1699384/2020/O/O NCDC

Issue - 8 Vol. 4

Disease Alert
प्रकोप चेतावनी

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

August 2019

Inside

Cholera Outbreak Report at Gandhi Camp, Jalandhar, Punjab

Regarding Cholera:

Cholera is a water borne infection of small intestine caused by the some strains of bacterium Vibrio cholerae.

It can be a deadly disease if the diagnosis and treatment is delayed. The early arrival of patient to the health centre and early diagnosis may be life-saving. For investigating an outbreak of cholera, a good communication between ground-level health workers and Rapid Response Team (RRT) members like Epidemiologists becomes crucial. The more the patients are aware of water borne diseases like cholera, the better equipped they will be to protect themselves. It is noteworthy that epidemics of cholera are prevalent in the areas of bad hygiene and poor sanitation. These epidemics can be contained effectively if notification is done in timely manner.

In this particular outbreak the stagnant water in the streets after the rain as well as blockage in sewage system were the main cause. This led to the water in the MC water pipelines getting contaminated.

Routine surveillance and proper chlorination of water supply can reduce the emergence of water borne disease outbreaks. The results of culture showed the growth of Vibrio Cholerae in the drinking water. As well as the stool samples also showed growth of V. cholera on culturing.

V.cholera produces entero-toxins which cause diseases in humans. It produces watery diarrhea, vomiting, abdominal pain, muscle cramps and severe dehydration that lead to death of the patient if left untreated. Timely information from the local health workers (from the field survey) or from medical officers (hospital based OPD) to the higher health officials can help in preventing the causality due to WBDs.

Time of Onset

2-5 hours after exposure

Infective Dose

In water the infective dose is 103 – 106 organisms

Risk Factors

Contaminated water and food, combined with poor sanitation

Prevention

Improved sanitation & provision of clean drinking water

Treatment

Oral rehydration therapy, Zinc supplementation, Intravenous fluids, antibiotics.

Diagnostic Method

Stool Culture.

Symptoms

- Classic symptom is Watery Diarrhoea, classically "Rice Water Stools"
- Nausea & Vomiting
- Muscle cramps
- Severe Dehydration (due to intractable diarrhoea)
- Sunken eyes, cold skin, wrinkling of hands and feet (signs of dehydeation)

DETAILS OF INVESTIGATION:

Verification of Outbreak

Information regarding suspected Cholera patients was first received from a microbiologist at a private hospital. After receiving the information RRT along with Medical Officer along with their team of ANM and ASHA of local Urban Dispensary as well as MPHW (M) responded immediately. The team started the house to house survey immediately to find new cases. Realizing the gravity of situation, RRT formed a formal Case Definition of suspected Cholera cases in this outbreak -

Case definition used for this outbreak

"*A case for the outbreak was defined as any person who drank water from the Municipal Council Supply which was presumed to be contaminated and had experienced the symptoms of pain in stomach, Vomiting and passage of watery loose stools more than 3 times per day after drinking water".*

Investigations by RRT:

- RRT contacted the area MO and MPHS (F) to investigate the cause of outbreak. Team visited the affected area along with ANM and ASHA and MPHW (M). The detailed flowchart of activities done by RRT is enclosed below.
- The team contacted the Councillor of the area and she supported the team during survey, community interaction and communication with the other departments.
- Municipal Corporation was informed immediately. The water supply of the area was disconnected immediately by the department and a water tanker was provided by the Municipal Corporation, Jalandhar. The team checked the leakage points and corrected 3 points.
- House to house survey was done by the team to search for cases of diarrhoea.
- A medical camp was organized in the Civil Dispensary, Gandhi Camp.
- Chlorine tablets, ORS sachets and Zinc tablets were distributed to suspected patients.

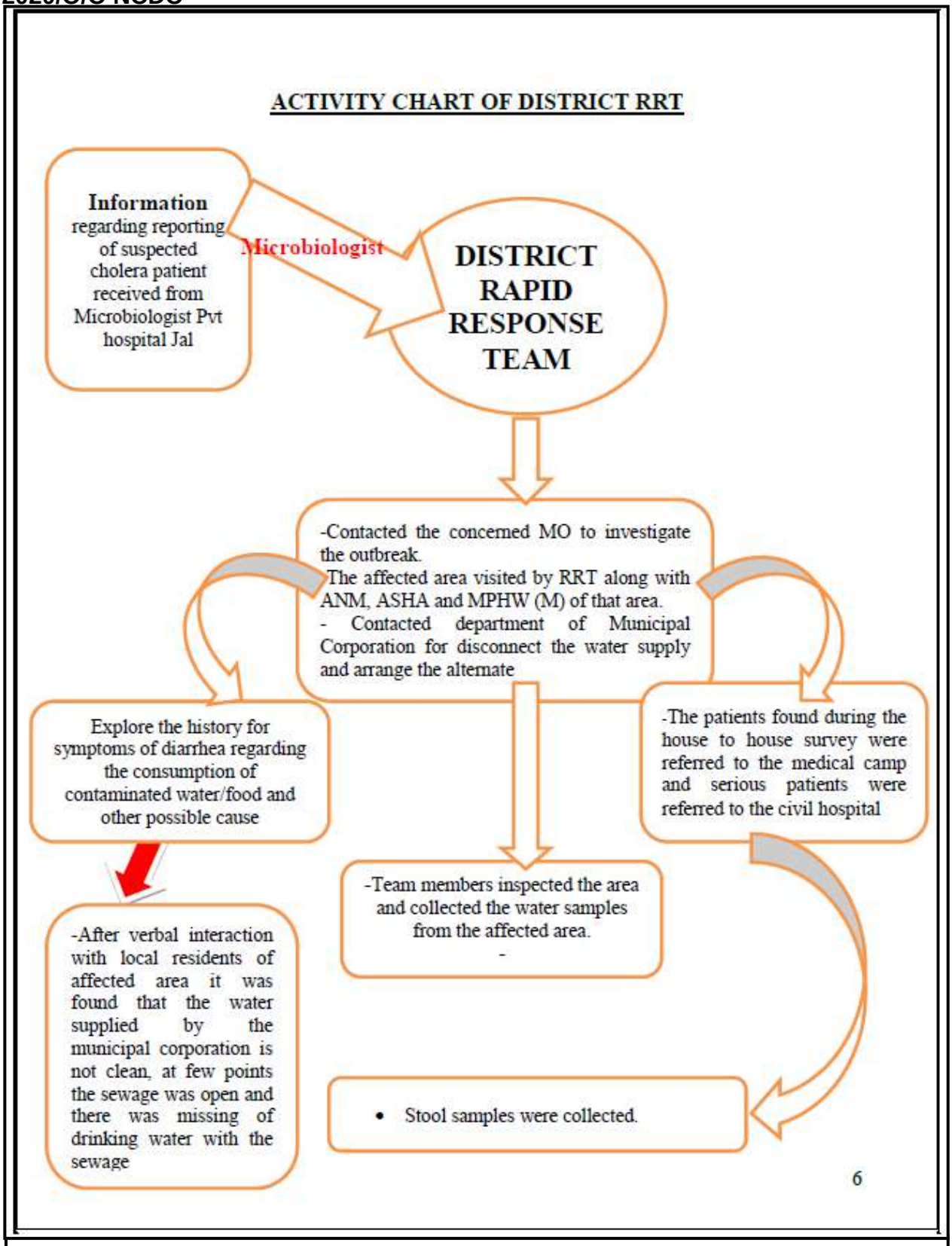

Fig.1: Activity Chart of District Chart during Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab

- IEC activities regarding water borne diseases was done. Along with this announcement through the Gurudwaras and local mandirs was also done continuously in the morning and evening.
- 5 Water samples were collected and sent to State Public Health Laboratory, Chandigarh for bacterial examination.
- 3 water samples were collected and sent to District Public Health laboratory, Jalandhar.

- Sterile stool collection containers were given to the patients suffering from diarrhoea to collect the stool samples. Clinically the main symptoms were loose stools and few cases of with vomiting. 7 Stool samples were collected for culturing.

DESCRIPTIVE EPIDEMIOLOGY

Person wise analysis

- The total population of the affected Mohalla is approx. 9500.
- Out this, 102 were examined in the medical camp out of which 18 had symptoms.
- Age group from 0-10 yrs is the most affected group. However, there were no death reported

Table 1: Distribution of cases, admissions and deaths according to the age group during Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab

Age groups	Cases	Deaths	Admissions
0-10 yrs	6	0	1
11-20 yrs	0	0	0
21-30 yrs	5	0	1
31-40 yrs	2	0	1
41-50 yrs	4	0	1
≥51 yrs	1	0	0

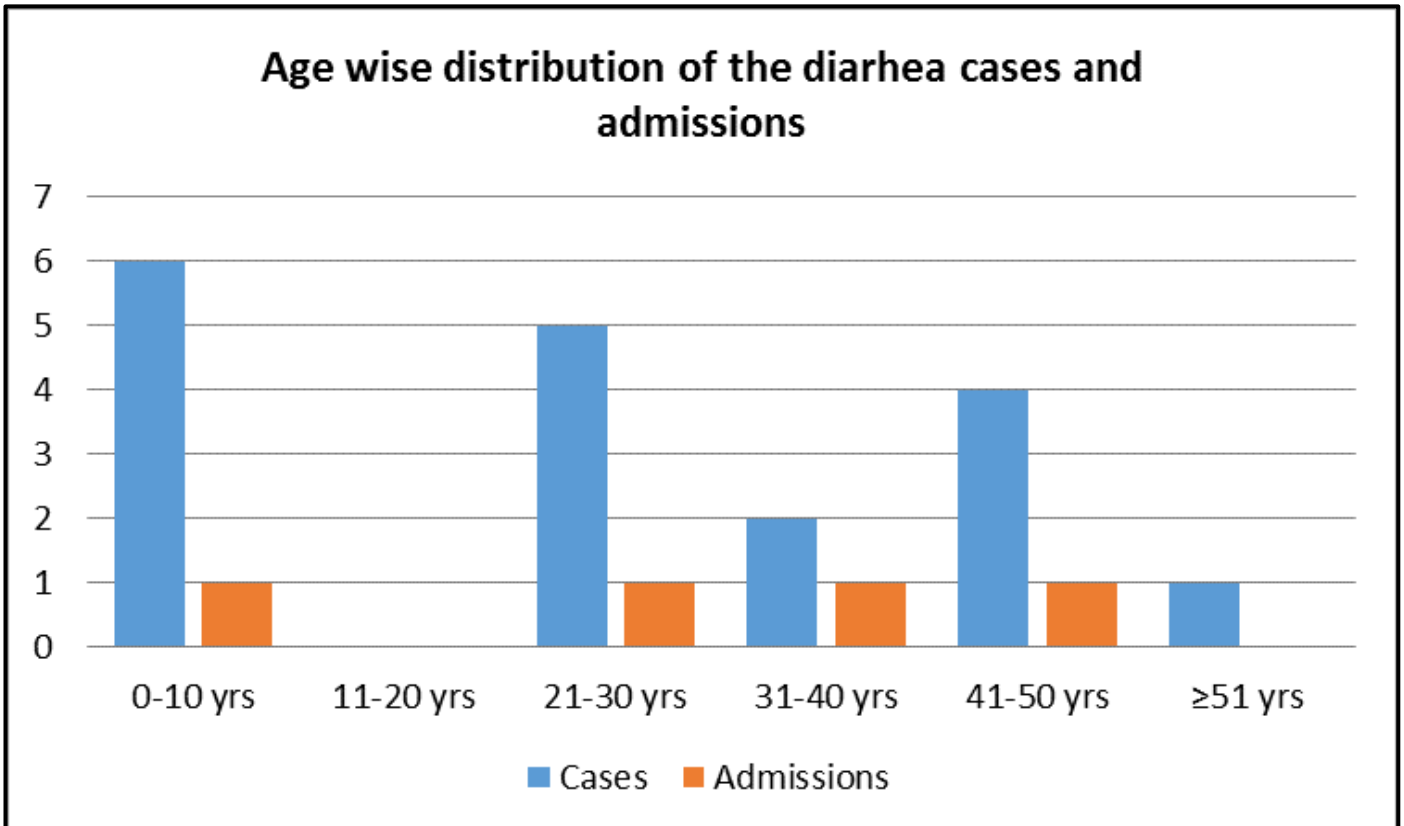

Fig.2: Age wise distribution of cases during Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab

There were total 18 cases who were infected out of which 5 (28%) were males and 13 (72%) were females.

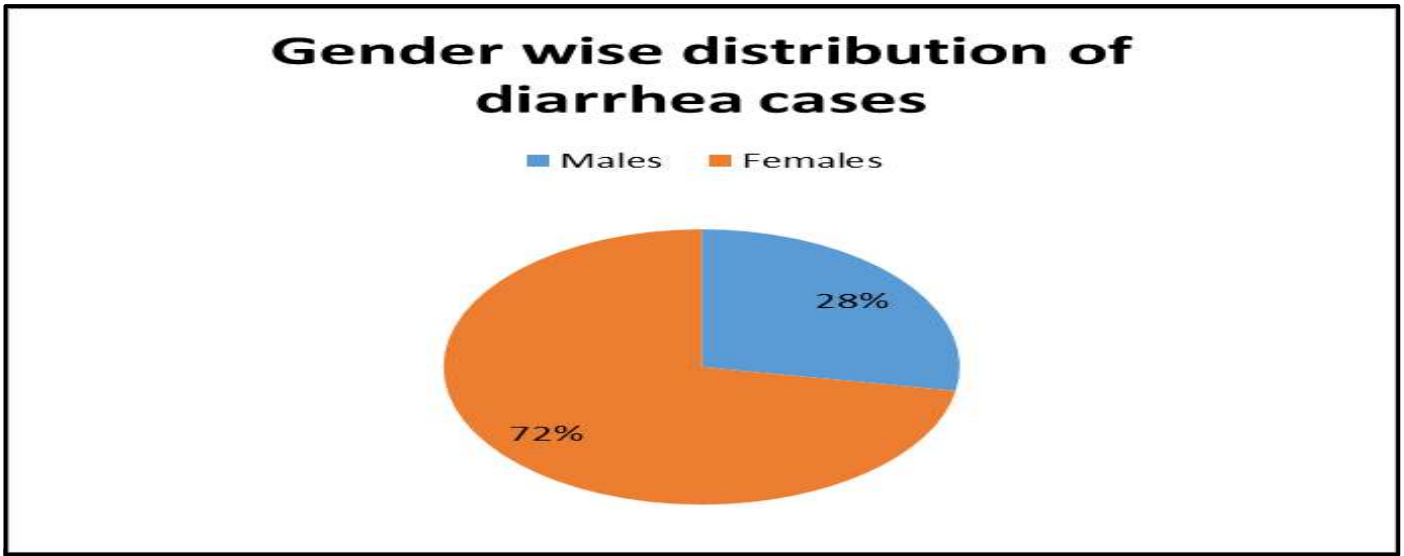

Fig.3: Gender wise distribution of cases during Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab

Attack Rate

This is defined as the number of exposed persons infected by the disease divided by the total number of exposed persons.

In this outbreak, there are total 18 persons who developed symptoms of gastroenteritis and out of which 4 were admitted. Hence attack rate here is

$$\text{Attack rate} = \frac{\text{number of exposed persons infected with the disease}}{\text{Total number of exposed persons}} \times 100$$

$$= 18/9500 \times 100 = 0.19\%$$

Time wise analysis

The number of new cases, OPD at dispensary and houses surveyed are:

Table 2: Distribution of cases of according to date of reporting of cases during Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab

Dates	No. of new cases	Total OPD at dispensary	Houses surveyed
18-07-19	6	0	60
19-07-19	2	13	75
20-07-19	2	15	292
21-07-19	3	17	195
22-07-19	4	19	285
23-07-19	1	10	275
24-07-19	0	12	375
25-07-19	0	16	345
Total	**18**	**102**	**1902**

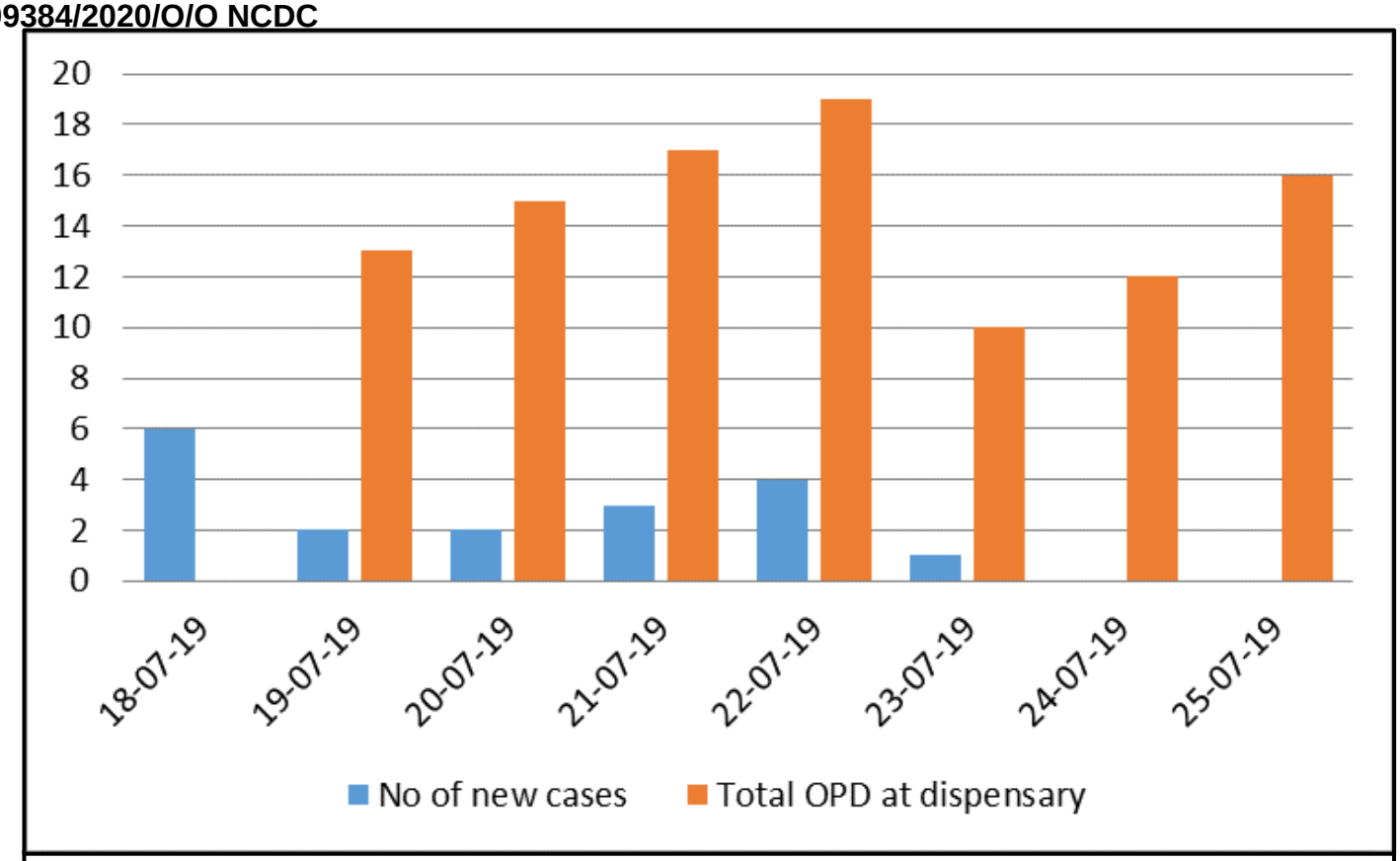

Fig. 4: Bar Chart showing the Comparison of number of cases visited the medical camp and number of patients who developed the symptoms date wise during Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab

Location Map

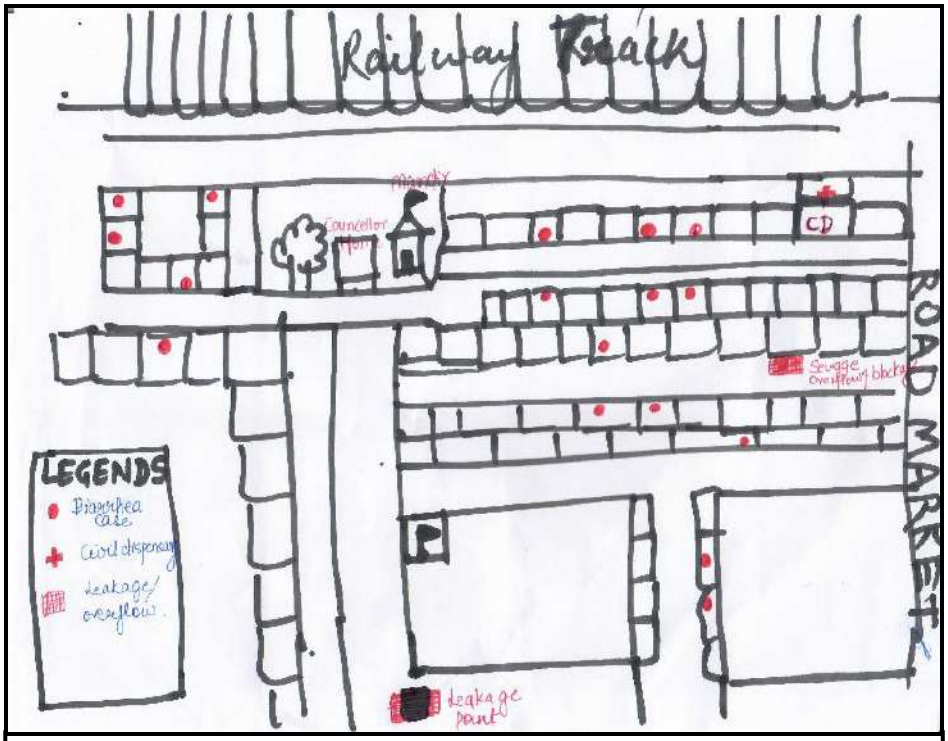

Fig. 5: Spot Map of the area of Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab.

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Laboratory Results

Table 3: List and number of different Samples taken during Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab						
Type of Sample sent	**Laboratory**	**Date of collection of Samples**	**Date of Reporting**	**Number of sample Tested/ Type of test**	**Results (Positive /Total Samples tested)**	**Interpretation**
Stool Culture	DPHL, Jalandhar	18 July to 23 July 2019	19 July to 24th July 2019	7/Culture	**6 out of 7 Positive**	Growth of Vibrio Cholera positive
Water sample (For Bacteriological Examination)	State Public Health lab, Chandigarh	19.07.2019	21.07.2019	5/Bacteriological examination	**4 out of 5 Positive**	Bacterial Contamination
Water Sample Culture	District Public Health lab Jalandhar	19.07.2019	20.07.2019	3/Culture	**2 out of 3 Positive**	Growth of Vibrio Cholera positive

Actions taken:

1. Health Education regarding boiling of water and hand washing technique were given to the affected persons and local residents.
2. Instructions regarding the maintenance of hygiene and sanitation were given.
3. Chlorine tablets were distributed in every house.
4. A water tank was also provided by the Municipal Council for the area.
5. Information related to chlorination of drinking water was also imparted by the health staff.
6. Heath awareness regarding WBDs were given by the MPHS(M)
7. Follow up of the patients was done by the local health workers of the concerned dispensary.

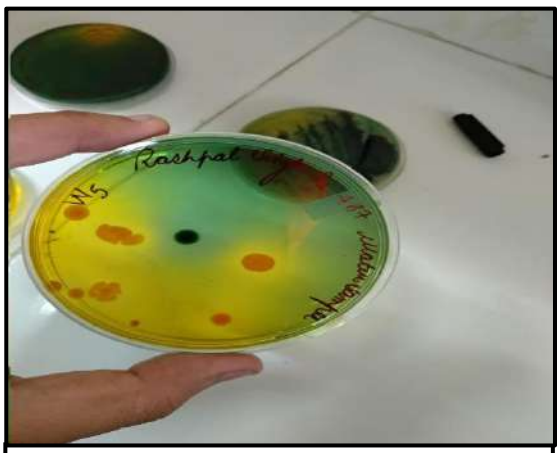


Fig. 6: Sample Collection (Stool Sample) during Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab.

TCBS (Thiosulphate Citrate Bile Salt Sucrose agar)

Green Plate is the control Plate and Yellow plate is contaminated Plate with Vibrio Cholera

Conclusions

The bacterial examination reveals that the infection was due to *Vibrio Cholerae*. Possibly, the drinking water was contaminated with bacteria which was consumed by the local residents without chlorination or boiling. This may have led to outbreak of Cholera.

Fig. 7: Health team conducting investigations during Cholera Outbreak at Gandhi Camp, Jalandhar, Punjab.

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

* Data extracted from IDSP Portal (www.idsp.nic.in) as on January 23, 2020.

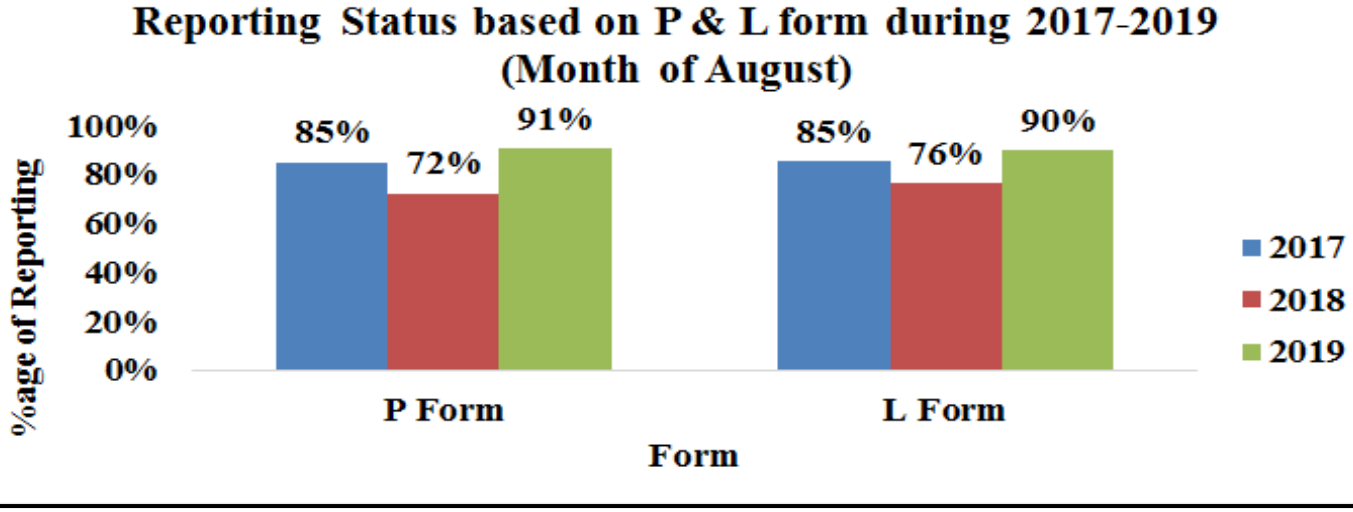


Fig. 8: RU wise reporting based on P & L form during August 2017 - 2019

As shown in Fig 8, in August 2017, 2018 and 2019, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 85%, 72% and 91% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 85%, 76% and 90% 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 9: State/UT wise P form completeness % for August 2019

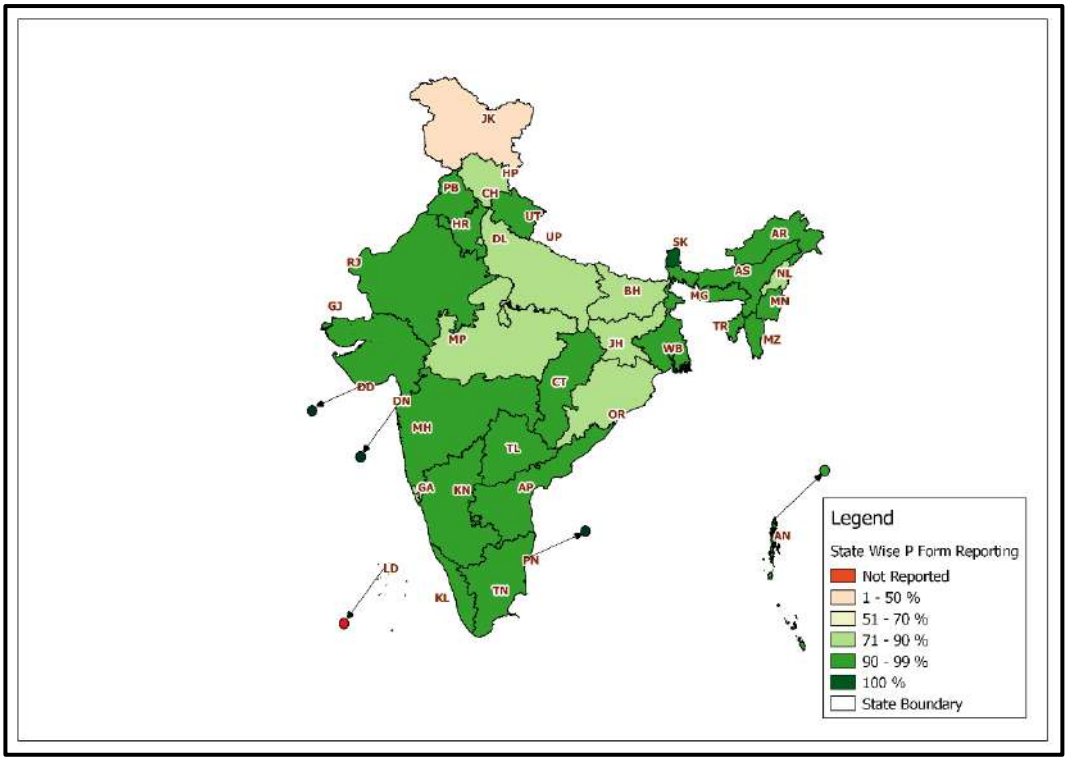
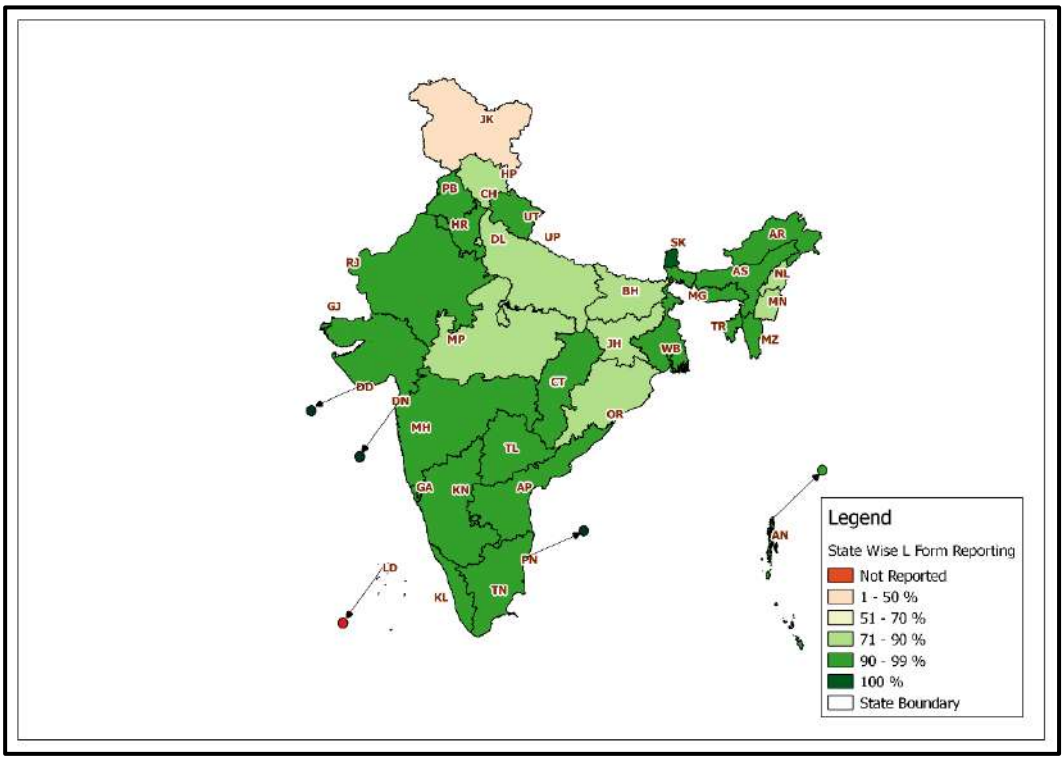


Fig 10: State/UT wise L form completeness % for August 2019



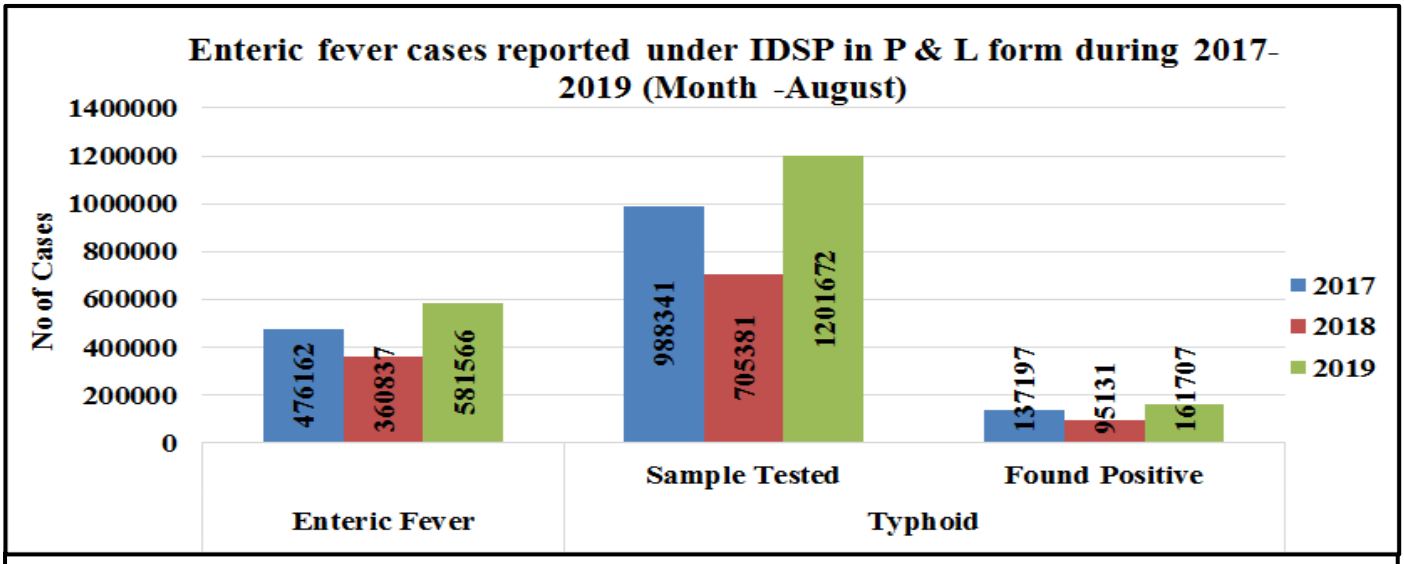


Fig. 11 No. of Enteric Fever Cases reported under P & L form during August 2017 - 2019

As shown in Fig 11, number of presumptive enteric fever cases, as reported by States/UTs in 'P' form was 476162 in August 2017; 360837 in August 2018 and 581566 in August 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in August 2017; 988341 samples were tested for Typhoid, out of which 137197 were found positive. In August 2018; out of 705381 samples, 95131 were found to be positive and in August 2019, out of 1201672 samples, 161707 were found to be positive.

Sample positivity has been 13.88%, 13.49% and 13.46% in August 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.

Fig 12: State/UT wise Presumptive Enteric fever cases and outbreaks for August 2019

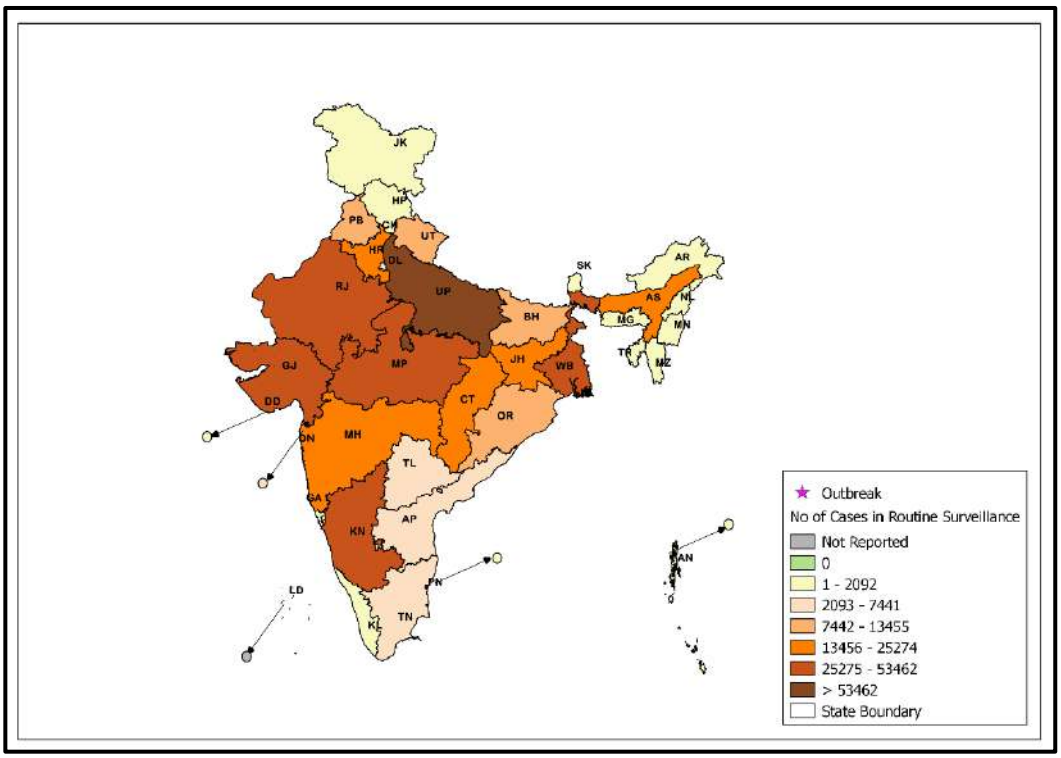
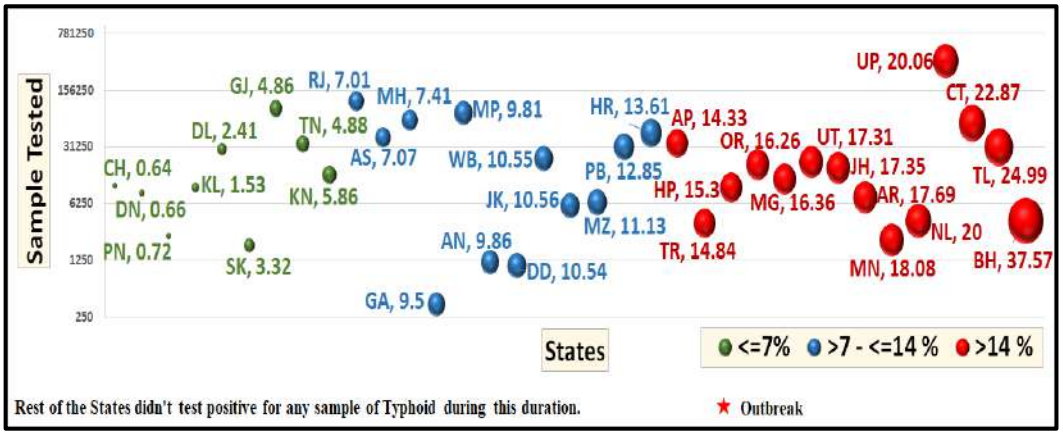


Fig 13: State/UT wise Lab Confirmed Typhoid cases and outbreaks for August 2019



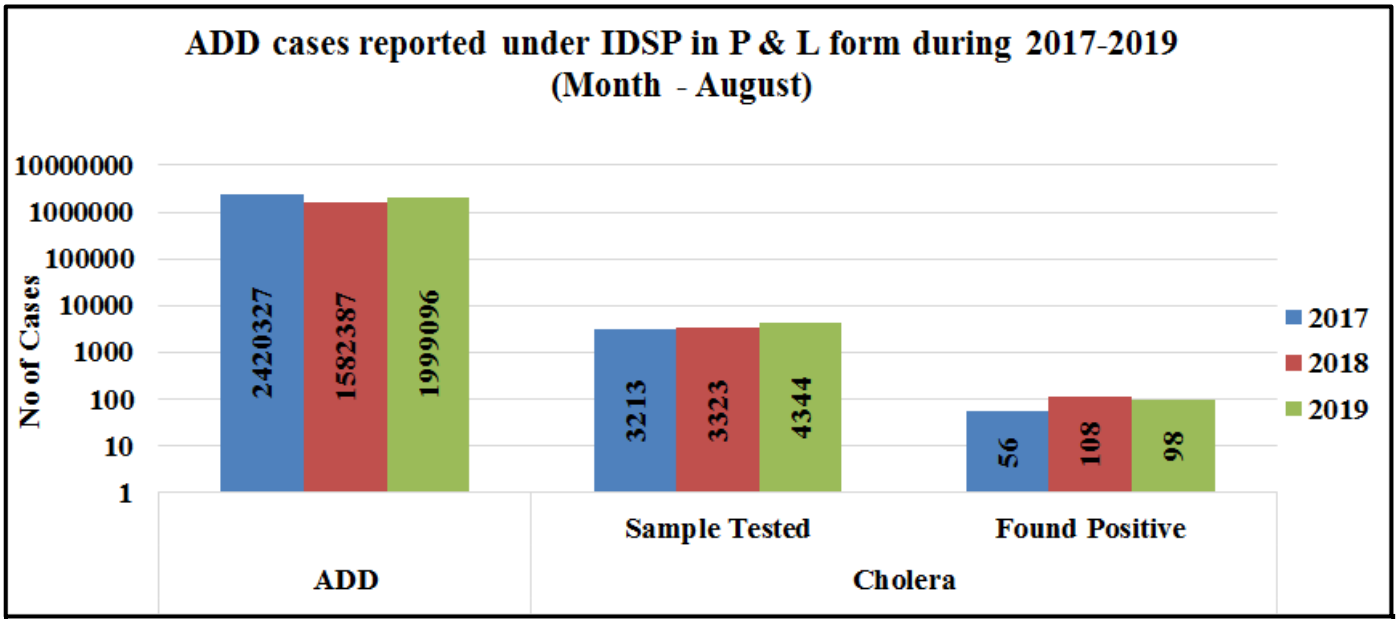


Fig. 14: No. of ADD Cases reported under IDSP in P Form & Cholera Cases in L form during August 2017 - 2019

As shown in Fig 14, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in 'P' form was 2420327 in August 2017; 1582387 in August 2018 and 1999096 in August 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in August 2017, 3213 samples were tested for Cholera out of which 56` tested positive; in August 2018, out of 3323 samples, 108 tested positive for Cholera and in August 2019, out of 4344 samples, 98 tested positive.

Sample positivity of samples tested for Cholera has been 1.74%, 3.25% and 2.26% in August month of 2017, 2018 & 2019 respectively.

Fig 15: State/UT wise Presumptive ADD cases and outbreaks for August 2019

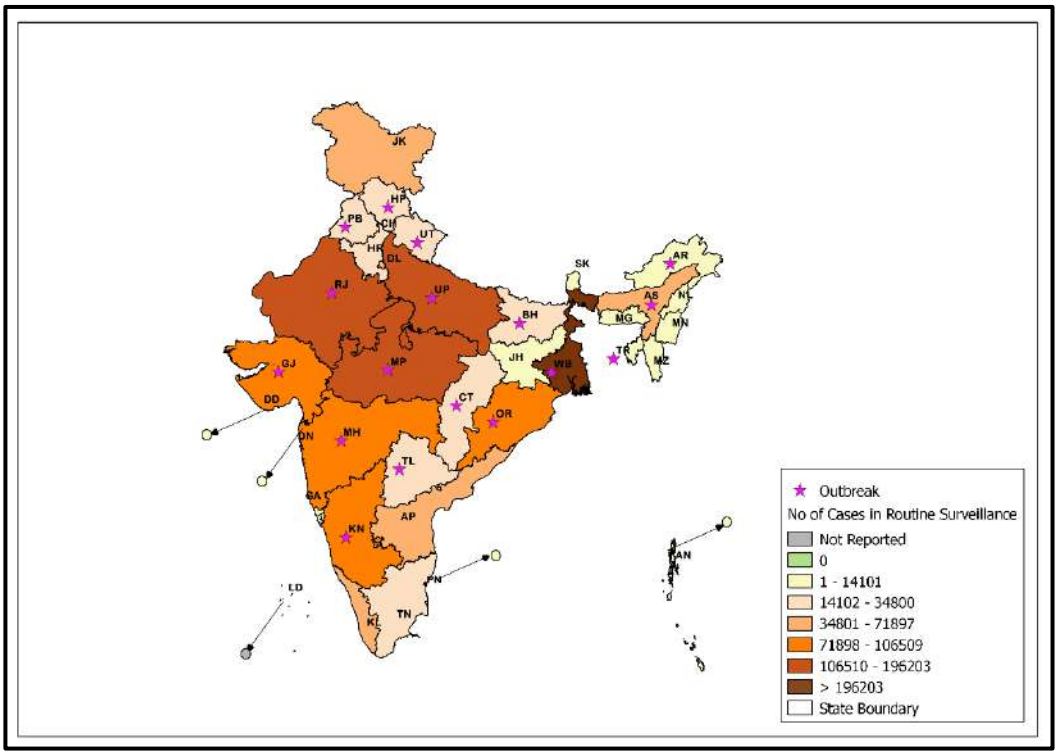
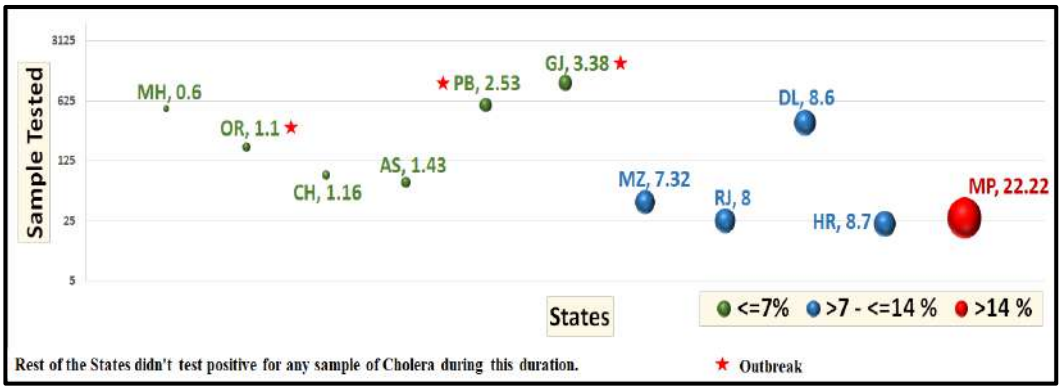


Fig 16: State/UT wise Lab Confirmed Cholera cases and outbreaks for August 2019



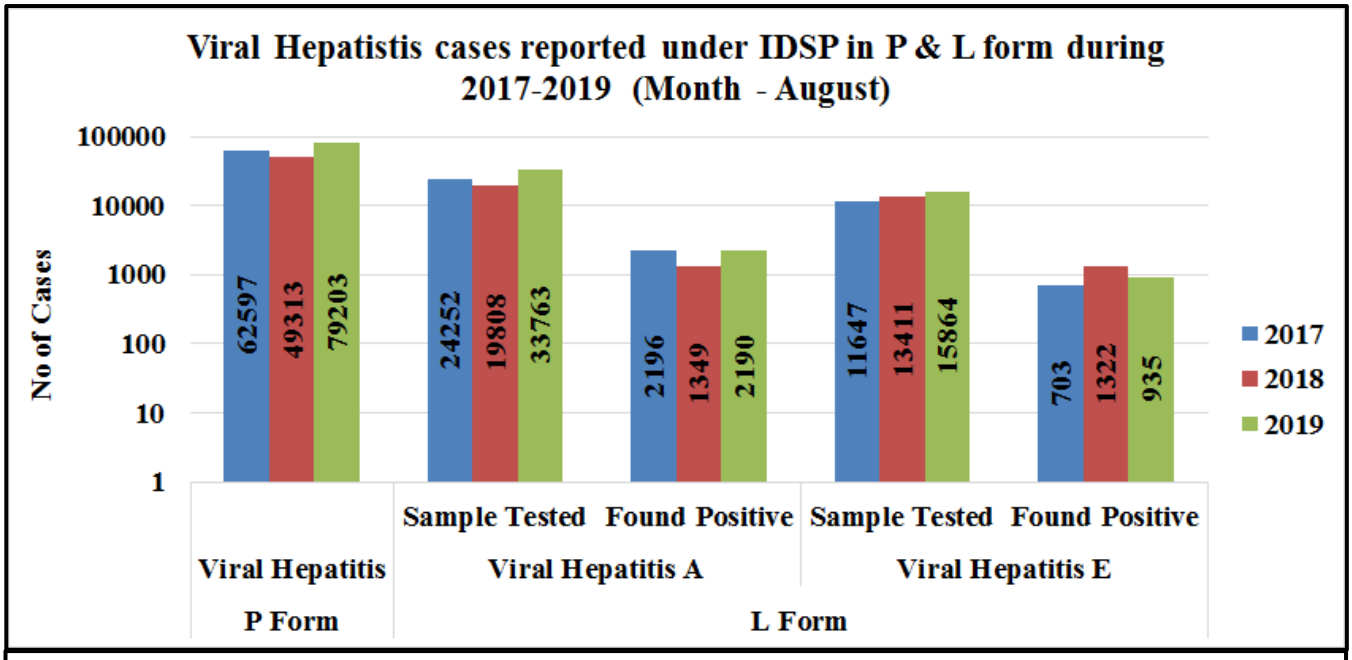


Fig 17: No of Viral Hepatitis Cases reported under IDSP in P form & Viral Hepatitis A & E cases reported under L form during August 2017 - 2019

As shown in Fig 17, the number of presumptive Viral Hepatitis cases was 62597 in August 2017, 49313 in August 2018 and 79203 in August 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 August 2017; 24252 samples were tested out of which 2196 were found positive. In August 2018 out of 19808 samples, 1349 were found to be positive and in August 2019, out of 33763 samples, 2190 were found to be positive.

Sample positivity of samples tested for Hepatitis A has been 9.05%, 6.81% and 6.49% in August month of 2017, 2018 & 2019 respectively.

As reported in L form for Viral Hepatitis E, in August 2017; 10248 samples were tested out of which 626 were found positive. In August 2018; out of 7510 samples, 746 were found to be positive and in August 2019, out of 14211 samples, 1108= were found to be positive.

Sample positivity of samples tested for Hepatitis E has been 6.04%, 9.86% and 5.89% in August month of 2017, 2018 & 2019 respectively.

Fig 18: State/UT wise Presumptive Viral Hepatitis cases and outbreaks for August 2019

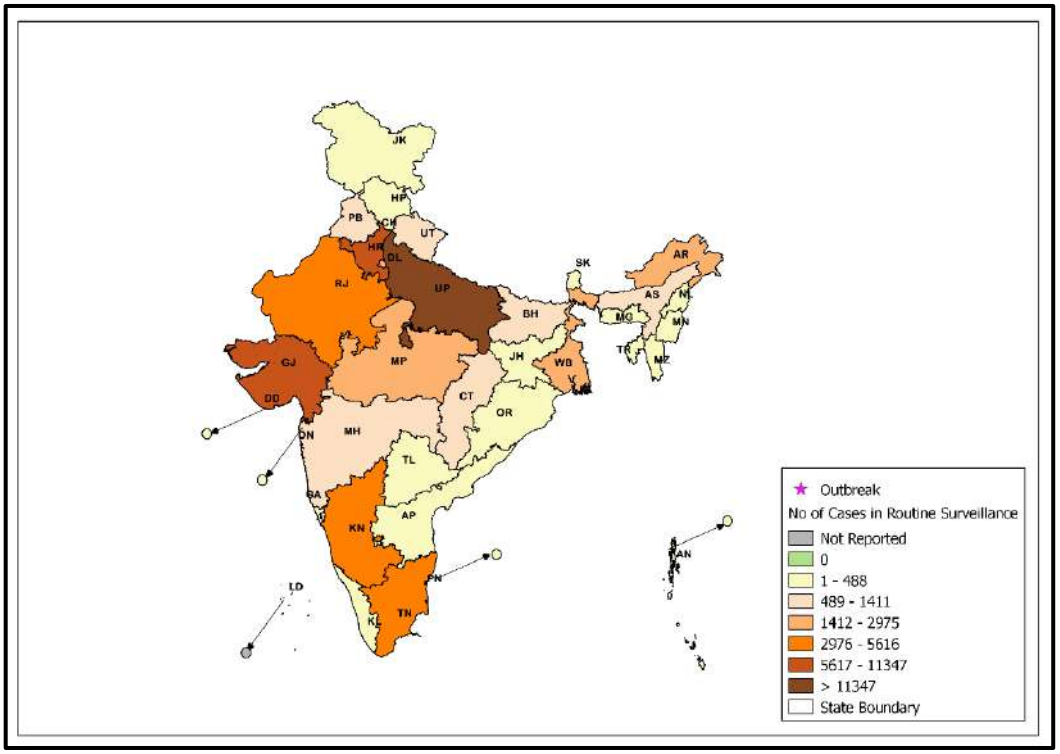


Fig 19: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for August 2019

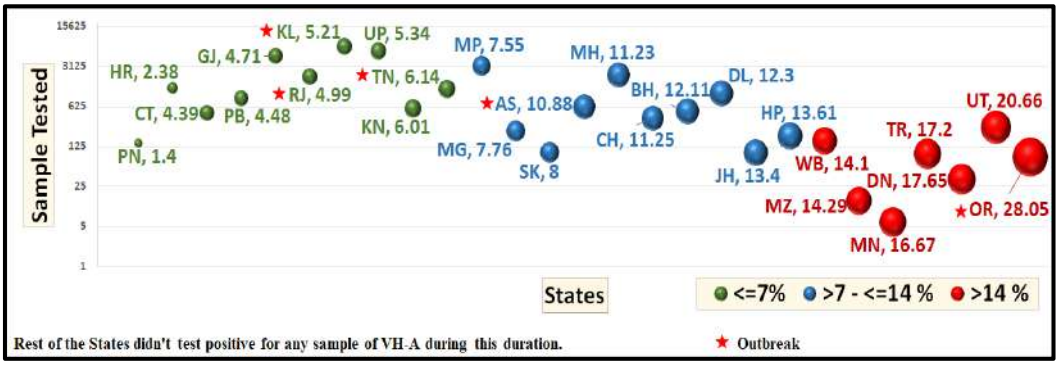
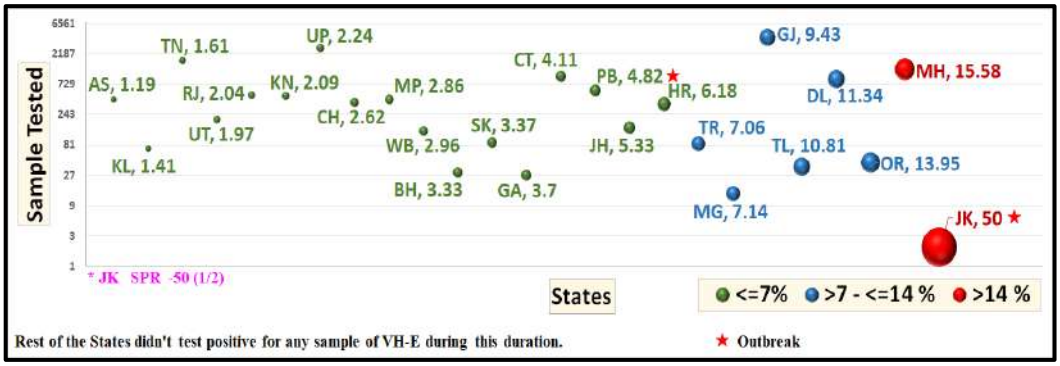


Fig 20: State/UT wise Lab Confirmed Viral Hepatitis E cases and outbreaks for August 2019



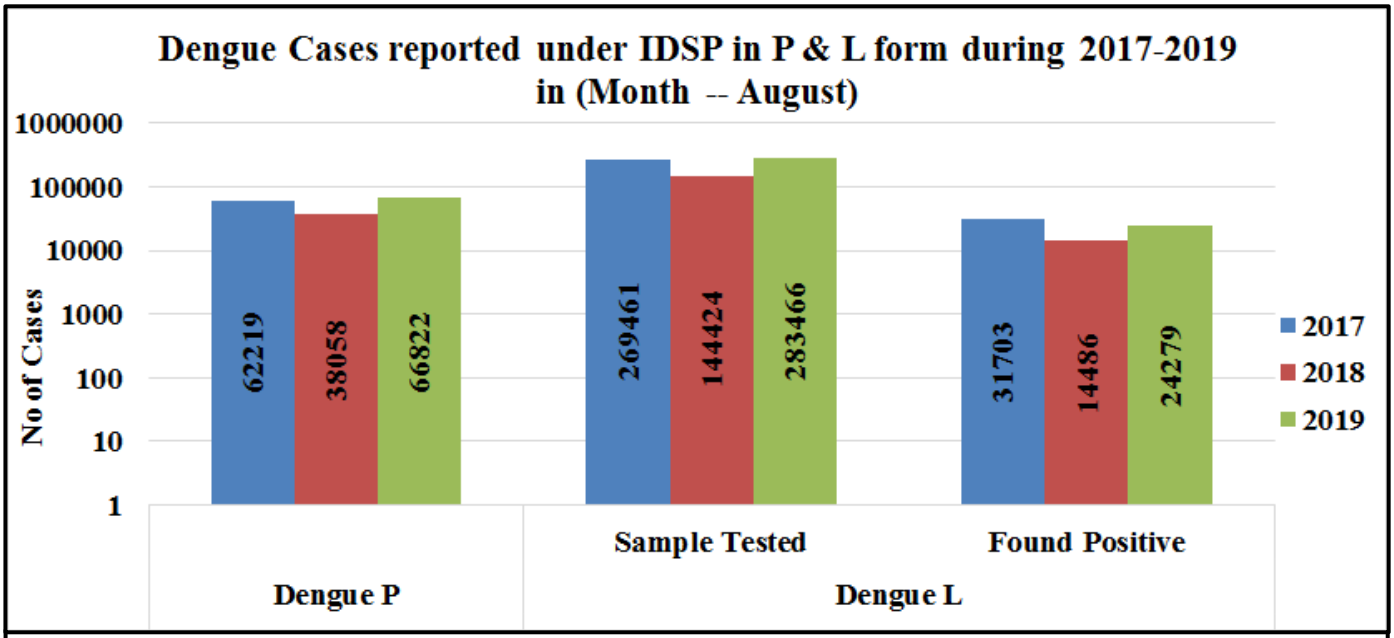


Fig 21: No. of Dengue Cases reported under IDSP in P & L form during August 2019

As shown in Fig 21, number of presumptive Dengue cases, as reported by States/UTs in 'P' form was 62219 in August 2017; 38058 in August 2018 and 66822 in August 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in August 2017; 269461 samples were tested for Dengue, out of which 31703 were found positive. In August 2018; out of 144424 samples, 14486 were found to be positive and in August 2019, out of 283466 samples, 24279 were found to be positive.

Sample positivity of samples tested for Dengue has been 11.77%, 10.03% and 8.57% in August month of 2017, 2018 & 2019 respectively**.**

Fig 22: State/UT wise Presumptive Dengue cases and outbreaks for August 2019

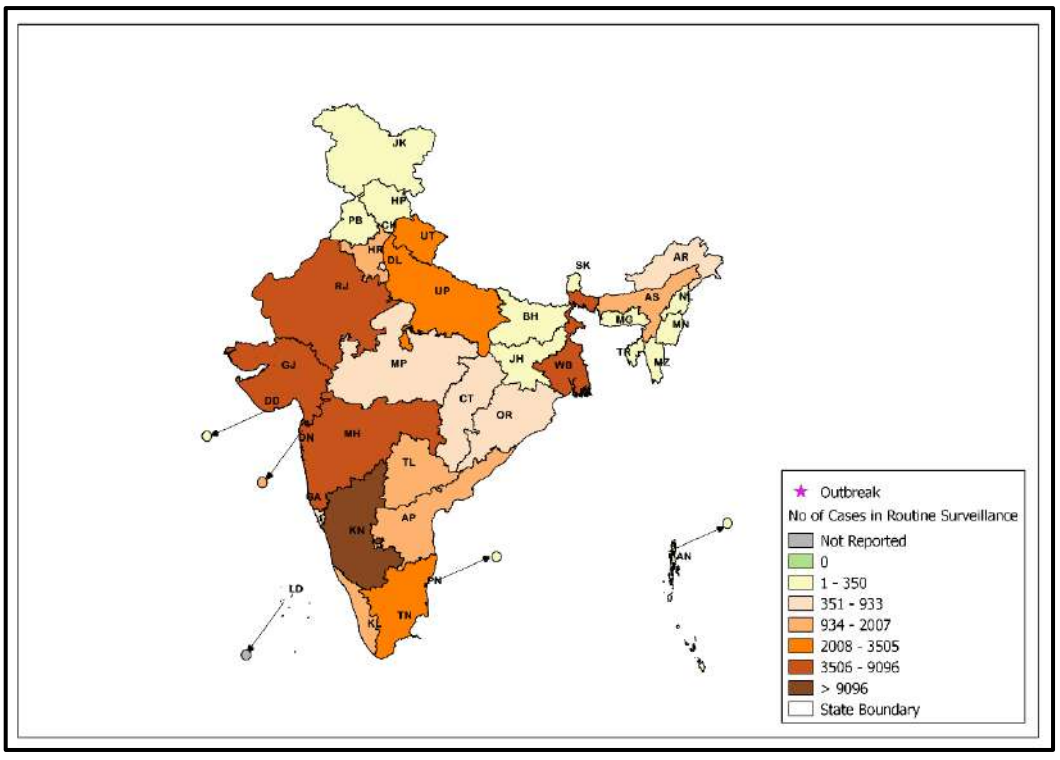
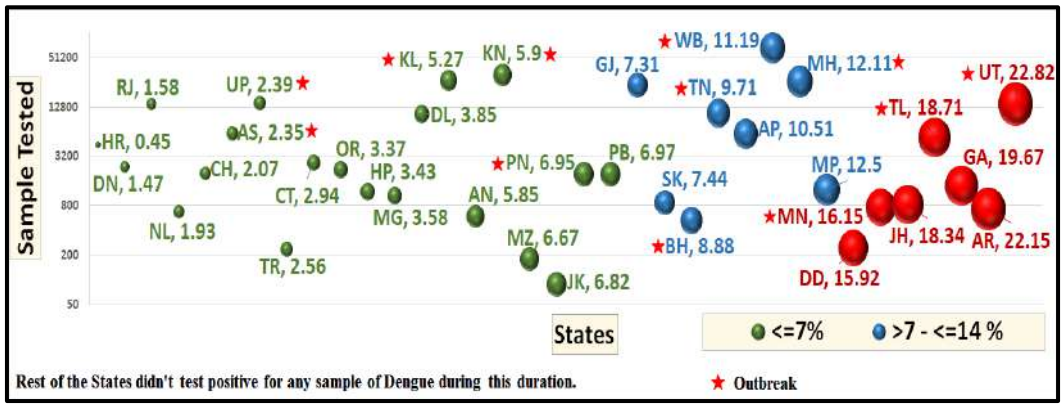


Fig 23: State/UT wise Lab Confirmed Dengue cases and outbreaks for August 2019



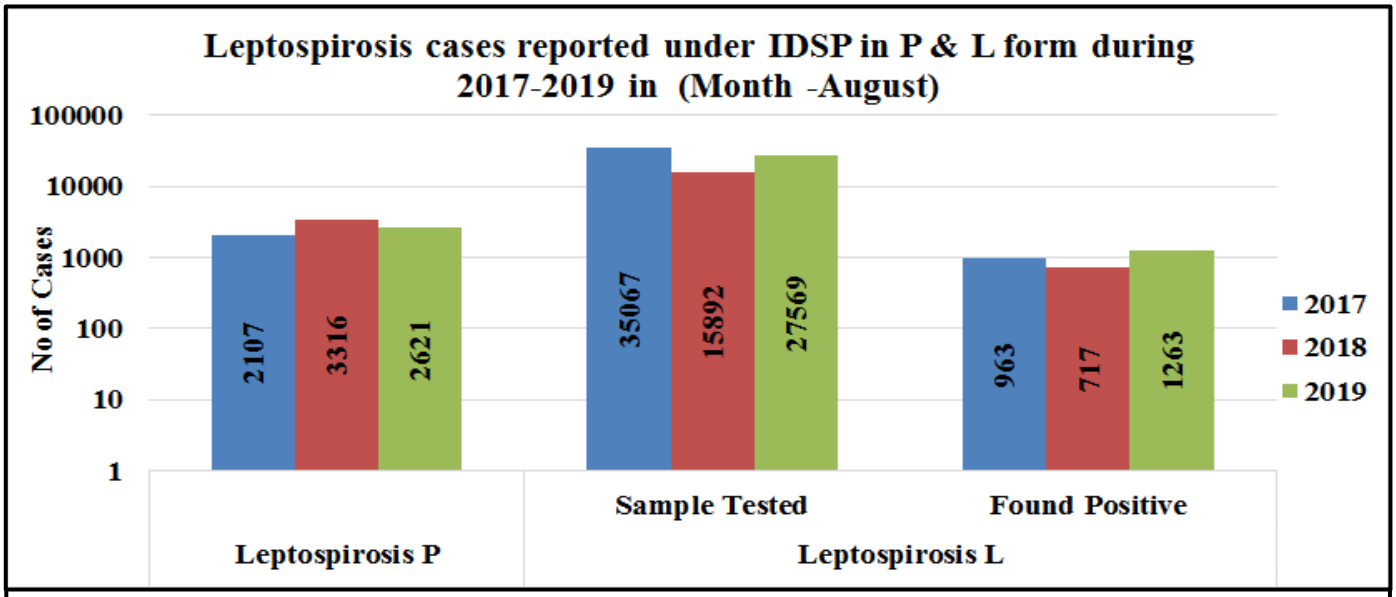


Fig 24: No. of Leptospirosis Cases reported under IDSP in P & L form during August 2016 – 2018

As shown in Fig 24, number of presumptive Leptospirosis cases, as reported by States/UTs in 'P' form was 2107 in August 2017; 3316 in August 2018 and 2621 in August 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in August 2017; 35067 samples were tested for Leptospirosis, out of which 963 were found positive. In August 2018; out of 15892 samples, 717 were found to be positive and in August 2019, out of 27569 samples, 1263 were found to be positive.

Sample positivity of samples tested for Dengue has been 2.75%, 4.51% and 4.58% in August month of 2017, 2018 & 2019 respectively.

Fig 25: State/UT wise Presumptive Leptospirosis cases and outbreaks for August 2019

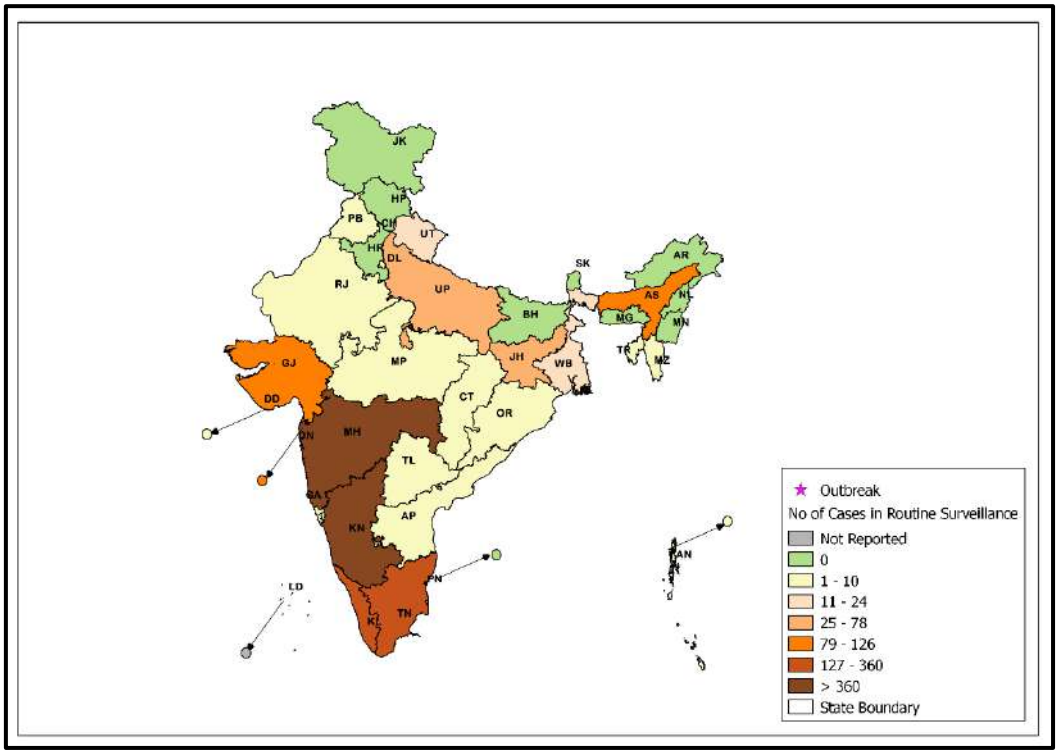
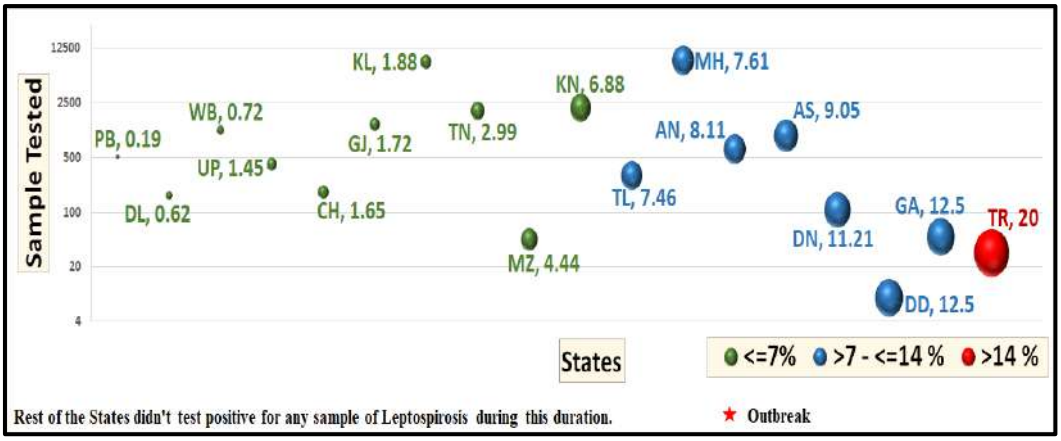


Fig 26: State/UT wise Lab Confirmed Leptospirosis cases and outbreaks for August 2019



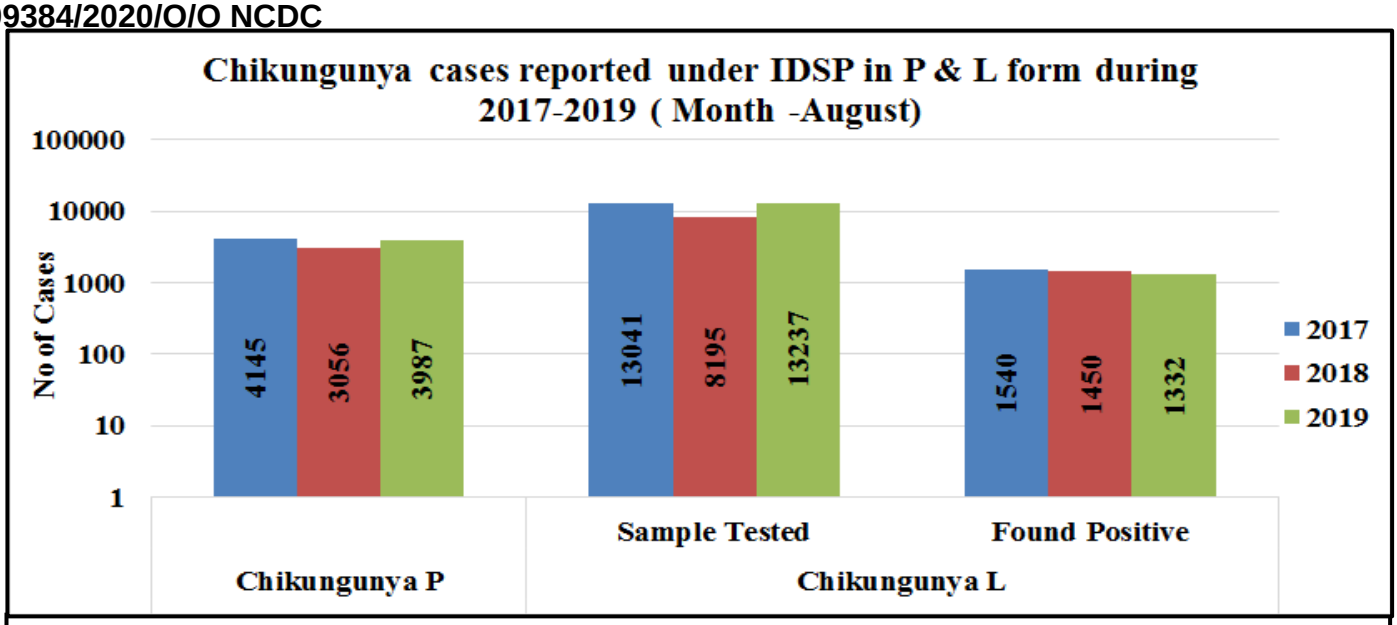


Fig. 27: No. of Chikungunya Cases reported under IDSP in P & L form during August 2017 - 2019

As shown in Fig 27, number of presumptive Chikungunya cases, as reported by States/UTs in 'P' form was 4145 in August 2017; 3056 in August 2018 and 3987 in August 2019. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in August 2017; 13041 samples were tested for Chikungunya, out of which 1540 were found positive. In August 2018; out of 8195 samples, 1450 were found to be positive and in August 2019, out of 13237 samples, 1332 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 11.81%, 17.69% and 10.06% in August month of 2017, 2018 & 2019 respectively.

Fig 28: State/UT wise Presumptive Chikungunya cases and outbreaks for August 2019

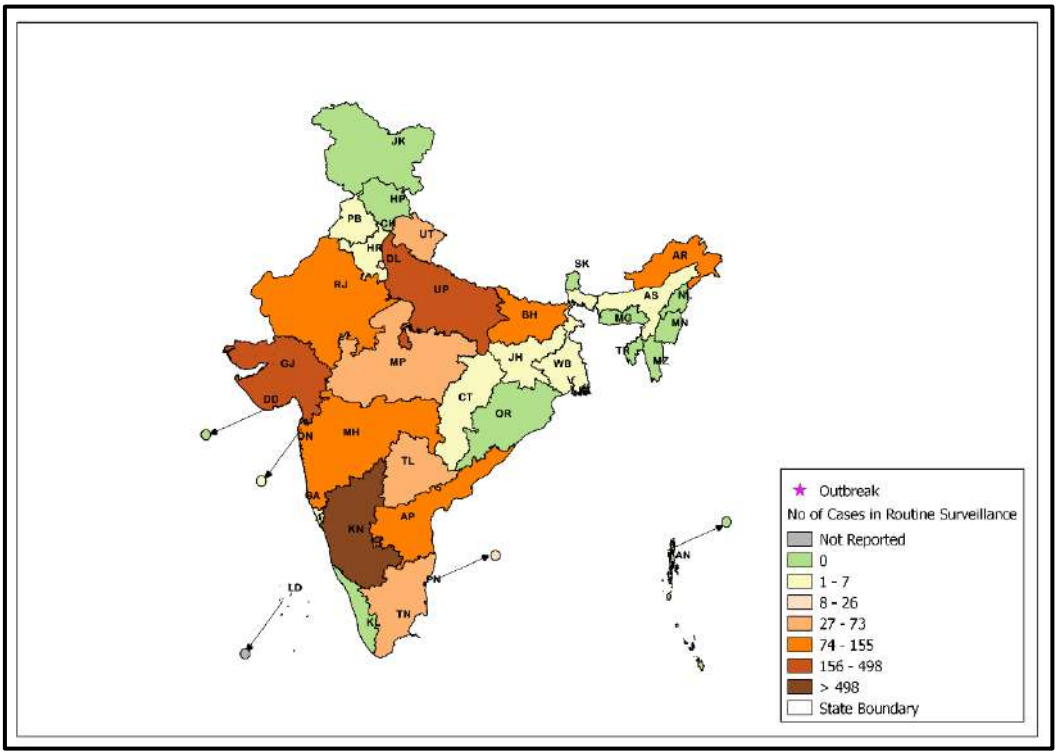


Fig 29: State/UT wise Lab Confirmed Chikungunya cases and outbreaks for August 2019

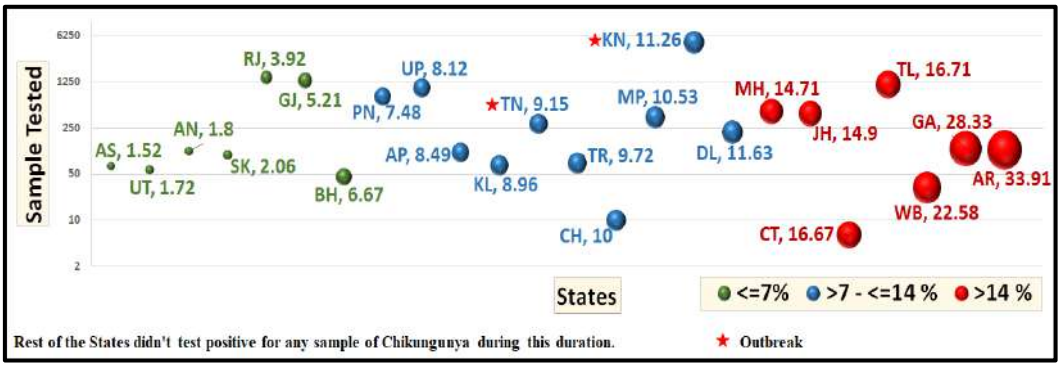
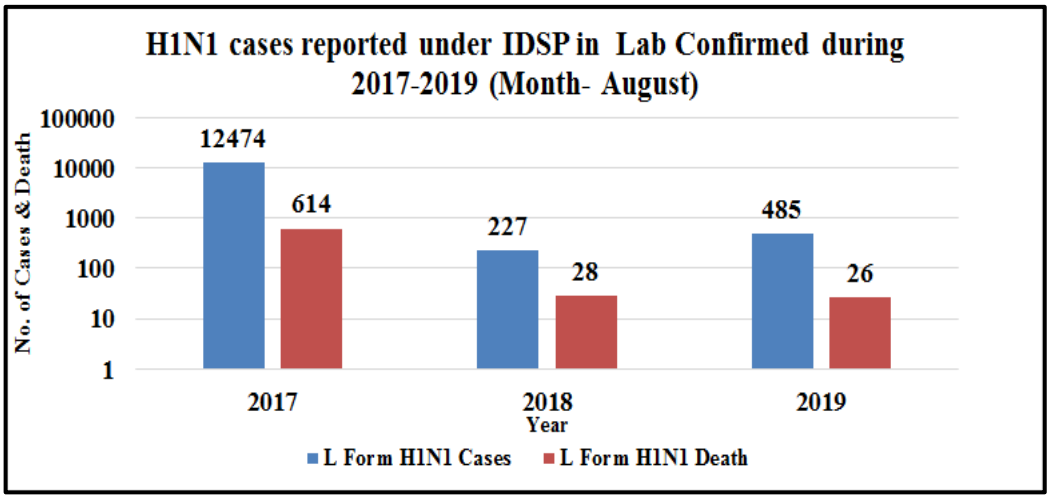


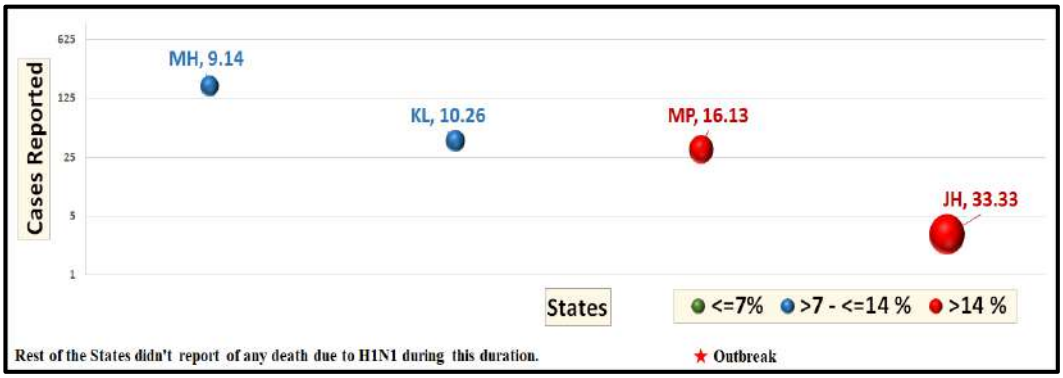
Fig 30: H1N1 cases reported under IDSP in L Form during 2017-2019 in August 2019



As reported in L form, in August 2017; there were 12474 cases and 614 deaths. In August 2018; there were 227 cases and 28 deaths and in August 2019, there were 485 cases and 26 deaths.

Case fatality rate for H1N1 were 4.92%, 12.33% and 5.36% in August month of 2016, 2017 & 2018 respectively.

Fig 31: State/UT wise H1N1 cases and outbreaks for August 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

- 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.

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Data shown in this bulletin are provisional, based on weekly reports to IDSP by State Surveillance Unit. Inquiries, comments and feedback regarding the IDSP Surveillance Report, including material to be considered for publication, should be directed to: Director, NCDC 22, Sham Nath Marg, Delhi 110054. Email: dirnicd@nic.in & idsp-npo@nic.in

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