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Disease Alert
प्रकोप चेतावनी

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

September 2018

Inside

Investigation of Hepatitis – C Outbreak in District Haridwar –Uttarakhand

Background

In month of august 2018, a clustering of suspected viral hepatitis cases reported from the adjacent villages Hastmouli, Alampura, Prahladpur, Shahpur and Madarpur of Block- Khanpur in District- Haridwar. District Rapid Response Team (RRT) constituted under Integrated Disease Surveillance Program (IDSP), visited the affected area and outbreak verification and medical care provision camps were conducted. Based on reported sign & symptoms, a total of 257 blood samples of suspected hepatitis C cases were collected. The serum was extracted from blood samples and screened by ELISA at IDSP District Public Health Laboratory (DPHL) at Mela Hospital (sub-district hospital) for Hepatitis C. A total of 57 samples tested positive by ELISA.

These 57 samples tested positive for Hepatitis C virus (HCV) by ELISA test and were further sent to National Centre for Disease Control (NCDC) Delhi for RT-PCR testing for confirmation of HCV RNA and Genotype assessment. At NCDC Delhi, these 57 samples were further amplified by RT-PCR for HCV specific 5' UTR gene (249 base pair). Out of which, 38 were positive and 19 were negative for HCV RNA. Nucleotide sequencing was carried out for 38 RNA positive samples, out of which 21 samples belonged to genotype 3a, 12 samples belonged to genotype 1a while the genotype of 5 samples could not be determined due to poor sequence data

General information about Hepatitis C

In India, there are an estimated 6 to 12 million people infected with Hepatitis C. Anti-Hepatitis C virus (HCV) antibody prevalence in the general population is estimated to be between 0.09-15% (Average 0.5% - 1.5%). Chronic HCV infection is a major cause for liver cirrhosis, hepatocellular carcinoma (HCC) and end stage liver disease. Hepatitis C virus, which, before its identification was labelled "non-A, non-B hepatitis," is a linear, single-stranded enveloped RNA virus belonging to the flavivirus family.

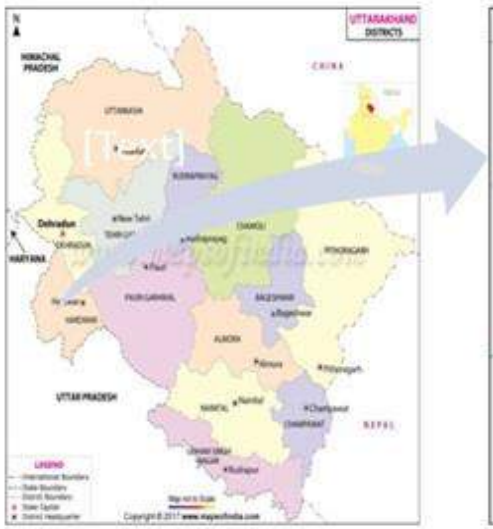
HCV causes both acute and chronic hepatitis. Acute hepatitis is often clinically mild and marked by fluctuating elevations of serum aminotransferase levels; >50% likelihood of chronicity, leading to cirrhosis in >20%.Chronic infection with HCV is usually clinically silent, and is only very rarely associated with life-threatening disease. Spontaneous clearance of acute HCV infection occurs within six months of infection in 15–45% of infected individuals in the absence of treatment. Almost all the remaining 55–85% of persons will harbour HCV for the rest of their lives

(if not treated) and are considered to have chronic HCV infection. Left untreated, chronic HCV infection can cause liver cirrhosis, liver failure and HCC. Of those with chronic HCV infection, the risk of cirrhosis of the liver is 15–30% within 20 years. The risk of HCC in persons with cirrhosis is approximately 2–4% per year.

HCV is transmitted though infected blood. Common modes of transmission include injecting drug use through the sharing of needles, syringes or other injection equipment; the reuse or inadequately sterilized medical equipment, especially syringes and needles in health-care settings; and the transfusion of unscreened blood and blood products. HCV can also be transmitted sexuality and can be passed from an infected mother to her baby; however, these modes of transmission are much less common.

Outbreak investigation process and results

In response to above, an outbreak investigation was conducted by state RRT and district RRT comprising of experts from desired speciality. Investigation was conducted with the objectives of understanding the distribution and determinants of the reported outbreak of Hepatitis C and recommending appropriate prevention and control measures. A standardised structured data collection tool was used to collect all the relevant data. The data was analysed by using Epi-info software version (7.2.1.0).



Village	Cases
Alampur	9
Hastmoli	19
Madarpur	2
Prahladpur	3
Shahpur	5
Total	38

Fig. 1: Geographical distribution of Hepatitis Cases in District Haridwar

Fig. 2: Field investigation by State Rapid Response Team

The total HCV RNA positive hepatitis C cases were 38. The mean age of cases was 34.6 year. A total of 4 Cases (10%) were under 12 years of age, 4 cases (10%) between 12 to 18 years and rest of 30 cases (80%) were more than 18 years.

Out of total cases 58% (22 cases) were male. All the patients and relatives were briefed about various aspects of Hepatitis C.

Table 1: Information collected on risk factor of transmission of Hepatitis C infection amongst positive cases is in table-1.

Risk factor	Frequency (%) n=38
Health Seeking Behaviour- visit to private practitioner(Non MBBS) for medical care	32 (84%)
History of Injection- Private Practitioner (Non MBBS)/Private Hospital	36 (95%)
Body piercing (Ear/Nose/Other)	17 (45%)
History of Visit to Dentist	15 (39%)
Presence of Tattoo Mark	11 (29%)
Exposure to vaccination, organized by NGO etc.	08 (21%)

The table 1 depicts that 84 % of total cases visits to Non-MBBS private practitioner, quacks and alternative medicine practitioner for medical care and 95% of cases had history of taking injections from these practitioners/private hospitals. Body piercing was found in 45% of cases, 39% had history of visit to a local dentist for dental problem, 29% had tattoo mark and 21% had exposure to vaccination of Hepatitis B in a camp mode organised by an NGO.

Outbreak response and provision of medical care:

- **Capacity building**

  As a systematic approach for prevention, control and management of Hepatitis C outbreak and further occurrence of hepatitis C cases in the area, a capacity building workshop was conducted at district level. The participants were clinicians, microbiologists, pathologists, lab technicians and counsellors. The State IDSP unit, State Viral Hepatitis Cell, experts from AIIMS Rishikesh, Coronation district hospital and Govt. Doon Medical College conducted the training.

Fig. 3: Capacity building workshop of district officials by state officials

- **Logistic arrangement (Drugs and diagnostics)**

  All the essential drugs i.e. Directly Acting Antivirals (DAAs) procurement was conducted. The district hospital was strengthened to ensure availability of basic diagnostic required for evaluation of patients for initiation of type of treatment regimen which includes LFT, KFT, CBC, PTINR and USG etc. All the diagnostics were provided to the patients free of cost.

- **Case management**

  All the confirmed hepatitis C cases were called on a specific day for all basic diagnostics needed for initiation of treatment. On the very next day, the patients based on their diagnostic reports were clinically evaluated and taken on treatment regimen. 29 patients were taken on Sofosbuvir+Daclatasvir combination and 4 patients were taken on Sofosbuvir+Velpatasvir combination. All the patients were properly counselled regarding infection prevention, transmission and treatment. Patients were allocated to designated counsellors for routine counselling. Awareness was conducted to patients and their relatives regarding all aspects of hepatitis C to prevent the transmission in community

Fig. 4: Treatment and counselling of patients and attendants at Treatment Centre District Haridwar

- **Creating awareness**

  An IEC campaign is undergoing in the area regarding prevention, cutting transmission, seeking proper health care etc. Frequently Asked Questions in local language, flyers and posters for serving PHCs/CHCs prepared for creating awareness in the community.

Acknowledgement:

We acknowledge the immense and dedicated contribution of Dr. Premlal, Chief Medical Officer, Haridwar; Dr. V. S. Tolia, Officer Incharge- NVHCP/ NHM, Uttarakhand; Dr. Rohit Gupta, Gastroenterologist, AIIMS Rishikesh; Dr. V. S. Panwar, Physician, Coronation Hospital, Dehradun; Dr. Yogendra Mathuriya, Microbiologist, Govt. Doon Medical College, Dehradun; Dr. Partha Rakshit, Deputy Director, NVHCP, National Centre for Disease Control, Delhi; Dr. Gagandeep Grover, State Nodal Officer- NVHCP, Punjab and all those who are directly or indirectly involved.

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Surveillance data of Enteric Fever, Acute Diarrhoeal Disease, Viral Hepatitis A & E, Dengue Leptospirosis and Chikungunya During September 2016 - 2018*

* Data extracted from IDSP Portal (www.idsp.nic.in) as on January 16, 2019.

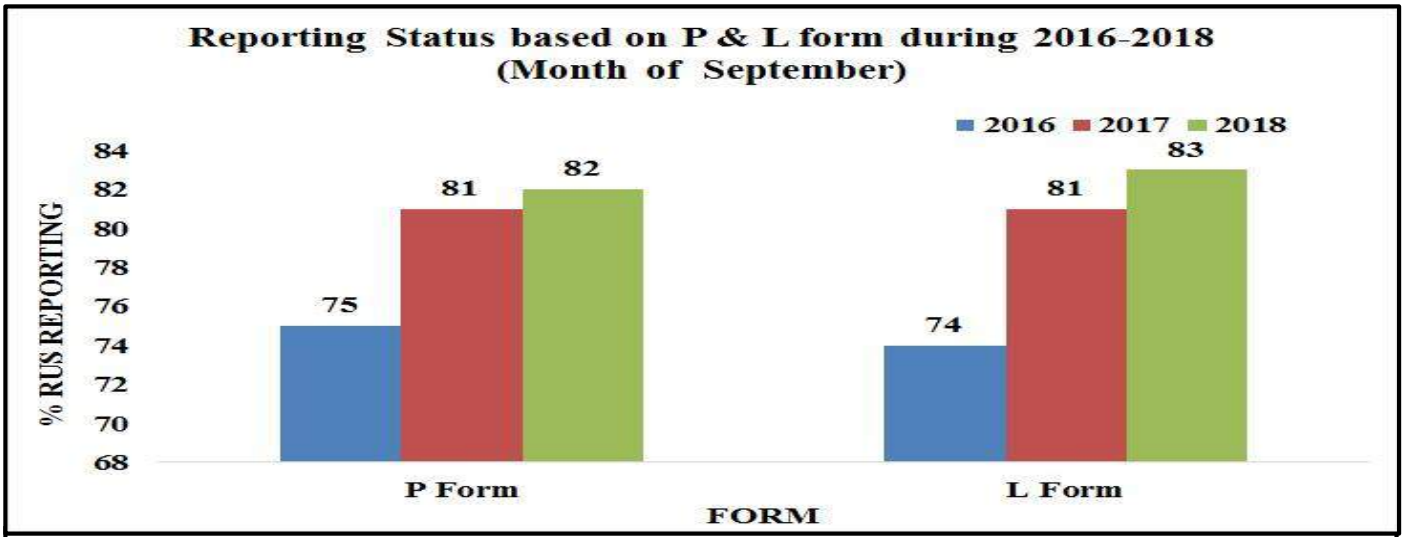


Fig. 5: RU wise reporting based on P & L form during September 2016 - 2018

As shown in Fig 5, in September 2016, 2017 and 2018, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 75%, 81% and 82% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 74%, 81% and 83% 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 6: State/UT wise P form completeness % for September 2018

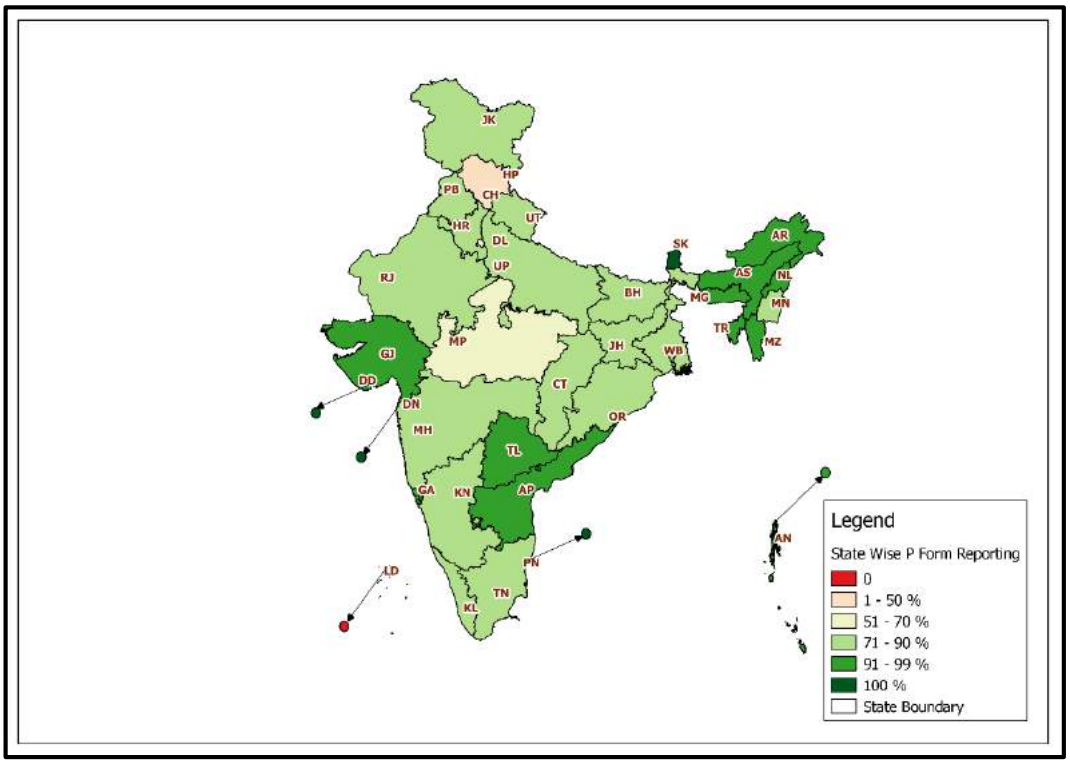
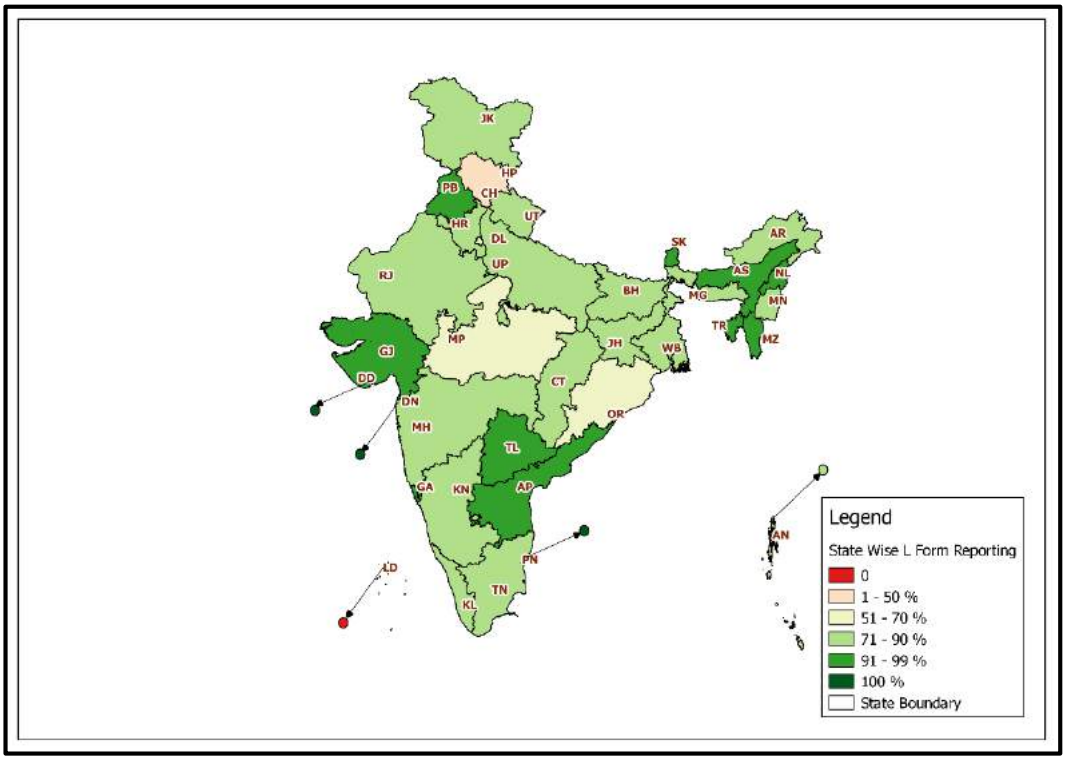


Fig 7: State/UT wise L form completeness % for September 2018



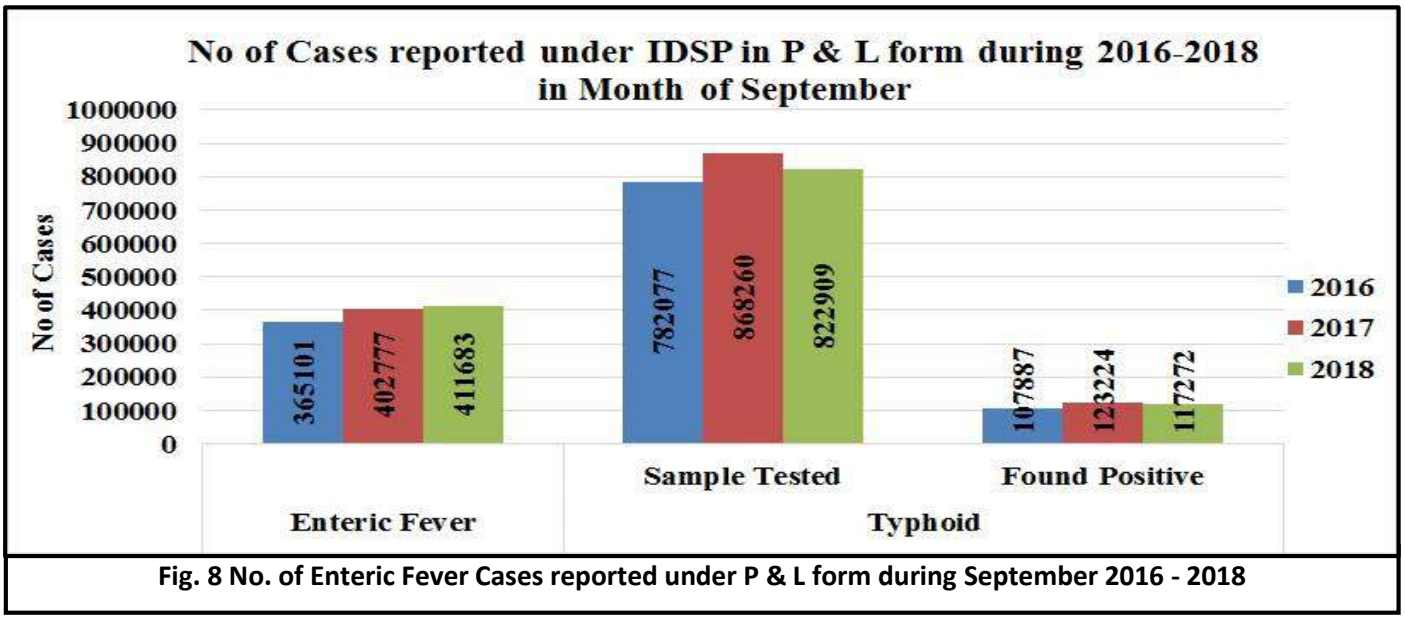


Fig. 8 No. of Enteric Fever Cases reported under P & L form during September 2016 - 2018

As shown in Fig 8, number of presumptive enteric fever cases, as reported by States/UTs in 'P' form was 365101 in September 2016; 402777 in September 2017 and 411683 in September 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in September 2016; 782077 samples were tested for Typhoid, out of which 107887 were found positive. In September 2017; out of 868260 samples, 123224 were found to be positive and in September 2018, out of 822909 samples, 117272 were found to be positive.

Sample positivity has been 13.79%, 14.19% and 14.25% in September month of 2016, 2017 & 2018 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 9: State/UT wise Presumptive Enteric fever cases and outbreaks for September 2018

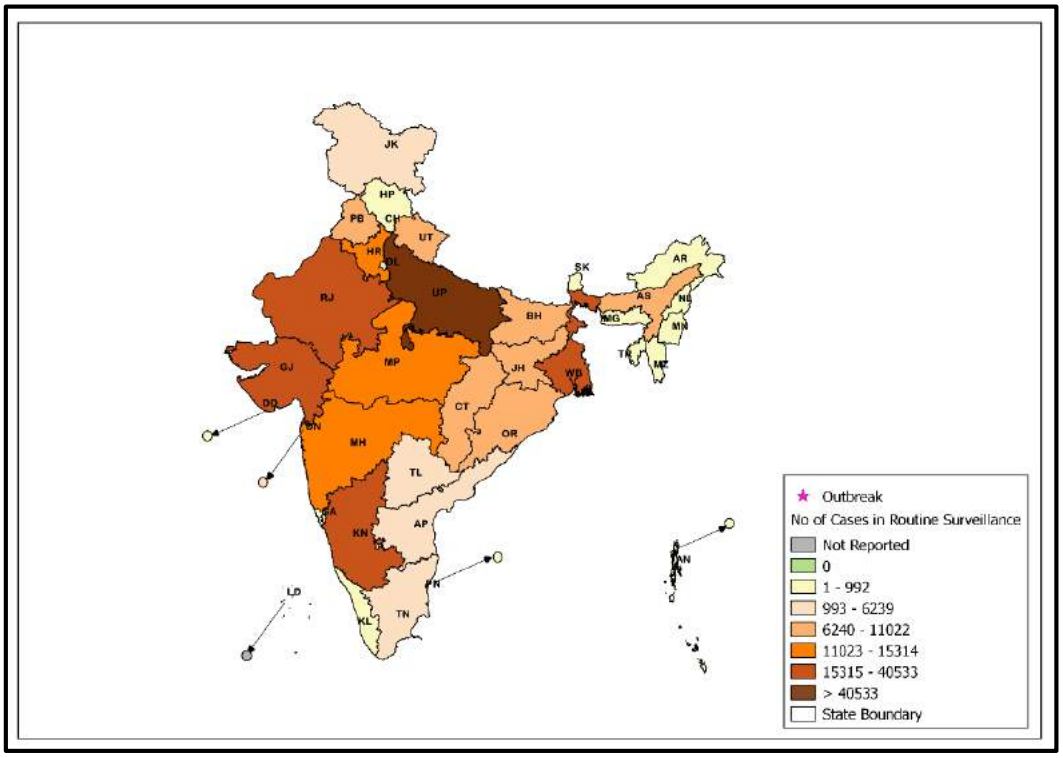
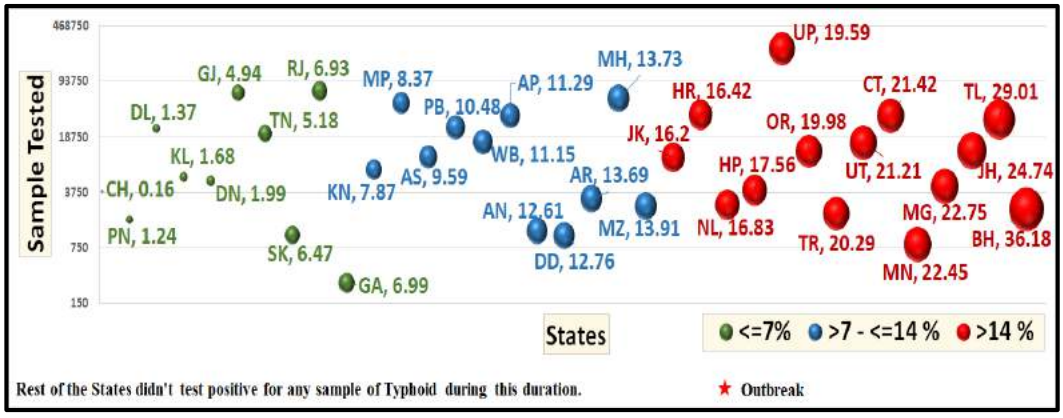


Fig 10: State/UT wise Lab Confirmed Typhoid cases and outbreaks for September



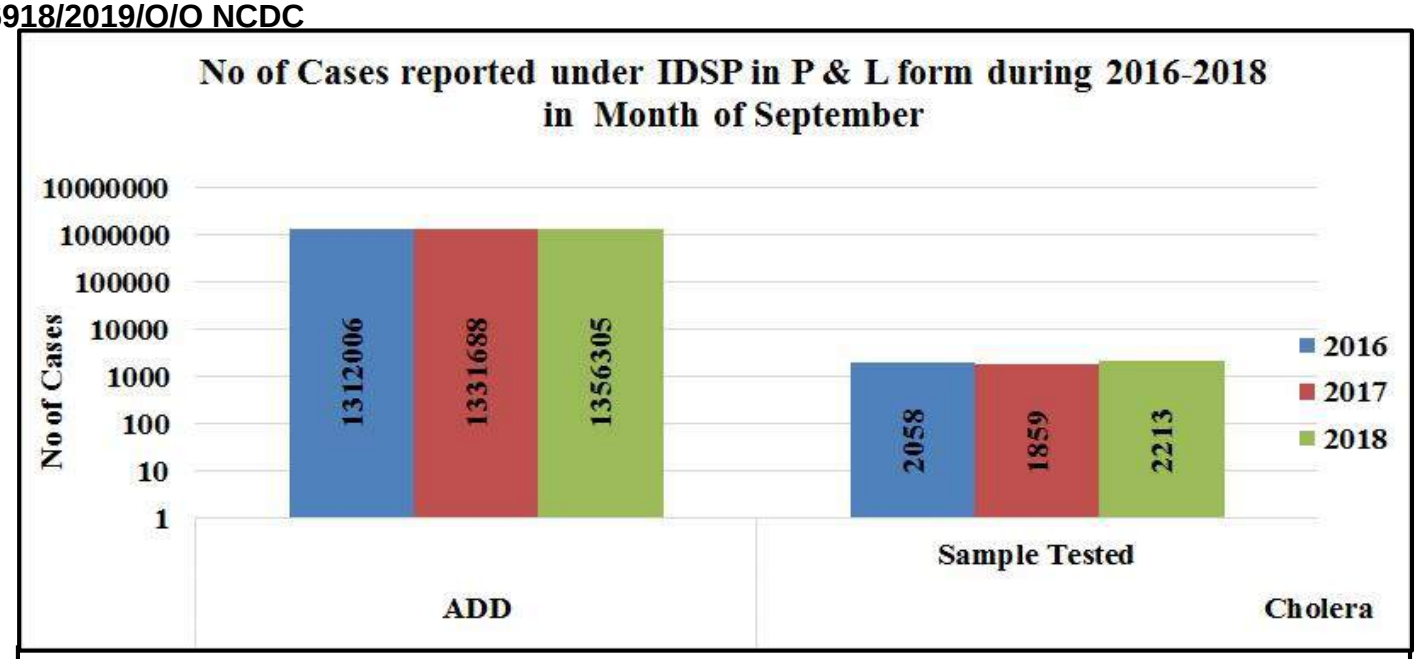


Fig. 11 No. of ADD Cases reported under IDSP in P Form & Cholera Cases in L form during September 2016 - 2018

As shown in Fig 11, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in 'P' form was 1312006 in September 2016; 1331688 in September 2017 and 1356305 in September 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in September 2016, 2058 samples were tested for Cholera out of which 64 tested positive; in September 2017, out of 1859 samples, 29 tested positive for Cholera and in September 2018, out of 2213 samples, 45 tested positive.

Sample positivity of samples tested for Cholera has been 3.11%, 1.56% and 2.03% in September month of 2016, 2017 & 2018 respectively.

Fig 12: State/UT wise Presumptive ADD cases and outbreaks for September 2018

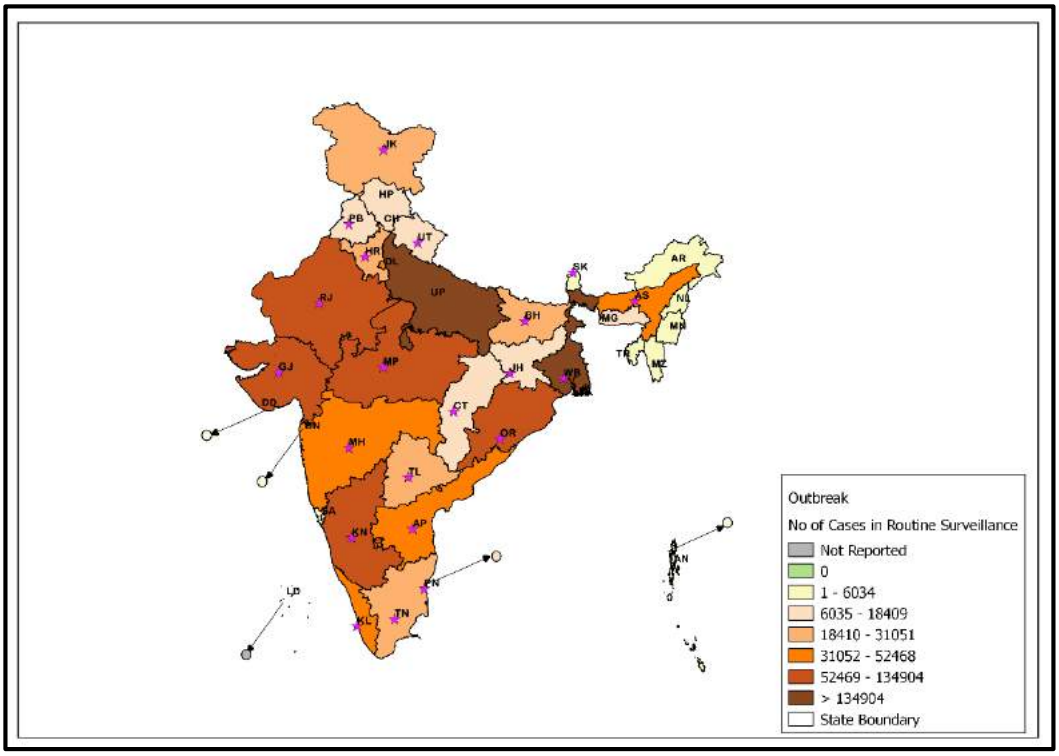


Fig 13: State/UT wise Lab Confirmed Cholera cases and outbreaks for September 2018

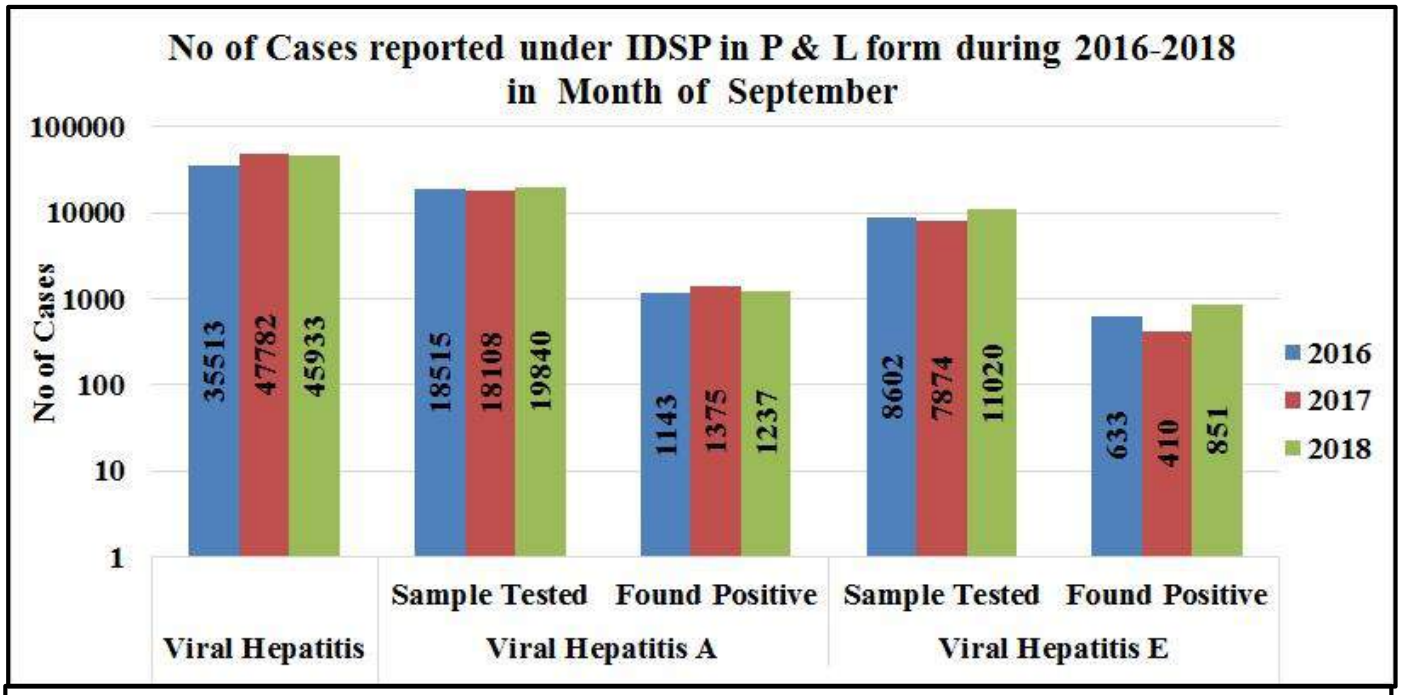


Fig 14: No of Viral Hepatitis Cases reported under IDSP in P form & Viral Hepatitis A & E cases reported under L form during September 2016 - 2018

As shown in Fig 14, the number of presumptive Viral Hepatitis cases was 35513 in September 2016, 47782 in September 2017 and 45933 in September 2018. These presumptive cases were diagnosed on the basis of case definitions provided under IDSP.

As reported in L form for Viral Hepatitis A, in September 2016; 18515 samples were tested out of which 1143 were found positive. In September 2017 out of 18108 samples, 1375 were found to be positive and in September 2018, out of 19840 samples, 1237 were found to be positive.

Sample positivity of samples tested for Hepatitis A has been 6.17%, 7.59% and 6.23% in September month of 2016, 2017 & 2018 respectively.

As reported in L form for Viral Hepatitis E, in September 2016; 8602 samples were tested out of which 633 were found positive. In September 2017; out of 7874 samples, 410 were found to be positive and in September 2018, out of 11020 samples, 851 were found to be positive.

Sample positivity of samples tested for Hepatitis E has been 7.36%, 5.21% and 7.72% in September month of 2016, 2017 & 2018 respectively.

Fig 15: State/UT wise Presumptive Viral Hepatitis cases and outbreaks for September 2018

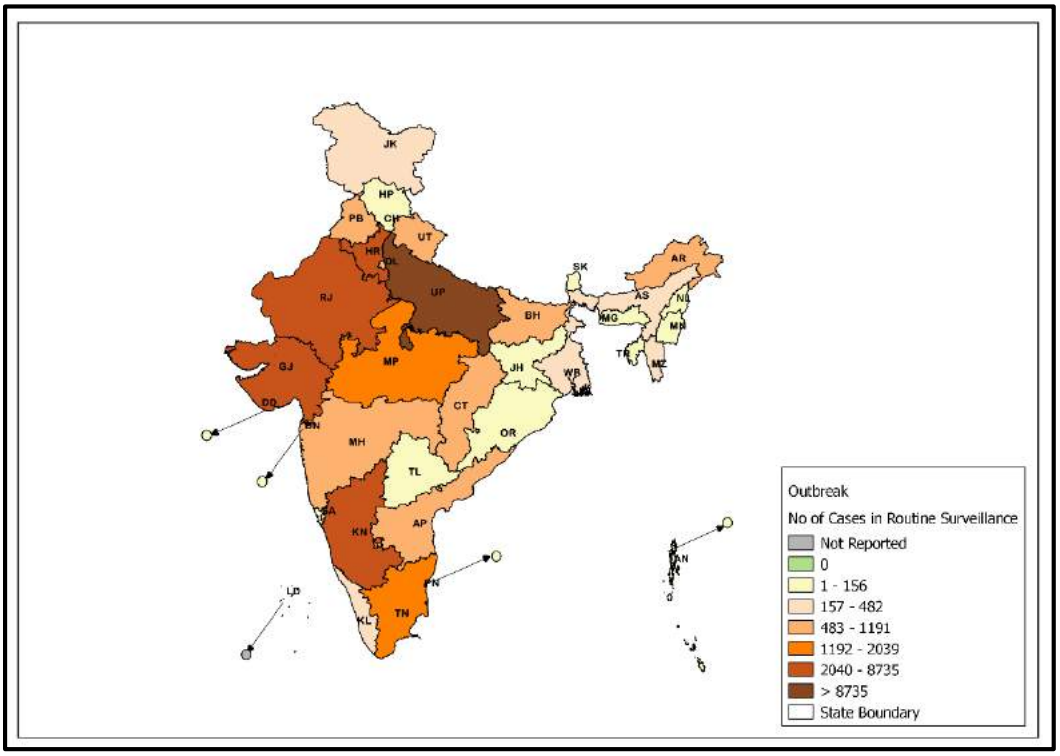


Fig 16: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for September 2018

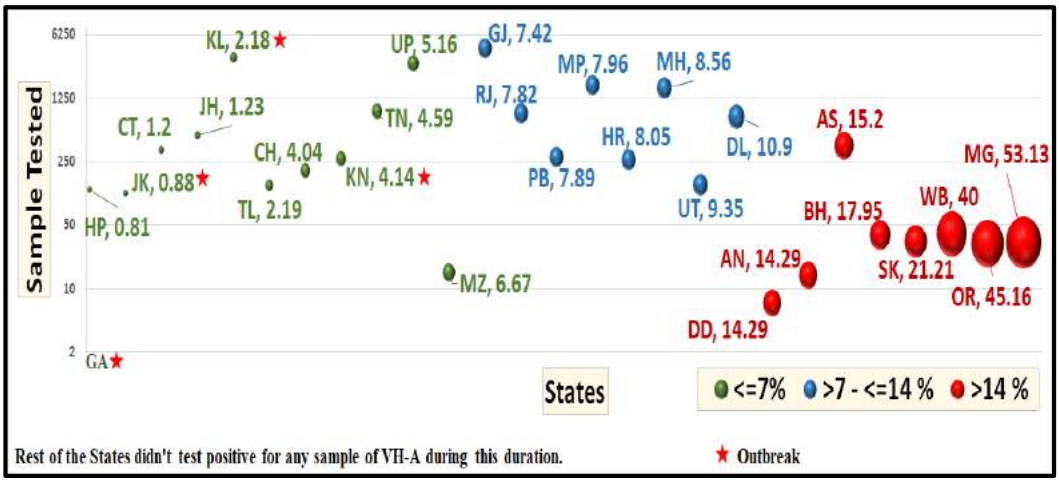
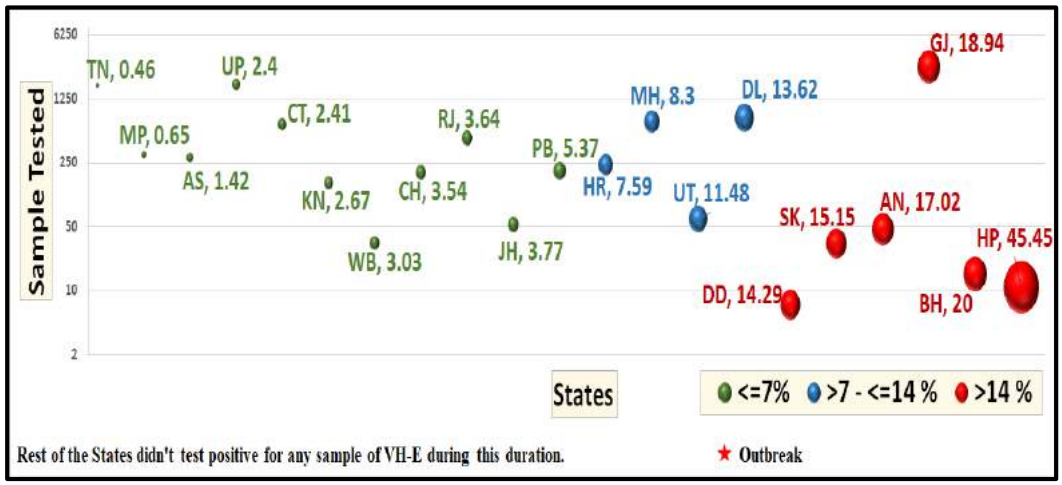


Fig 17: State/UT wise Lab Confirmed Viral Hepatitis E cases and outbreaks for September 2018



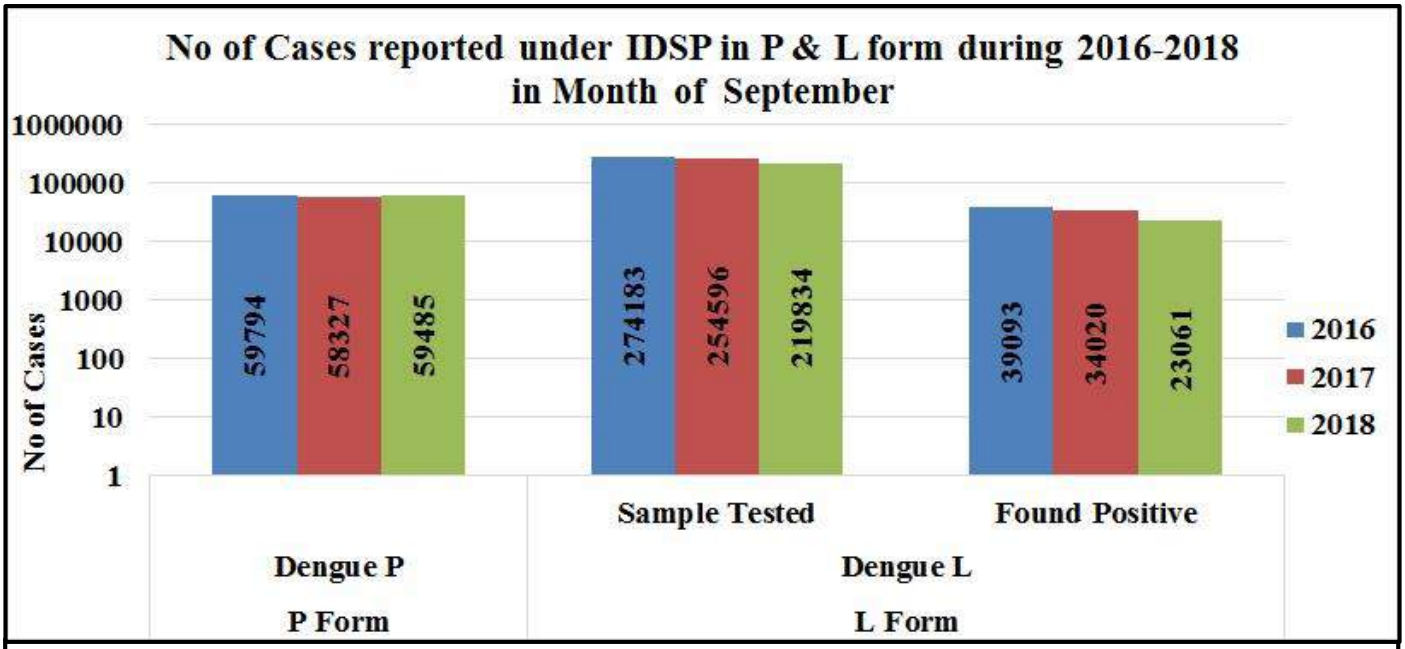


Fig 18: No. of Dengue Cases reported under IDSP in P & L form during September 2016 - 2018

As shown in Fig 18, number of presumptive Dengue cases, as reported by States/UTs in 'P' form was 59794 in September 2016; 58327 in September 2017 and 59485 in September 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in September 2016; 274183 samples were tested for Dengue, out of which 39093 were found positive. In September 2017; out of 254596 samples, 34020 were found to be positive and in September 2018, out of 219834 samples, 23061 were found to be positive.

Sample positivity of samples tested for Dengue has been 14.26%, 13.36% and 10.49% in September month of 2016, 2017 & 2018 respectively.

Fig 19: State/UT wise Presumptive Dengue cases and outbreaks for September 2018

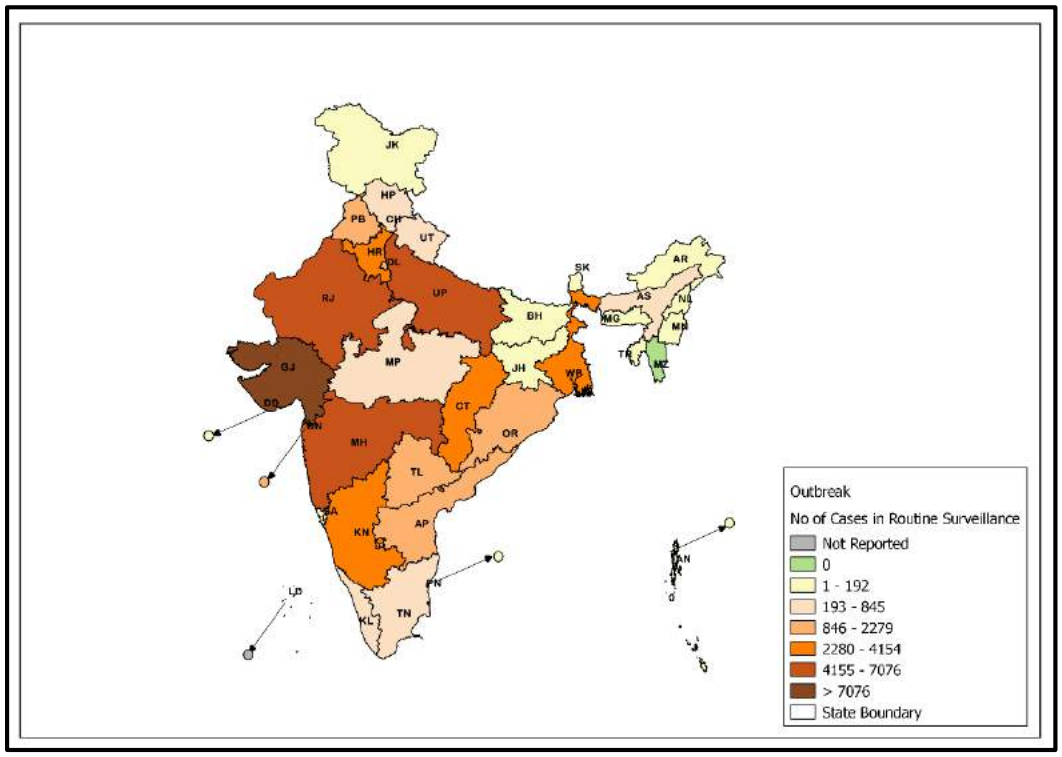
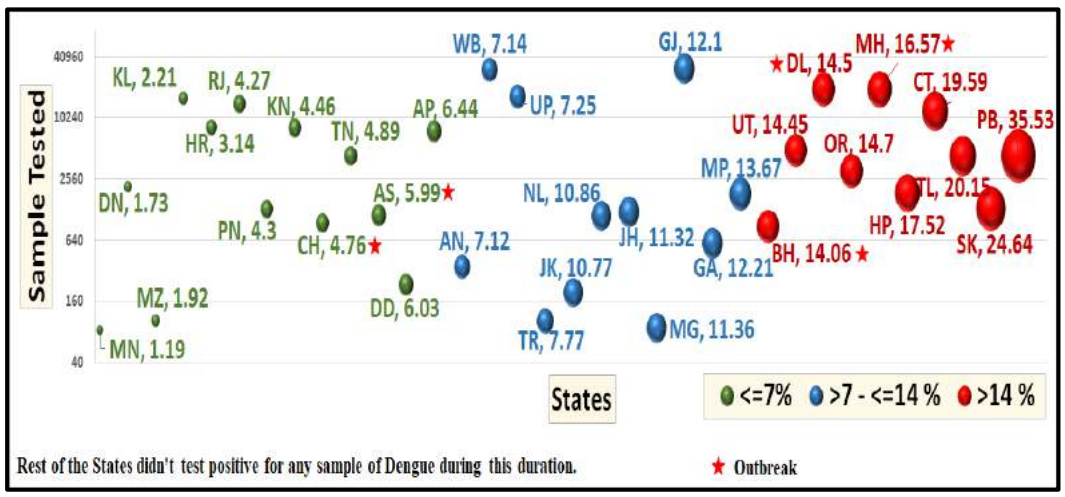


Fig 20: State/UT wise Lab Confirmed Dengue cases and outbreaks for September 2018



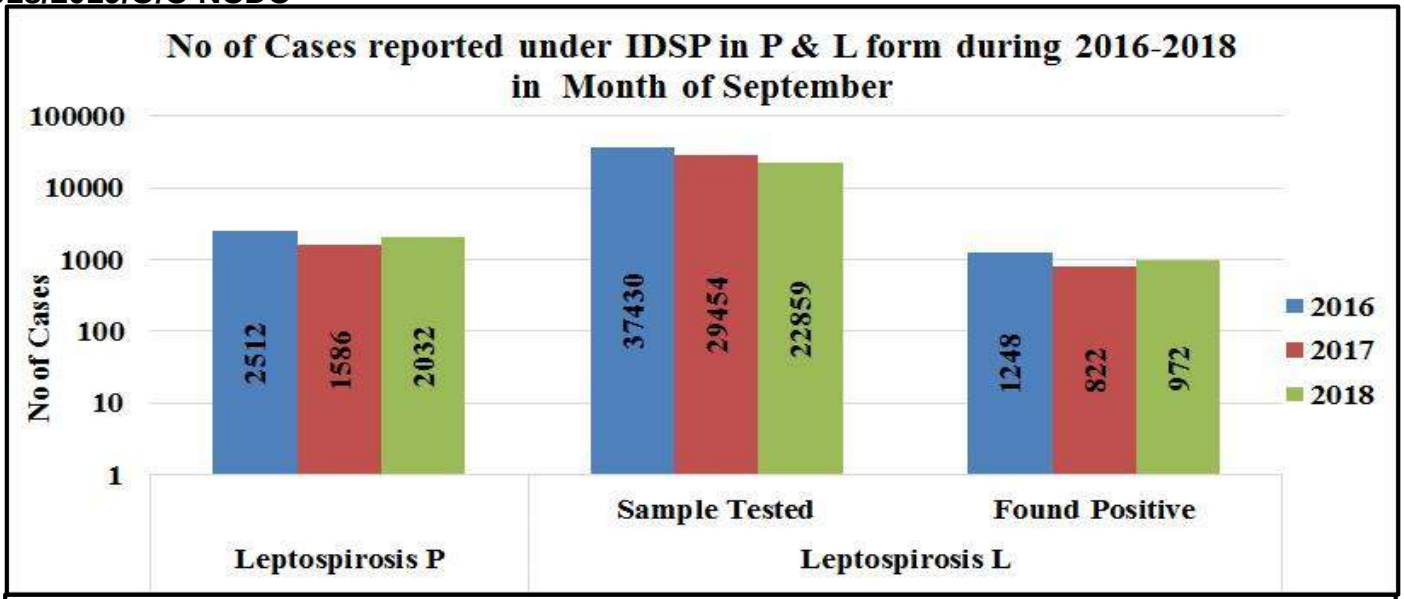


Fig 21: No. of Leptospirosis Cases reported under IDSP in P & L form during September 2016 - 2018

As shown in Fig 21, number of presumptive Leptospirosis cases, as reported by States/UTs in 'P' form was 2512 in September 2016; 1586 in September 2017 and 2032 in September 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in September 2016; 37430 samples were tested for Leptospirosis, out of which 1248 were found positive. In September 2017; out of 29454 samples, 822 were found to be positive and in September 2018, out of 22859 samples, 972 were found to be positive.

Sample positivity of samples tested for Dengue has been 3.33%, 2.79% and 4.25% in September month of 2016, 2017 & 2018 respectively.

Fig 22: State/UT wise Presumptive Leptospirosis cases and outbreaks for September 2018

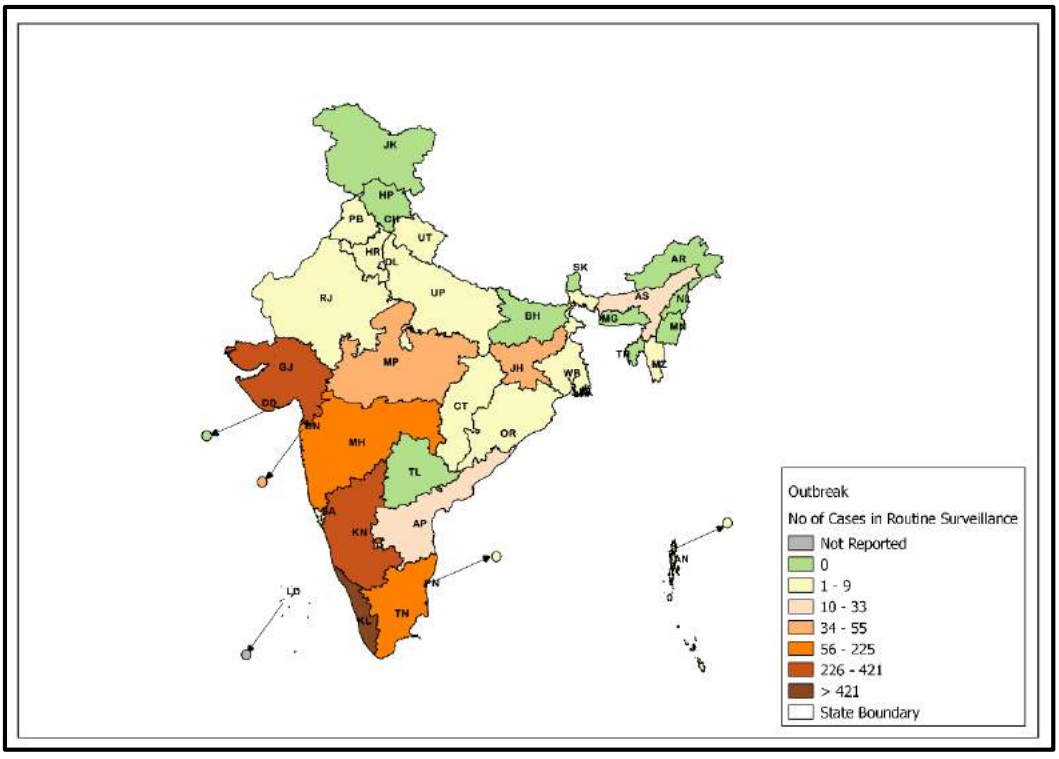
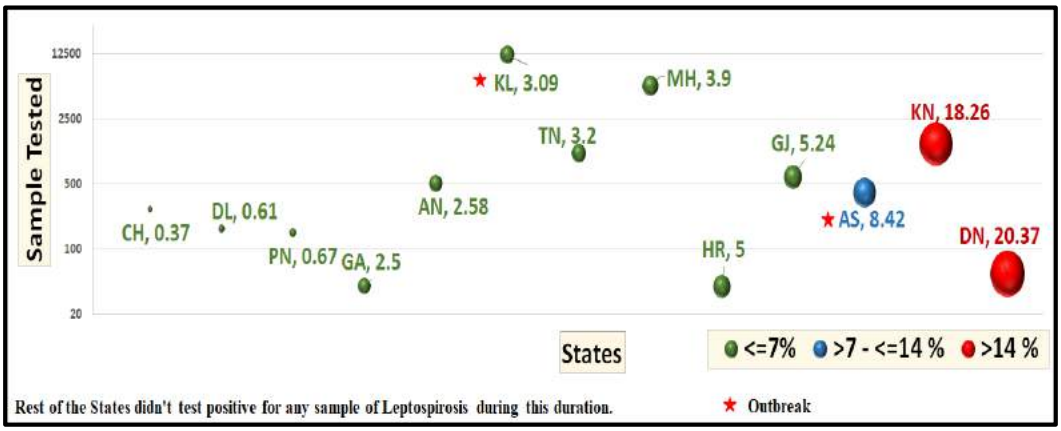


Fig 23: State/UT wise Lab Confirmed Leptospirosis cases and outbreaks for September 2018



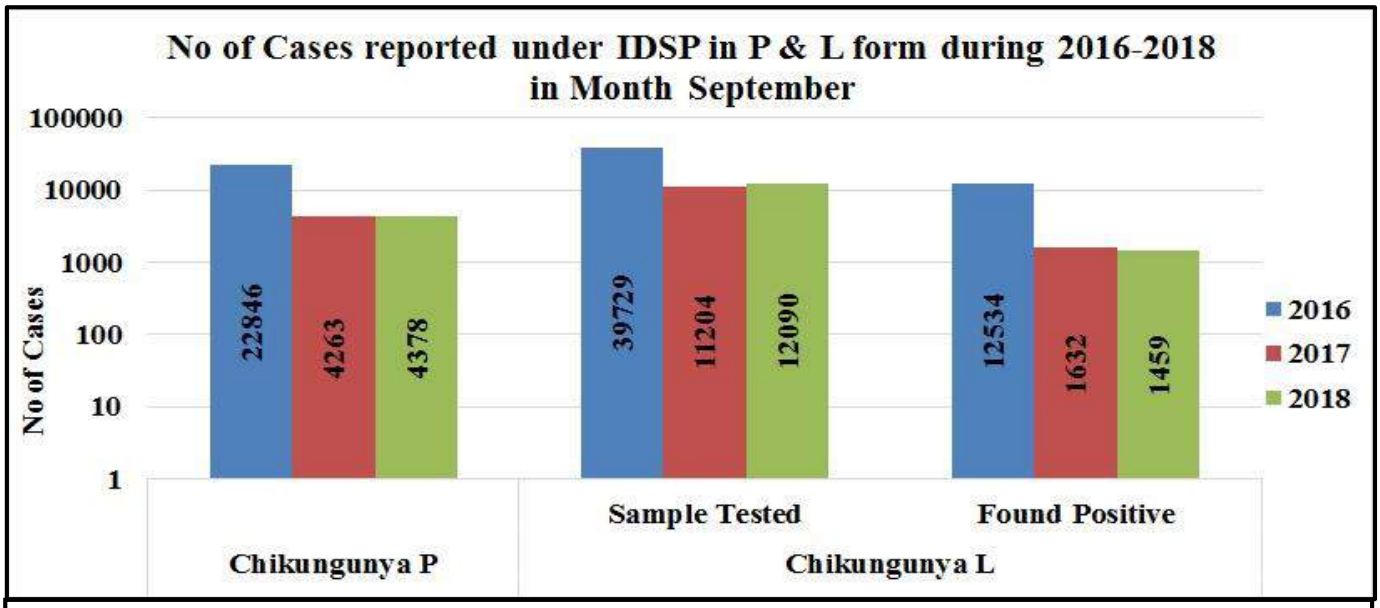


Fig. 24: No. of Chikungunya Cases reported under IDSP in P & L form during September 2016 - 2018

As shown in Fig 24, number of presumptive Chikungunya cases, as reported by States/UTs in 'P' form was 22846 in September 2016; 4263 in September 2017 and 4378 in September 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in September 2016; 39729 samples were tested for Chikungunya, out of which 12534 were found positive. In September 2017; out of 11204 samples, 1632 were found to be positive and in September 2018, out of 12090 samples, 1459 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 31.55%, 14.57% and 12.07% in September month of 2016, 2017 & 2018 respectively.

Fig 25: State/UT wise Presumptive Chikungunya cases and outbreaks for September 2018

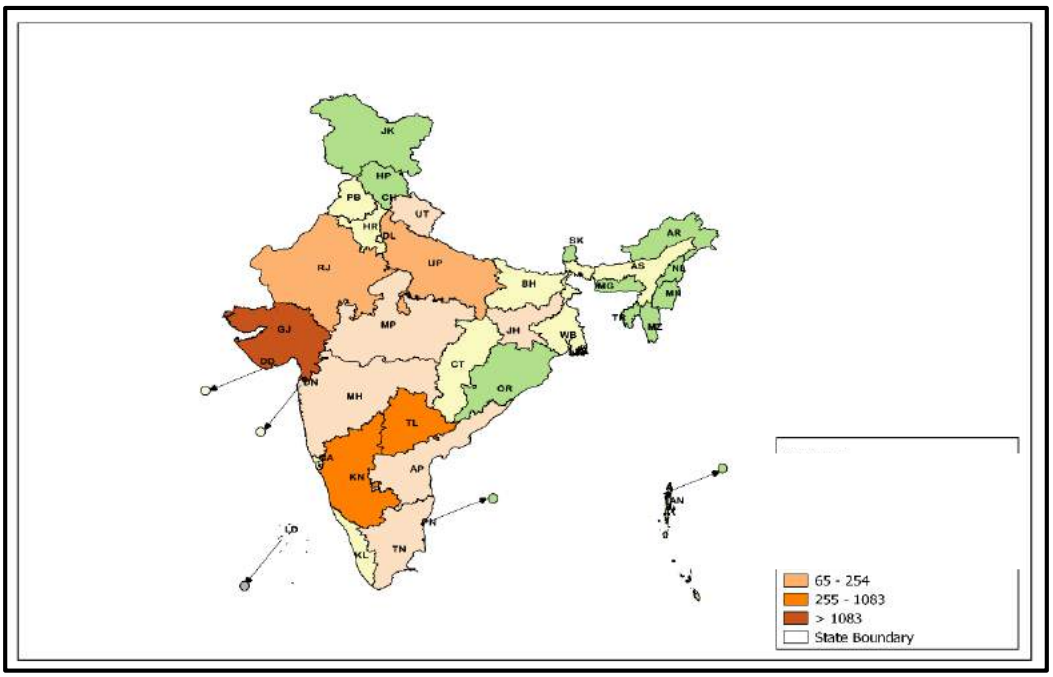


Fig 26: State/UT wise Lab Confirmed Chikungunya cases and outbreaks for September 2018

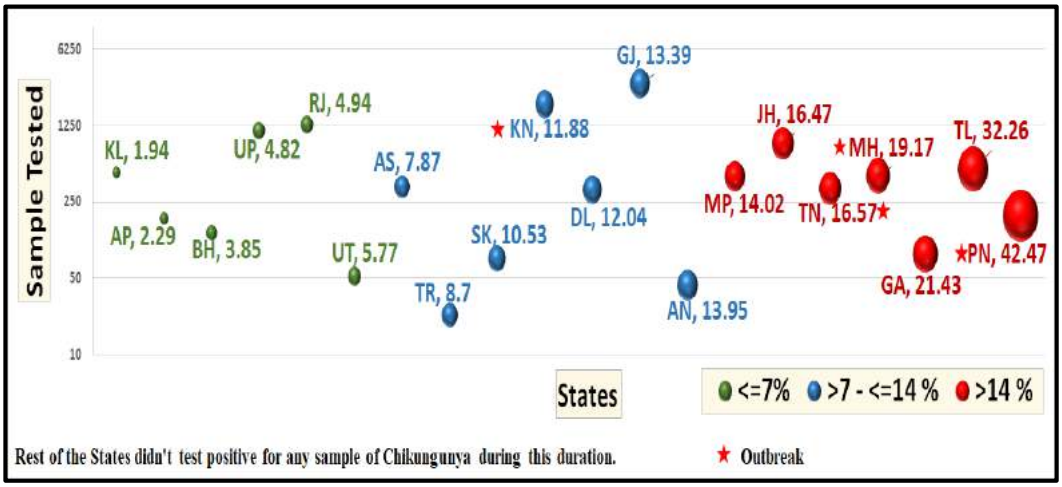
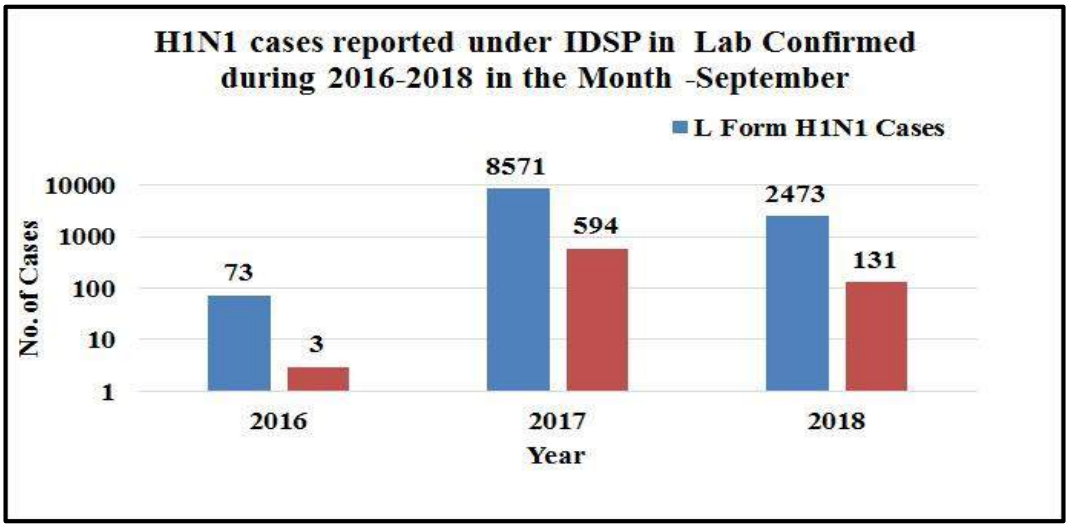


Fig 27: H1N1 cases reported under IDSP in L Form during 2016-2018 in September Month



As reported in L form, in September 2016; there were 73 cases and 3 deaths. In September 2017; there were 8571 cases and 594 deaths and in September 2018, there were 2473 cases and 131 deaths.

Case fatality rate for H1N1 were 4.11%, 6.93% and 5.29% in September month of 2016, 2017 & 2018 respectively.

Fig 28: State/UT wise Lab-confirmed H1N1 cases and outbreaks for September 2018

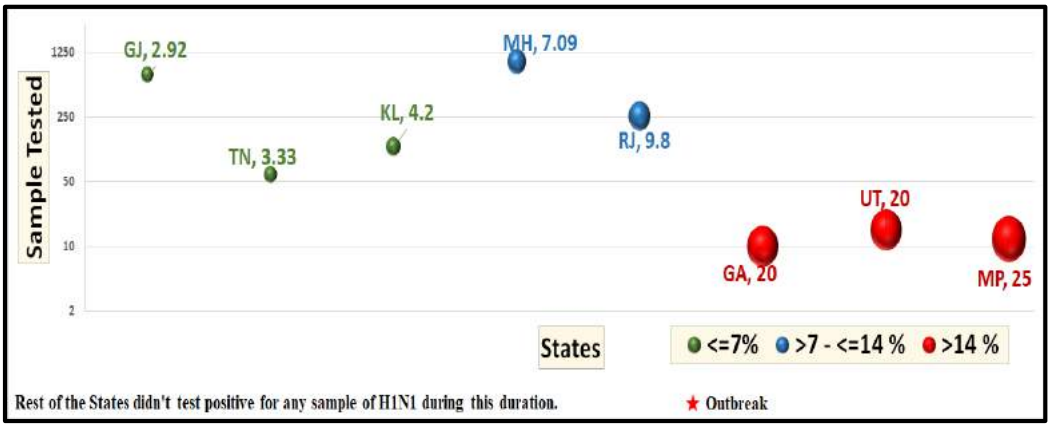
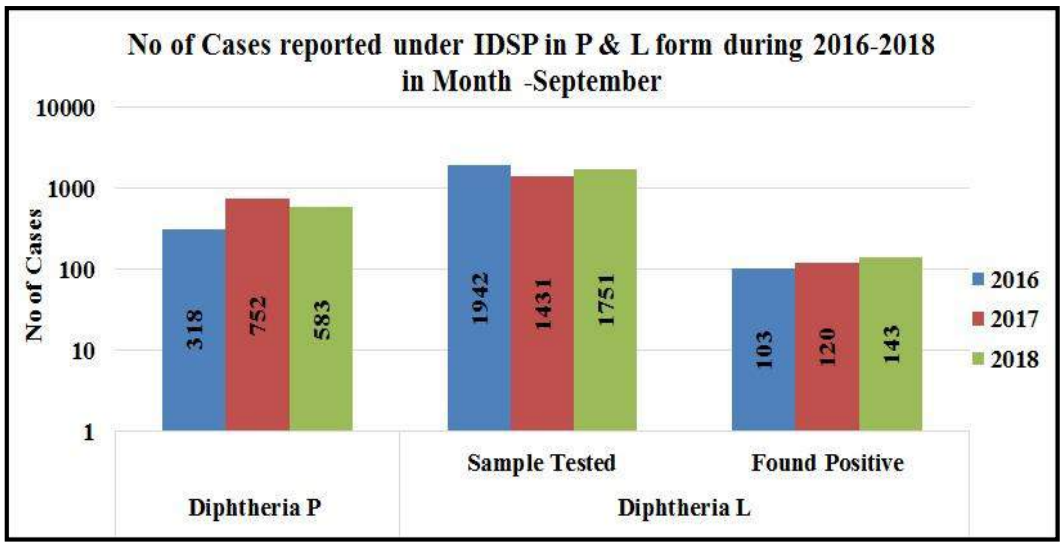


Fig 29: Diphtheria cases reported under IDSP under P & L Form during 2016-2018 in September Month



As shown in Fig 29, number of presumptive Diphtheria cases, as reported by States/UTs in 'P' form was 318 in September 2016; 752 in September 2017 and 583 in September 2018. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in September 2016; 1942 samples were tested for Diphtheria, out of which 103 were found positive. In September 2017; out of 1431 samples, 120 were found to be positive and in September 2018, out of 1751 samples, 143 were found to be positive.

Sample positivity of samples tested for Diphtheria has been 5.30%, 8.38% and 8.17% in September month of 2016, 2017 & 2018 respectively.

Fig 30: Presumptive Diphtheria cases reported under IDSP under P & L Form during 2016-2018 in September Month

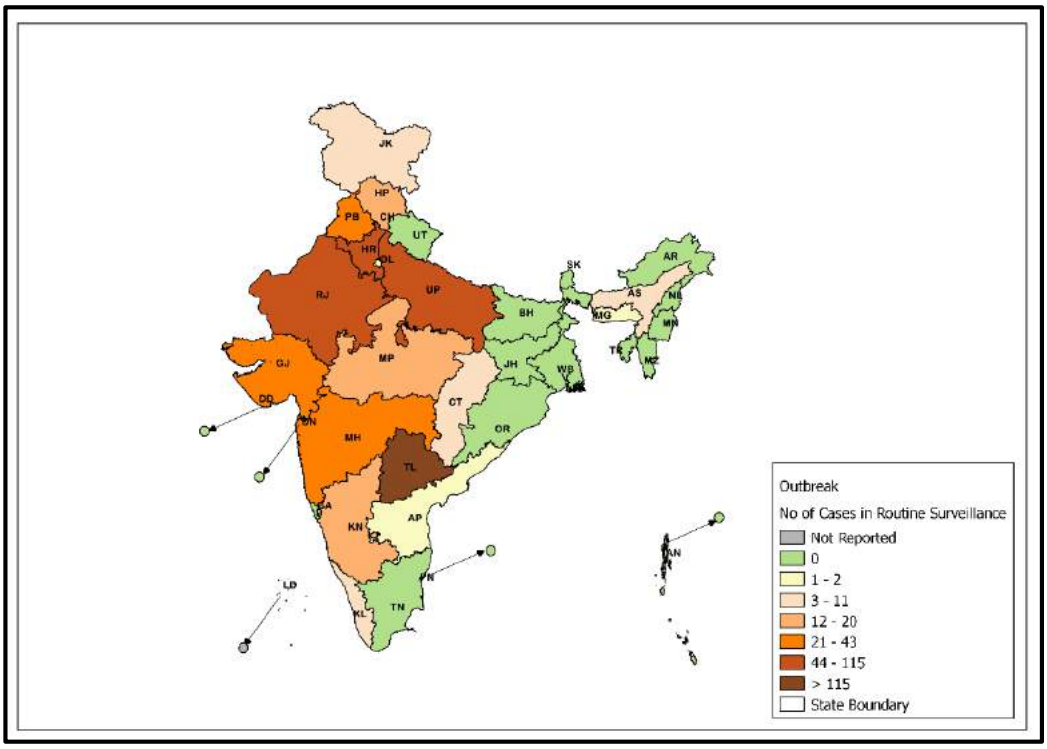
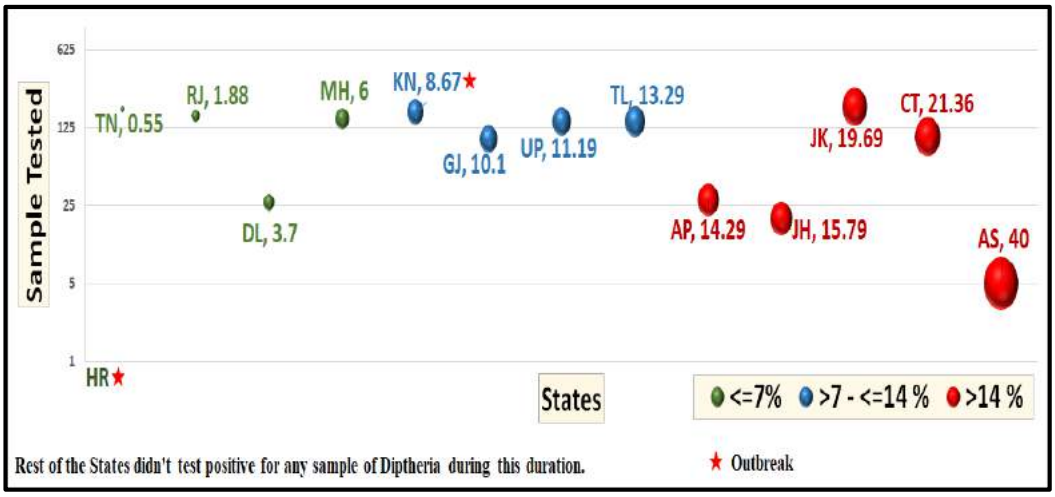


Fig 31: Lab Confirmed Diphtheria cases reported under IDSP under P & L Form during 2016-2018 in September Month



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**: Any patient with fever for more than one week and with any two of the following: Toxic look, Coated tongue, Relative bradycardia, Splenomegaly, Exposure to confirmed case, Clinical presentation with complications e.g. GI bleeding, perforation, etc. AND/OR Positive serodiagnosis (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: Presumptive Acute Diarrheal Disease (Including Acute Gastroenteritis):** Passage of 3 or more loose watery stools in the past 24 hours. (With or without vomiting).
- **Confirmed Cholera**: A case of acute diarrhoea with isolation and identification of Vibrio cholera serogroup O1 or O139 by culture of a stool specimen.
- **Viral Hepatitis**: **Presumptive**: Acute illness typically including acute jaundice, dark urine, anorexia, malaise, extreme fatigue, and right upper quadrant tenderness.
  Confirmed: Hepatitis A: A case compatible with the clinical description of acute hepatitis with demonstration of anti-HAV IgM in serum sample.
  Confirmed: Hepatitis E: A case compatible with the clinical description of acute hepatitis with demonstration of anti-HEV IgM in serum sample.

- **Dengue**: **Presumptive**: An acute febrile illness of 2-7 days duration with two or more of the mentioned manifestations:
  - Headache, Retro-orbital pain, Myalgia, Arthralgia, Rash, haemorrhagic manifestations, leukopenia, or Non-ELISA based NS1 antigen/IgM positive. (A positive test by RDT will be considered as probable due to poor sensitivity and specificity of currently available RDTs.)

  Confirmed: A case compatible with the clinical description of dengue fever with at least one of the following:

  - Demonstration of dengue virus NS-1 antigen in serum sample by ELISA.
  - Demonstration of IgM antibodies by IgM antibody capture ELISA in single serum sample.
  - IgG seroconversion in paired sera after 2 weeks with fourfold increase of IgG titre.
  - Detection of viral nucleic acid by polymerase Chain reaction (PCR).
  - Isolation of the dengue virus (virus culture +ve) from serum, plasma, leucocytes.
    (Source – Dengue National guidelines, NVBDCP 2014)

- **Leptospirosis Case Definition**: **Presumptive Leptospirosis**: 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 one or more of the following:

- Calf muscle tenderness
- Conjunctival suffusion
- Oliguria or anuria and/or proteinuria
- Jaundice
- Haemorrhagic manifestations (intestines, lung)
- Meningeal irritation
- GI symptoms (Nausea/ Vomiting/ Abdominal pain/Diarrhoea)

- And/or one of the following:-
  - A positive result in IgM based immune- assays, slide agglutination test or latex agglutination test or immunochromatographic test.
  - A Microscopic Agglutination Test (MAT) titre of 100/200/400 or above in single sample based on endemicity.
  - Demonstration of leptospires directly or by staining methods

Lab Confirmed Leptospirosis: A case compatible with the clinical description of leptospirosis with at least one of the following:

- Isolation of leptospires from clinical specimen.
- Four fold or greater rise in the MAT titre between acute and convalescent phase serum specimens run in parallel. (Source: -National Guidelines on Diagnosis, Case Management Prevention and Control of Leptospirosis NCDC 2015).

- **Chikungunya case definition: Presumptive Case Definition**: An acute illness characterised by sudden onset of fever with any of the following symptoms: headache, backache, photophobia, severe arthralgia and rash.
  - Lab confirmed: A case compatible with the clinical description of chikungunya fever with at least one of the following: Demonstration of IgM antibodies by IgM antibody capture ELISA in a single serum sample.
  - Detection of viral nucleic acid by PCR.
  - Isolation of chikungunya virus from clinical specimen. (Source – Mid Term Plan Guidelines, NVBDCP 2013.

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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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