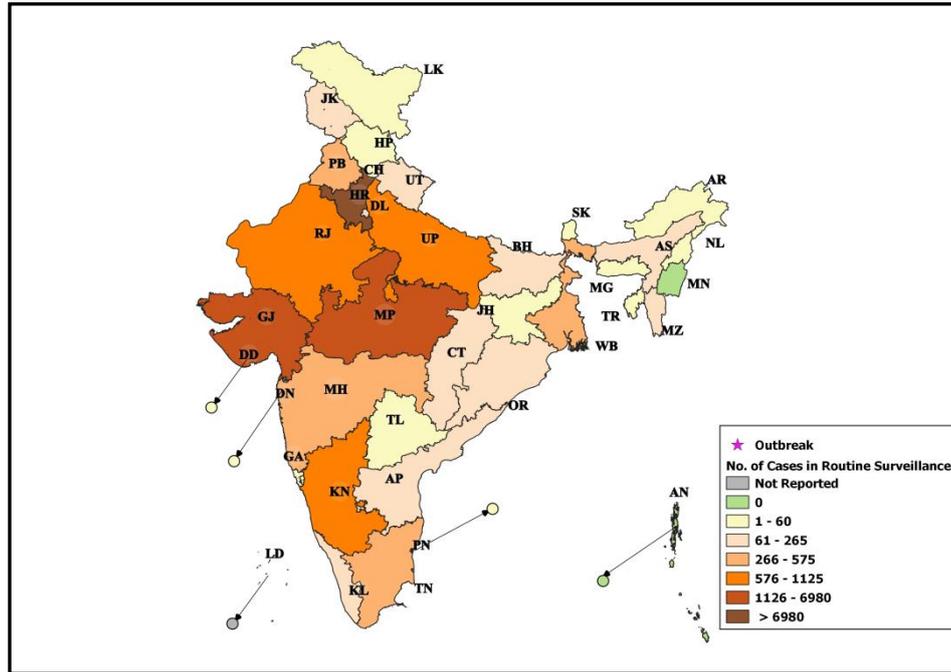
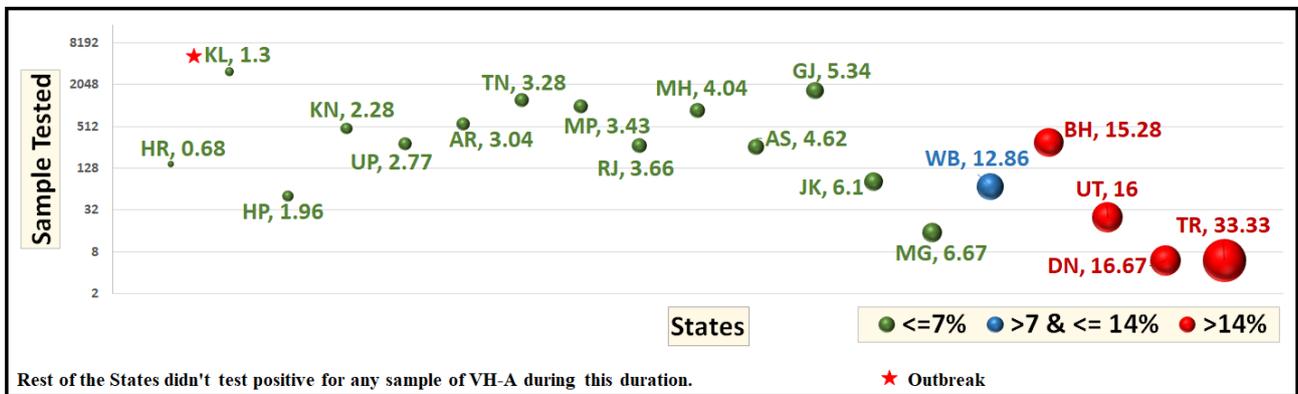*Fig. 14: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for May 2021*

Fig. 15: State/UT wise Lab Confirmed Viral Hepatitis E cases and outbreaks for May 2021
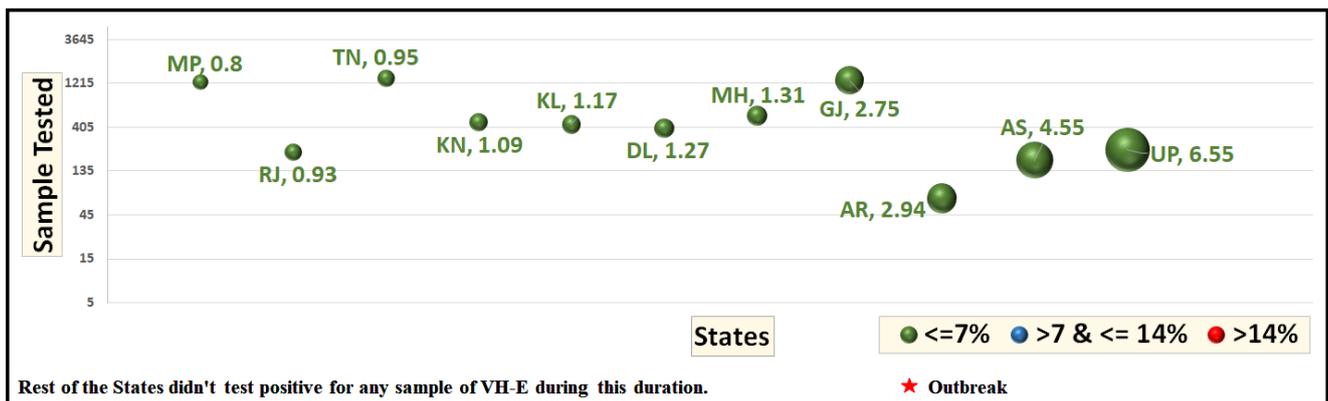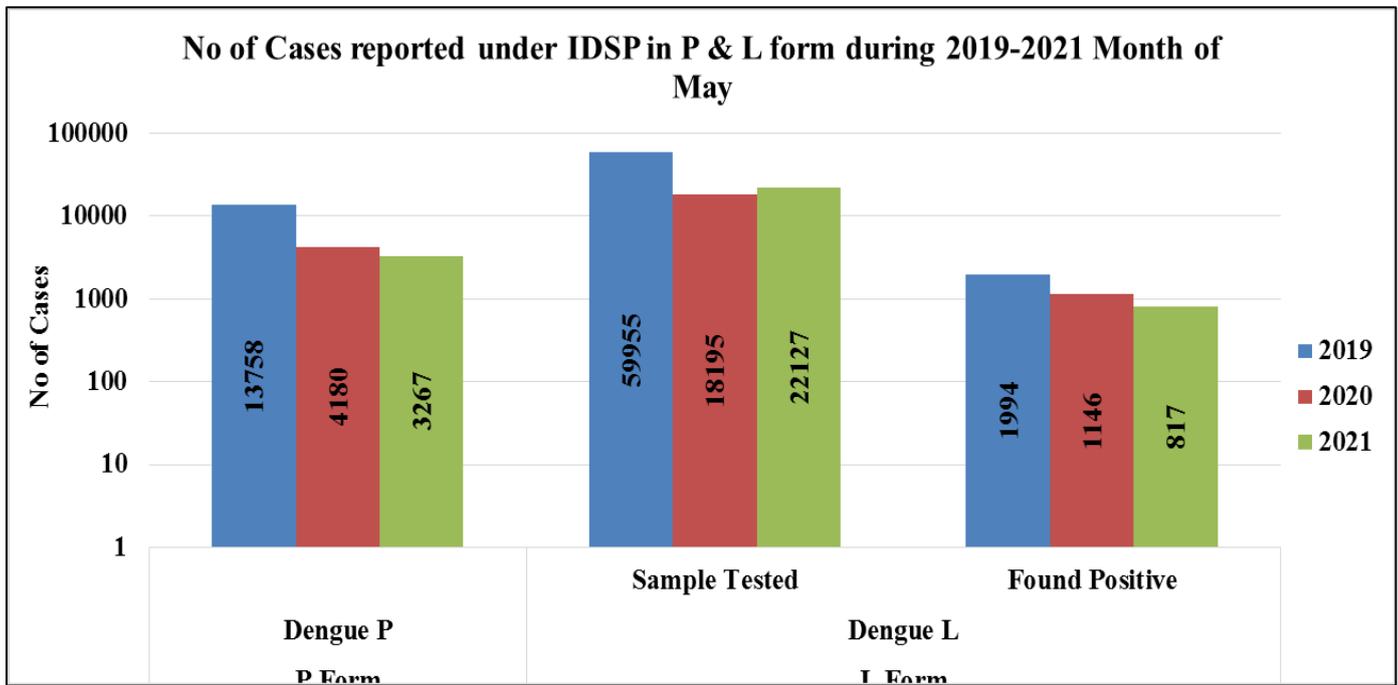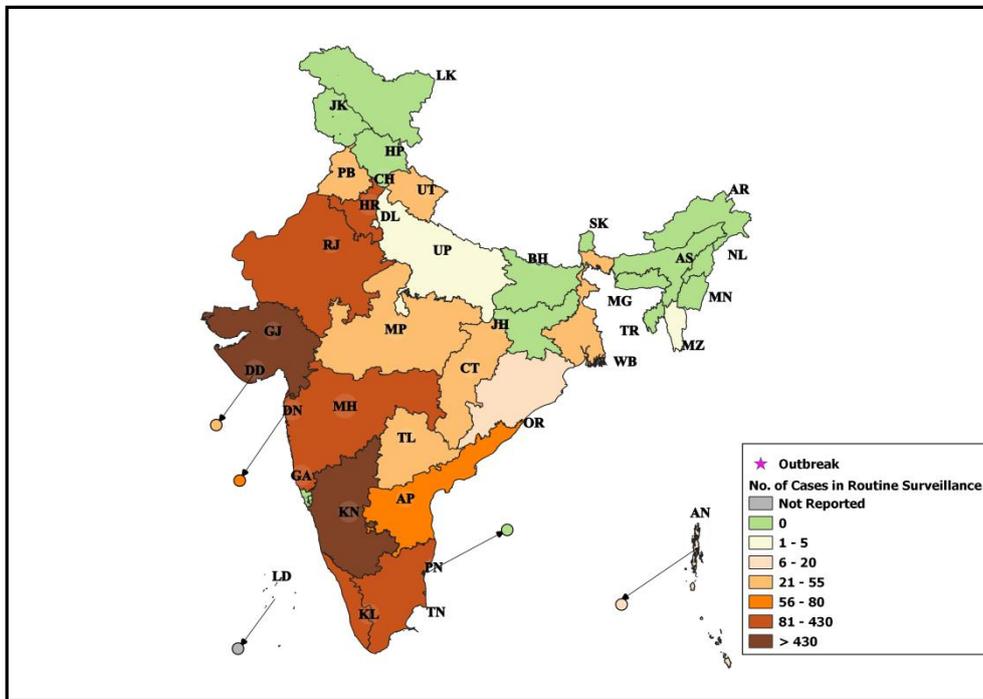
Fig. 16: No. of Dengue cases reported under IDSP in P & L form during May 2021

As shown in Fig. 16, number of presumptive Dengue cases, as reported by States/UTs in 'P' form was 13758 in May 2019; 4180 in May 2020 and 3267 in May 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2019; 59955 samples were tested for Dengue, out of which 1994 were found positive. In May 2020; out of 18195 samples, 1146 were found to be positive and in May 2021, out of 22127 samples, 817 were found to be positive.

Sample positivity of samples tested for Dengue has been 10.00%, 4.75% and 3.69% in May month of 2019, 2020 & 2021 respectively.

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

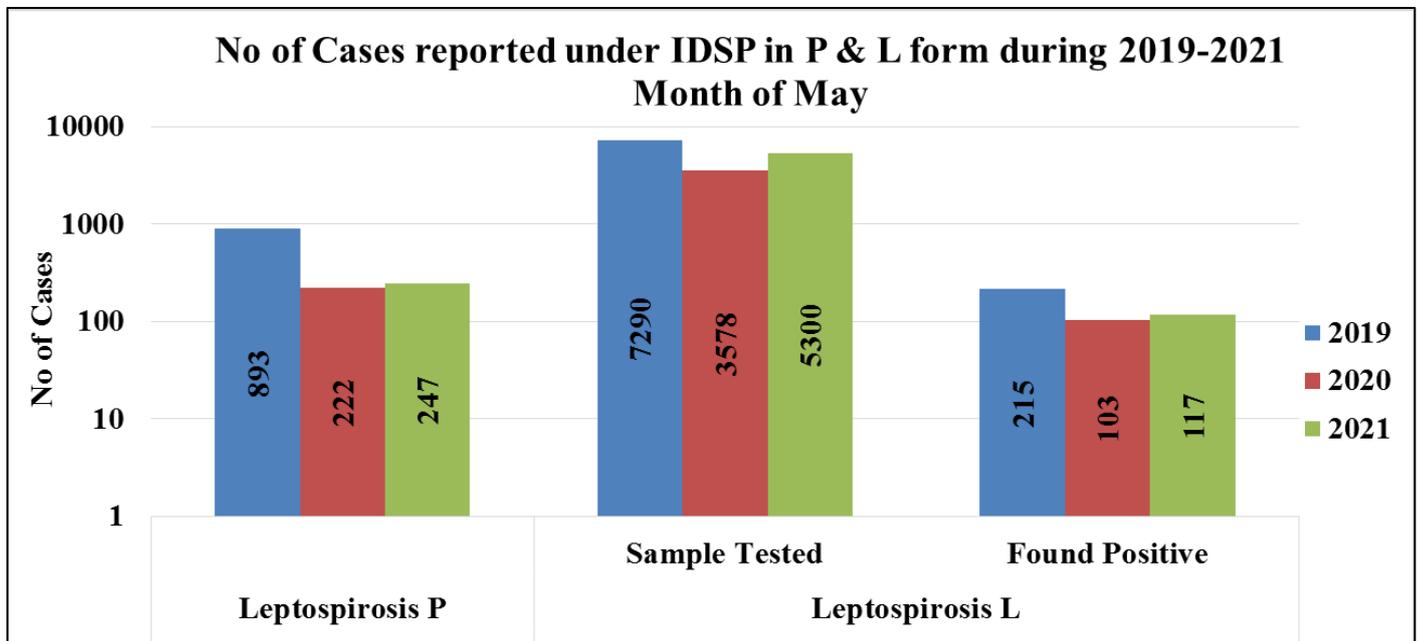*Fig. 18: State/UT wise Presumptive Dengue cases and outbreaks for May 2021*
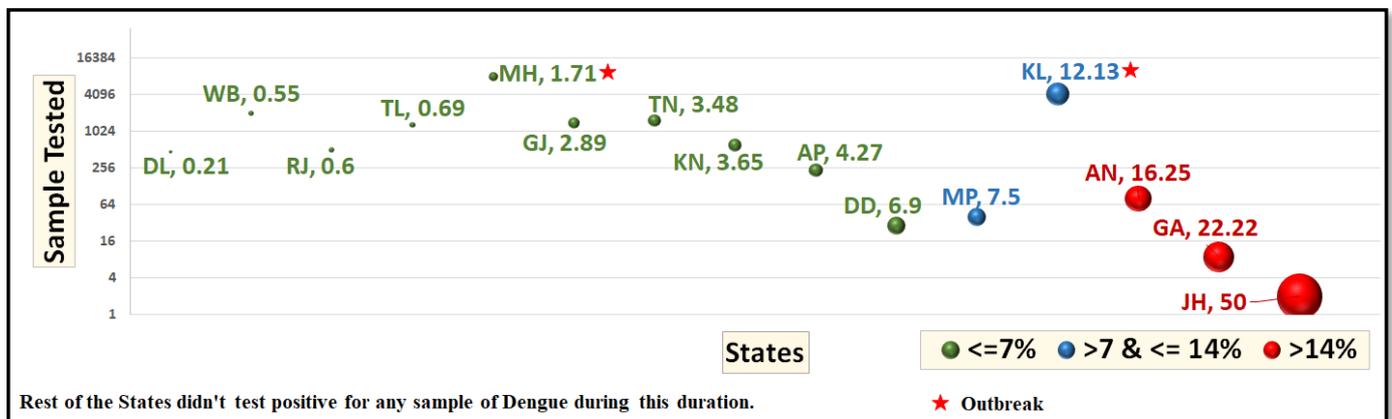
Fig. 19: No. of Leptospirosis Cases reported under IDSP in P & L form during May 2019 - 2021

As shown in Fig. 19, number of presumptive Leptospirosis cases, as reported by States/UTs in 'P' form was 1253 in April 2019; 185 in April 2020 and 435 in April 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in April 2019; 7325 samples were tested for Leptospirosis, out of which 233 were found positive. In April 2020; out of 2464 samples, 88 were found to be positive and in April 2021, out of 8486 samples, 239 were found to be positive.

Sample positivity of samples tested for Leptospirosis has been 3.18%, 3.57% and 2.82% in April month of 2019, 2020 & 2021 respectively.

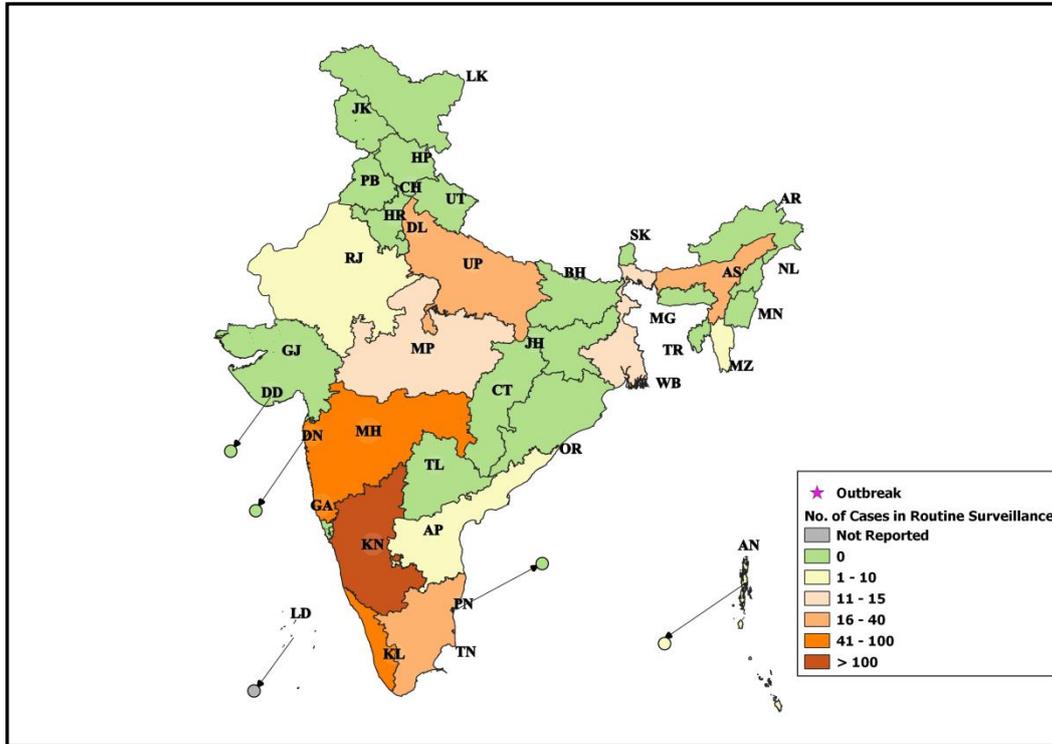## Fig. 20: State/UT wise Presumptive Leptospirosis cases and outbreaks for May 2021

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

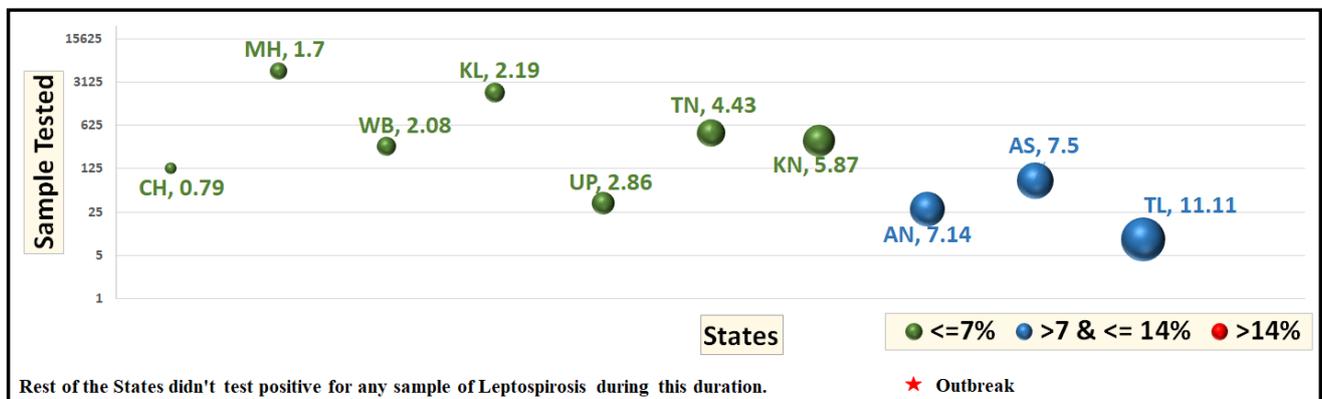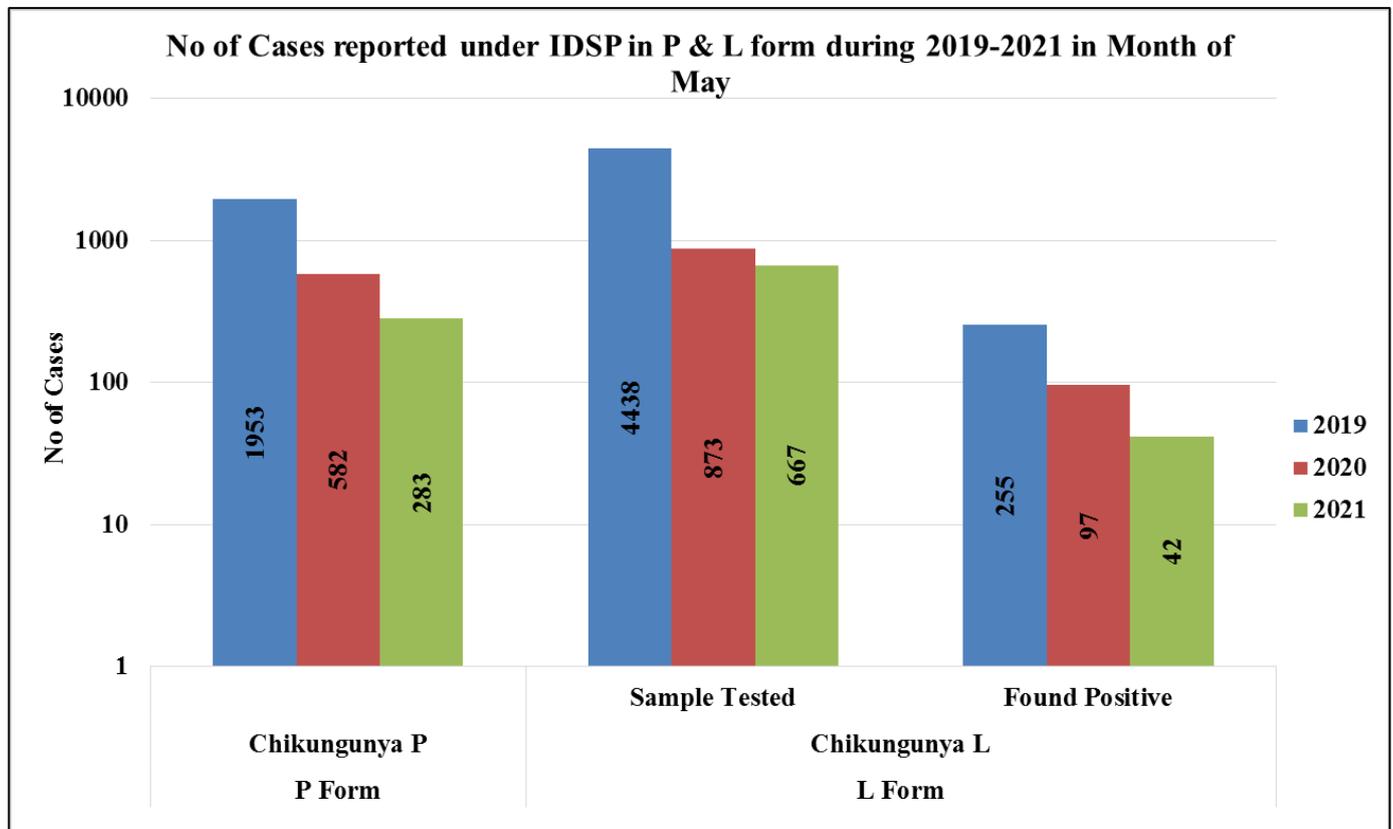Rest of the States didn't test positive for any sample of Leptospirosis during this duration.

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

As shown in Fig. 22, number of presumptive Chikungunya cases, as reported by States/UTs in 'P' form was 1953 in May 2019; 582 in May 2020 and 283 in May 2021. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in May 2019; 4438 samples were tested for Chikungunya, out of which 255 were found positive. In May 2020; out of 873 samples, 97 were found to be positive and in May 2021, out of 667 samples, 42 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 5.75%, 11.11% and 6.29% in May month of 2019, 2020 & 2021 respectively.

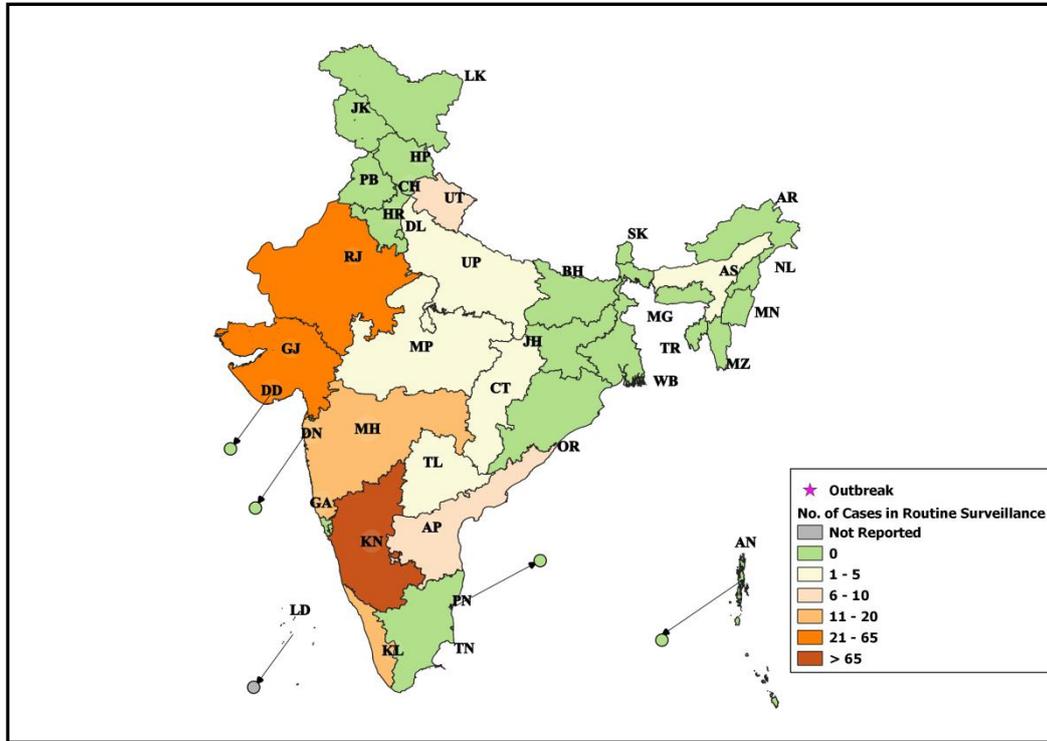*Fig. 23: State/UT wise Presumptive Chikungunya cases and outbreaks for May 2021*

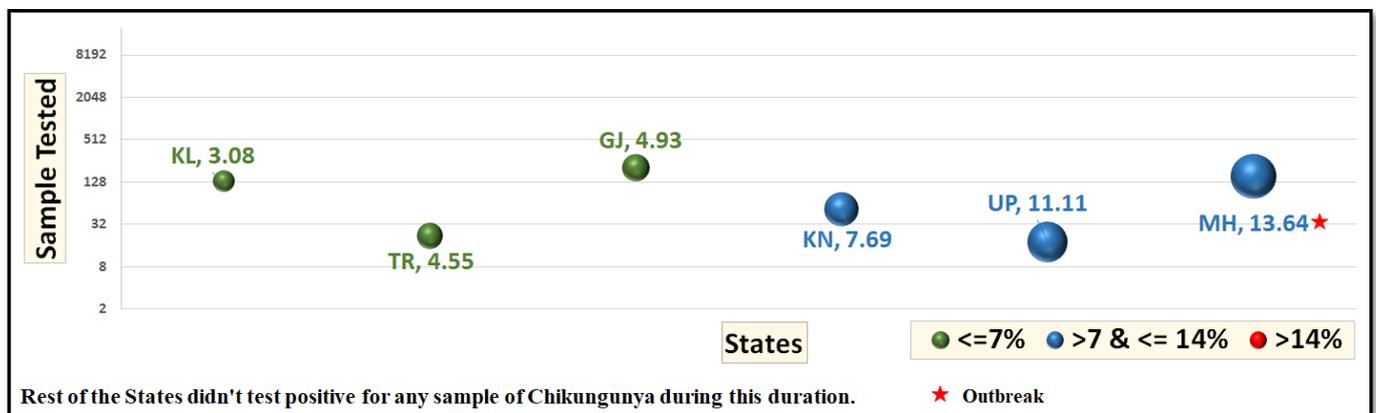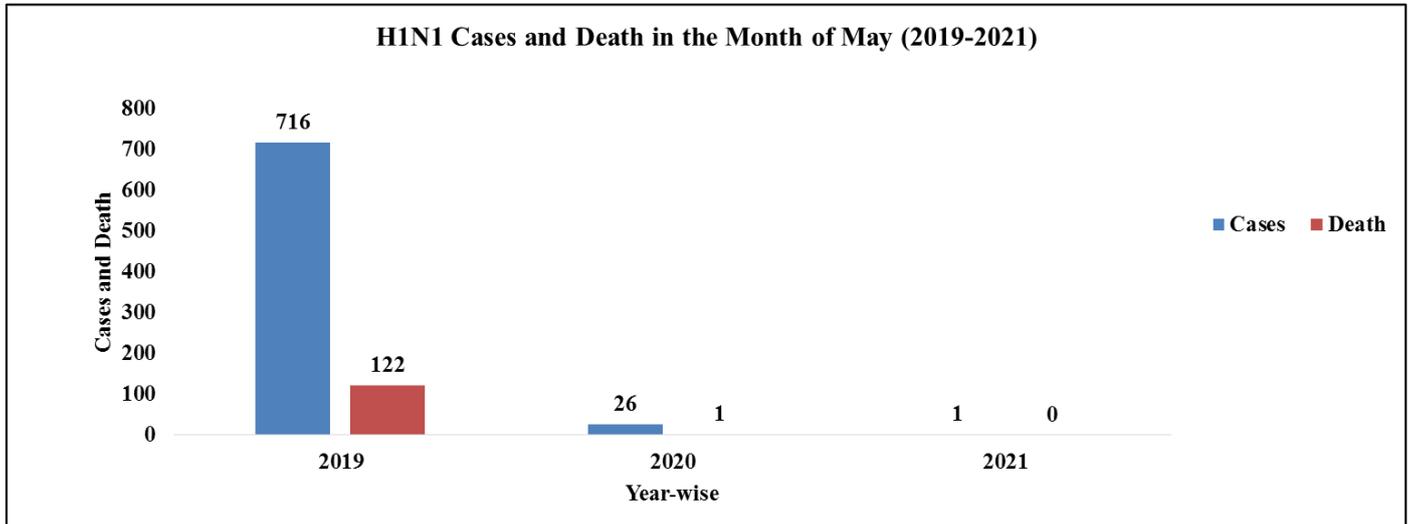*Fig. 24: State/UT wise Lab Confirmed Chikungunya cases and outbreaks for May 2021*

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

As shown in Fig. 25, as reported in L form, in May 2019, there were 716 cases and 122 deaths. In May 2020, there were 26 cases and 1 death; and in May 2021, there were 1 case and 0 deaths.

Case fatality rates for H1N1 were 17.03%, 3.84% and 0.00% in May month of 2018, 2019 & 2020 respectively.

Fig. 26: State/UT wise H1N1 cases and outbreaks for May 2021
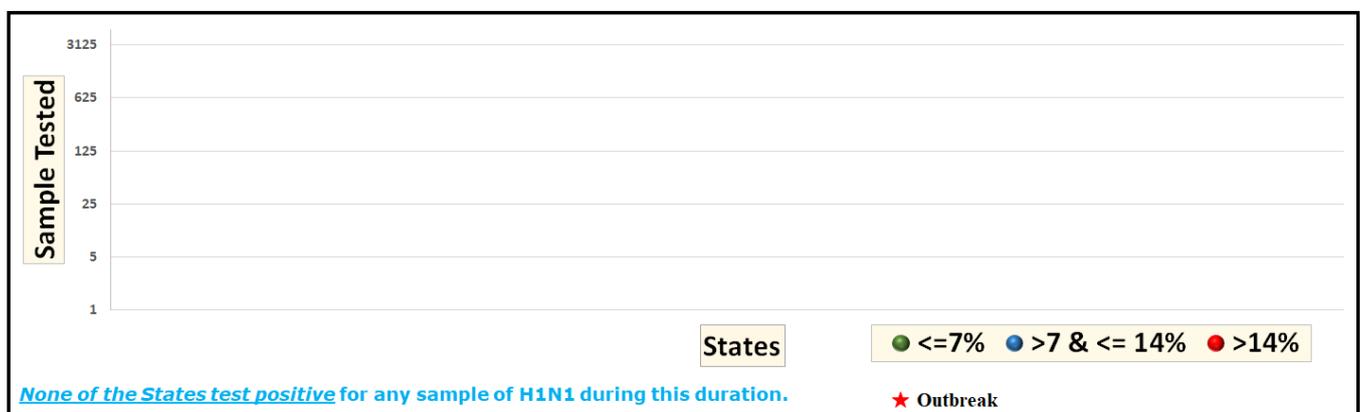
Action From The Field

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.

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