



Disease Alert

प्रकोप चेतावनी

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

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KYASANUR FOREST DISEASE (KFD) OUTBREAK,
MANATHAVADY BLOCK, DISTRICT WAYANAD, KERALA

BACKGROUND:

Regarding Kyasanur Forest Disease (KFD): KFD is a zoonotic disease commonly referred to as Monkey fever (because of its association with monkey deaths), is a tick-borne viral hemorrhagic fever, usually endemic to Southwestern part of India.

Historically, the virus was identified in 1957 when it was first isolated from a sick monkey from Kyasanur Forest in Shimoga district of Karnataka State. Rodents, shrews and monkeys are common hosts for KFD virus after being bitten by an infected tick.

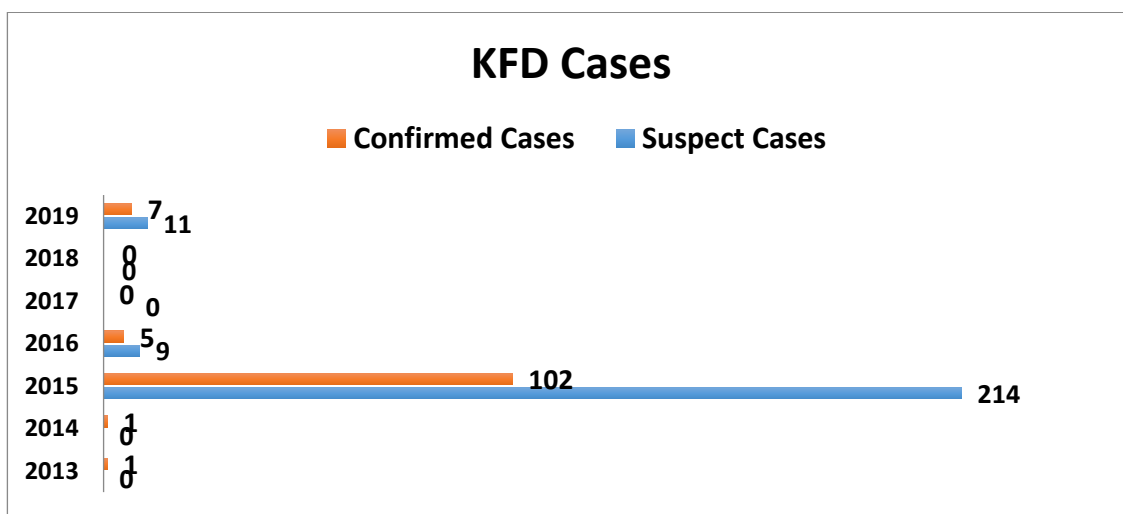
Infection causes severe febrile illness in most of the monkeys. When infected monkeys die, the ticks drop from their body, thereby generating 'hot-spots' of infectious ticks that further spread the disease.

Transmission of Disease: Humans can get the disease from the bite of an infected tick (*Hemaphysalis spinigera*) or by contact with an infected animal such as sick or recently dead monkey. There is no substantive evidence of human-to-human transmission of disease.

KFD CASES IN KERALA:

After Karnataka, Kerala is most affected State as far as KFD is concerned. The graph below shows that substantial number of cases have been reported in last 7 years, suggesting that the disease is endemic to certain geographical areas in Kerala which need continuous surveillance system in place for prompt action

Figure-1: Distribution of KFD Reported Cases in State from 2013-2019*



* About 11 deaths were reported in 2015 and 02 deaths in 2019 in this period.

BACKGROUND OF OUTBREAK IN MANATHAVADY BLOCK:

On 23rd December 2019, a female aged 23years consulted a nearby private doctor with symptoms of fever and associated complaints. When her symptoms did not subside, she visited District Hospital (DH) Manathavady after 3 days and then later was referred to Medical college hospital for admission.

As the symptoms were suspicious of KFD, District Surveillance Unit (DSU) was immediately for further investigation. Sample was also taken from the case that later turned to be tested positive for KFD on 31st December 2019.

After some days, DSU was again notified when another case of a male aged 62years from the same area who was referred with similar complaints to DH Manathavady. The sample was taken which tested positive for KFD on 7th January 2020.

Then, another case of a female aged 47years was reported from an adjoining area of earlier two cases with similar symptoms on 11th January 2020 and later her sample also tested positive on 14th January 2020.

On 21st January 2020, the 5th case, a female aged 36years from the same area was reported with symptoms who also tested positive.

INVESTIGATIONS UNDERTAKEN BY RRT:

Rapid Response Team (RRT) was constituted with District Surveillance Officer (DSO), MO of concerned PHC, and other ground level functionaries.



(RRT undertaking field investigation)

RRT evaluated the background information and started by formalizing a Clinical Case Definition to undertake active surveillance & develop a chronology of events for reaching a specific diagnosis.

A probable case of KFD was considered as one having following symptoms:

- (a) Fever/Headache/Myalgia from previously affected KFD/Hotspot areas.
OR
- (b) Fever/Headache/Myalgia with history of travel to forest/history of tick-bite
OR
- (c) Fever/Myalgia from areas of reported Monkey-death cases.

State RRT team also reviewed the outbreak situation through review meetings with District RRT officials. Later they also visited affected households in Appapara Family health Centre (FHC) area of Narangakunnu colony, Begur colony, Mannundi colony to conduct detailed investigation with District RRT officials.

The socio-demographic characteristics were correlated with environmental factors for confirming epidemiological linkage and to find out additional reasons responsible for such an outbreak.

The team also met Thirunelli Panchayat President and Secretary to handle the current situation effectively with strong coordinated efforts and community participation. Significance of involving other departments like Veterinary and Forest along with Inter-State coordination for effective control of the situation was discussed.



(RRT members interacting with community)

During active fever surveillance in field under supervision of DSU, two cases of young children were found to have developed symptoms on 26th January. Both later tested positive for disease. Both had history of tick bites. Later one more case with onset of symptoms on 24th January also tested positive.

The most common finding noted among almost all the reported cases was monkey deaths in recent past in their surroundings (near residence/workplace/play area), which raised suspicion of KFD to the concerned surveillance/nodal officers at district.

ENVIRONMENTAL ASSESSMENT:

Following salient features were observed in Environmental Assessment by RRT:-

- The area appeared fairly clean. The cases were located in areas along the riverbank progressing further towards Thirunelli.
- The area lies very close to the forest and is frequented by monkeys.
- Monkey deaths are common in those areas.
- There were also coffee plantations in the area where the initial case of KFD was reported. Monkeys quite often visit these plantations as well as nearby houses.
- All except one house were having roof tiles, which was at times destroyed by the monkeys who enter the houses for food etc. and cause nuisance to the household members.
- Each case had an evident history of monkey death in the locality where the affected person had visited.
- Many had domestic animals that graze in the areas and could be possible carriers of the affected ticks.

LABORATORY DIAGNOSIS:

- **RT-PCR test** was performed for confirmation of KFD case at Manipal Centre for Virology Research (MCVR), Manipal. All 7 samples tested positive.
- **Ticks collection for virus identification** was sent to National Institute of Virology (NIV), Pune.

DESCRIPTIVE EPIDEMIOLOGY:

As per epidemiological investigation and laboratory results, it was clear that this was an outbreak of KFD in the affected area. Moreover, seasonality has been observed with incidence of KFD cases occurring usually during the months of January to May every year in State.

Data analysis revealed the following aspects about 7 cases: -

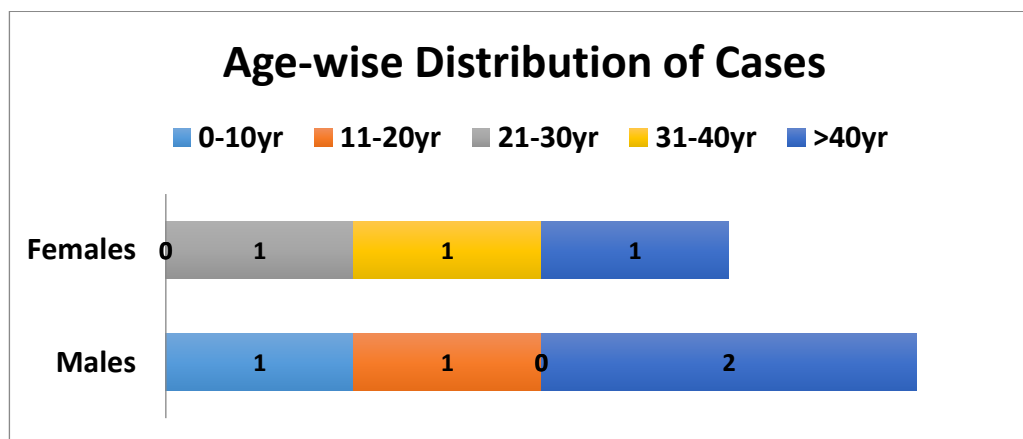
Table-1: Distribution of Confirmed KFD Cases during January 2020:

Case No.	Onset of symptoms	Date of admission/ Sample collection	Date of Lab results	Date of discharge
1	23-12-2019	26-12-2019	31-12-2019	21-01-2020
2	03-01-2020	06-01-2020	07-01-2020	04-02-2020
3	08-01-2020	11-01-2020	14-01-2020	21-01-2020
4	16-01-2020	21-01-2020	07-02-2020	28-01-2020
5	26-01-2020	28-01-2020	31-01-2020	01-02-2020
6	26-01-2020	28-01-2020	31-01-2020	08-02-2020
7	24-01-2020	01-02-2020	02-02-2020	12-02-2020

Interpretation: Most of the reported cases approached health facility for admission within 3 days of developing onset of symptoms except one case that was admitted after one week.

Table-2: Age and Gender-wise Distribution of Confirmed cases:

Gender	Confirmed Cases	Percentage (%)
Males	04	57
Females	03	43
TOTAL:	07	100

Figure-2: Age and Gender-wise Distribution of Confirmed cases:

Note: Numbers in Bar-diagram denote the number of reported confirmed cases in each age group.

Interpretation: Most of the reported cases during the month of January period are from different age groups and both genders. This highlights need of continuous awareness activities especially in high-risk areas of State.

CONTROL MEASURES UNDERTAKEN:

1. Epidemiological Surveillance and case management

- A. Daily active fever survey in the affected areas.
- B. District Vector Control (DVC) unit conducted dusting and ticks collection at the time of monkey deaths. Ticks were sent to NIV, Pune for virus identification.
- C. KFD treatment protocol/guideline was prepared and sent to all institutions.
- D. Tick-repellents for cattle from Veterinary department were issued to the households in the area. BB emulsion was also distributed in community.

2. Awareness through Social Behavior Change Communication

- A. Health education through IEC materials and Inter-personal communication.
- B. Prompt reporting of monkey deaths and their safe disposal.
- C. Vaccination camps were set up at hotspot/high-risk areas.



(Vaccination being done at local health facility)

3. Human resource development through Capacity building

- A. Training for ASHA workers was done at all bordering institutions.
- B. Attempt to motivate tribal people through Hamlet ASHAs were done.

4. Inter-Sectoral coordination through District RRT meeting

- A. House-to-house visits in affected areas were done in coordination with Forest, Veterinary and Homeopathy departments.
- B. Regional Entomology team also conducted activities at KFD affected areas.

SOME FIELD CHALLENGES FACED BY DISTRICT RRT:

1. Support from Tribal community was difficult: To build trust/faith due to language barrier for communication, accessibility to reach all households was not found to be safe, chance of misbehaving with health staff due to habit of alcoholism, inappropriate suitable time for meeting (they leave for work early morning and return late night).
2. Tick repellents were not used by the affected communities in spite of emphasizing on its importance and distributing free of cost by the Govt.
3. Some household members in affected areas refused KFD vaccination due to lack of awareness of the need, AEFI or vaccine hesitancy with repeated doses.



(Community awareness session in progress)

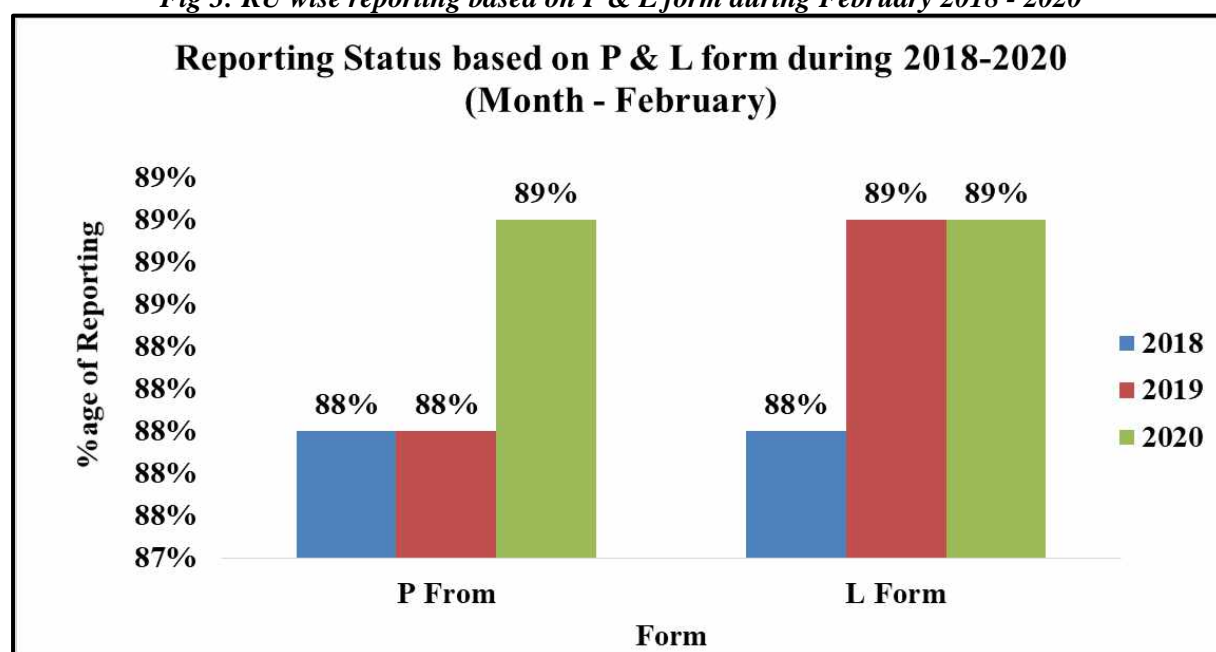
RECOMMENDATIONS (To prevent similar situation in future):

1. Strengthening surveillance of fever and unusual clinical presentations at healthcare facility and community levels. Data analysis needs to be done on a regular basis by medical officers.
2. Sensitize health providers in affected and nearby areas for prompt investigation of all unusual presentations through periodic training sessions.
3. Intensive awareness activities for behavioral modification in community to be done on a regular basis (like the use of insect repellents and protective clothing).
4. Strict directions from concerned authority for the local community to avoid/restrict visiting places of monkey deaths or contact with any infected/sick monkeys.
5. Emphasis on KFD Vaccination (including booster doses) in community.
6. Post-Mortem of monkeys may be done timely with active participation from other concerned departments to support Health department.
7. Emphasis to use tick repellents by owners on their cattle/pets especially in previous areas of monkey deaths.
8. Tick survey need to be done by engaging Expert professionals (as previous surveys did not yield any positive result due to poor strategy).
9. Tick control activities to be done under proper supervision of DVC/ Experts.
10. Inter-State sharing of surveillance details need to be strengthened by regular discussions and review meetings with counterparts.

Surveillance data of Enteric Fever, Acute Diarrhoeal Disease, Viral Hepatitis A & E, Dengue Leptospirosis, Dengue, Chikungunya, Leptospirosis and Seasonal Influenza A (H1N1) During February 2018 - 2020*

Data extracted from IDSP Portal (www.idsp.nic.in) as on May 3rd, 2020.

Fig 3: RU wise reporting based on P & L form during February 2018 - 2020



As shown in Fig 3, in February 2018, 2019 and 2020, the 'P' form reporting percentage (i.e. % RU reporting out of total in P form) was 88%, 88% and 89% respectively across India, for all disease conditions reported under IDSP in P form. Similarly, L form reporting percentage was 88%, 89% and 89% 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 4: State/UT wise P form completeness % for February 2020

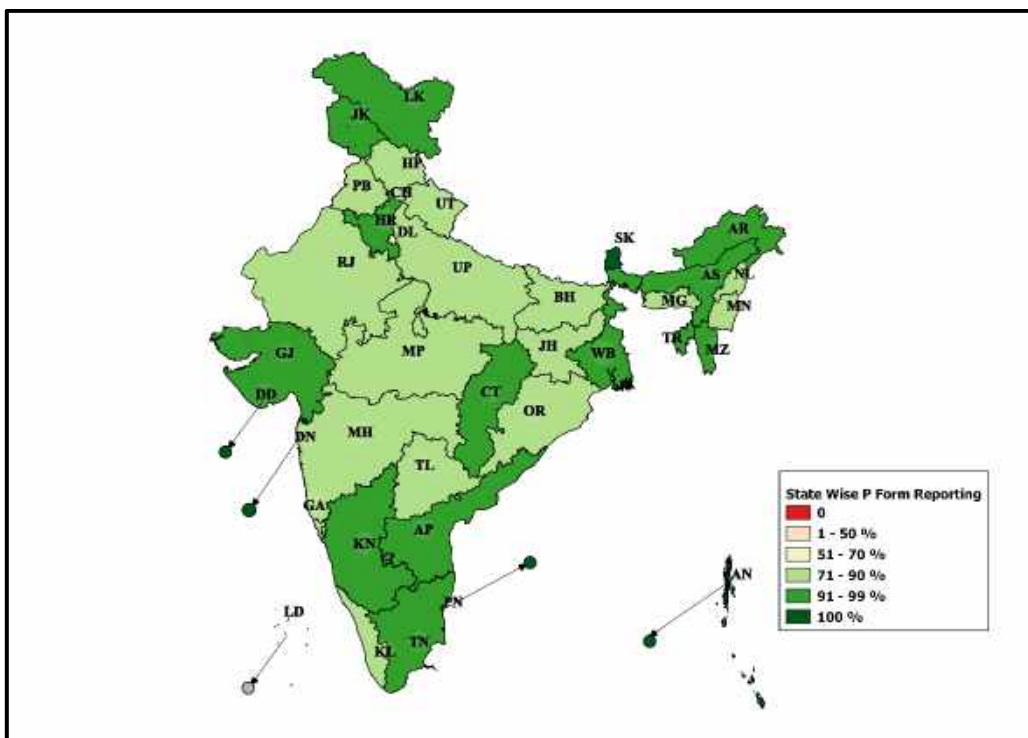
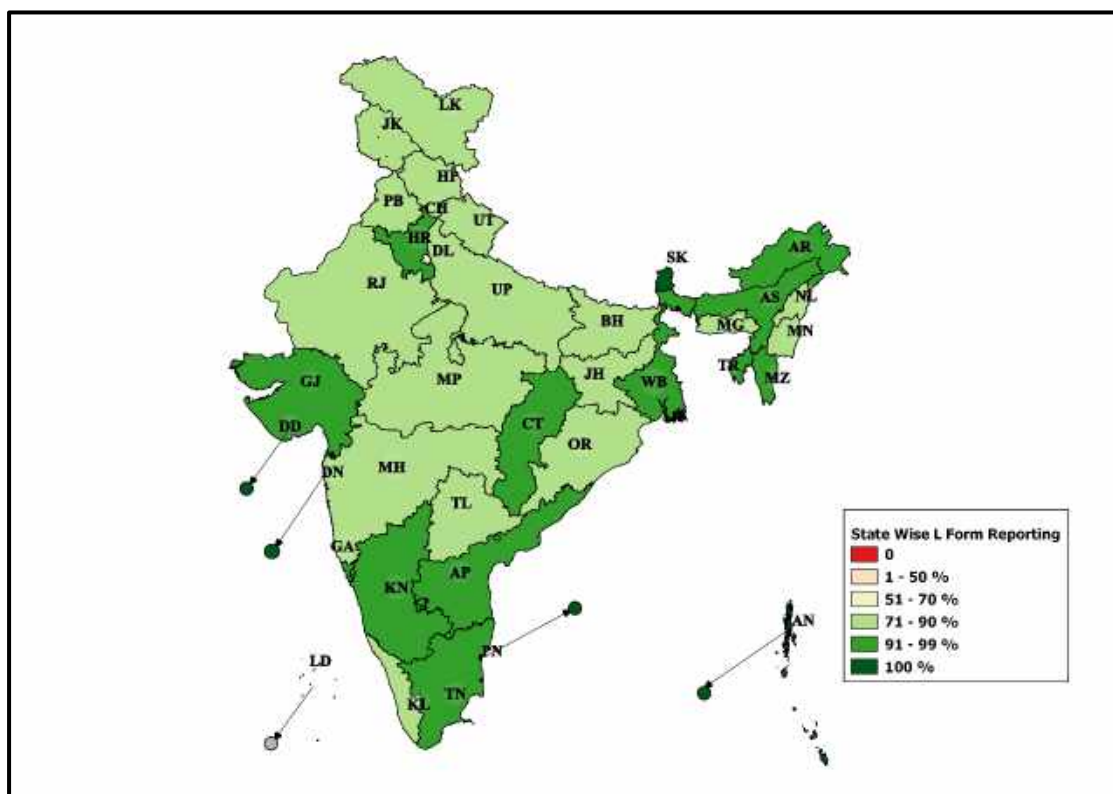


Fig 5: State/UT wise L form completeness % for February 2020



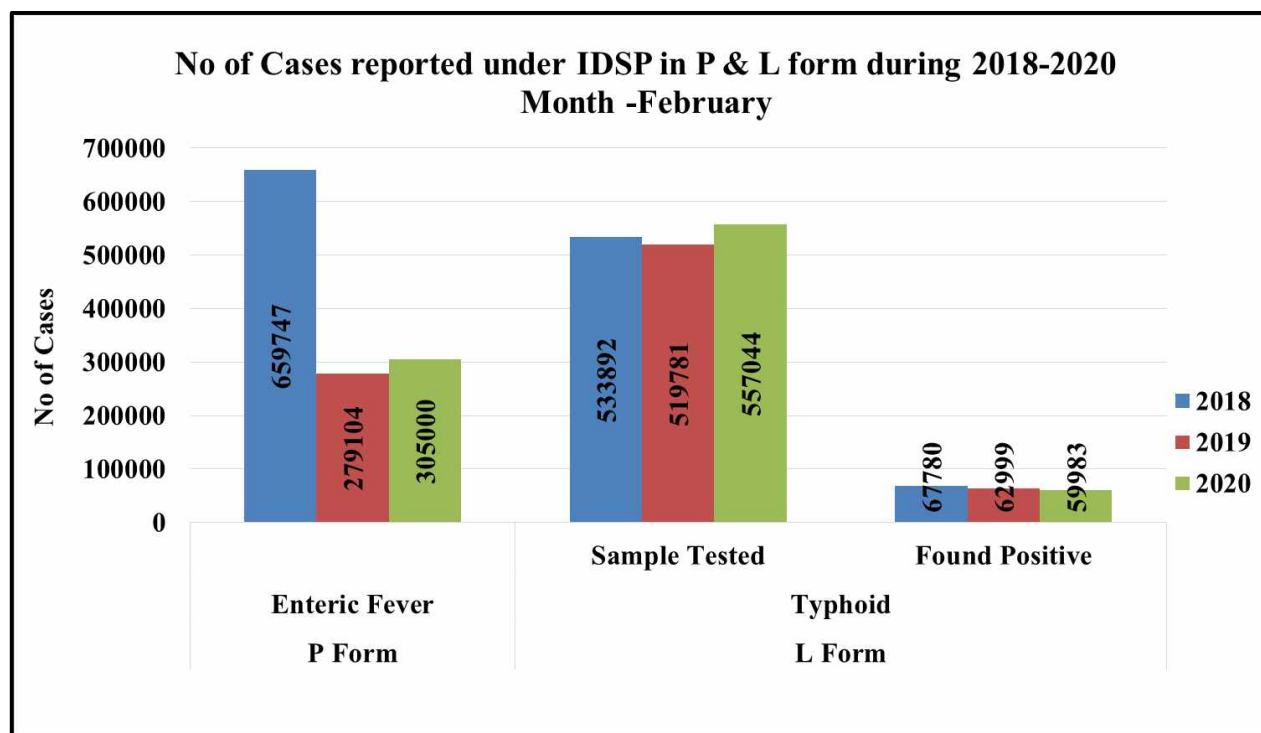


Fig 6: No. of Enteric Fever Cases reported under P & L form during February 2018 - 2020

As shown in Fig 6, number of presumptive enteric fever cases, as reported by States/UTs in ‘P’ form was 659747 in February 2018; 279104 in February 2019 and 305000 in February 2020. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2018; 533892 samples were tested for Typhoid, out of which 67780 were found positive. In February 2019; out of 519781 samples, 62999 were found to be positive and in February 2020, out of 557044 samples, 59983 were found to be positive.

Sample positivity has been 12.70%, 12.12% and 10.77% in February month of 2019, 2018 & 2020 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 and outbreaks for February 2020

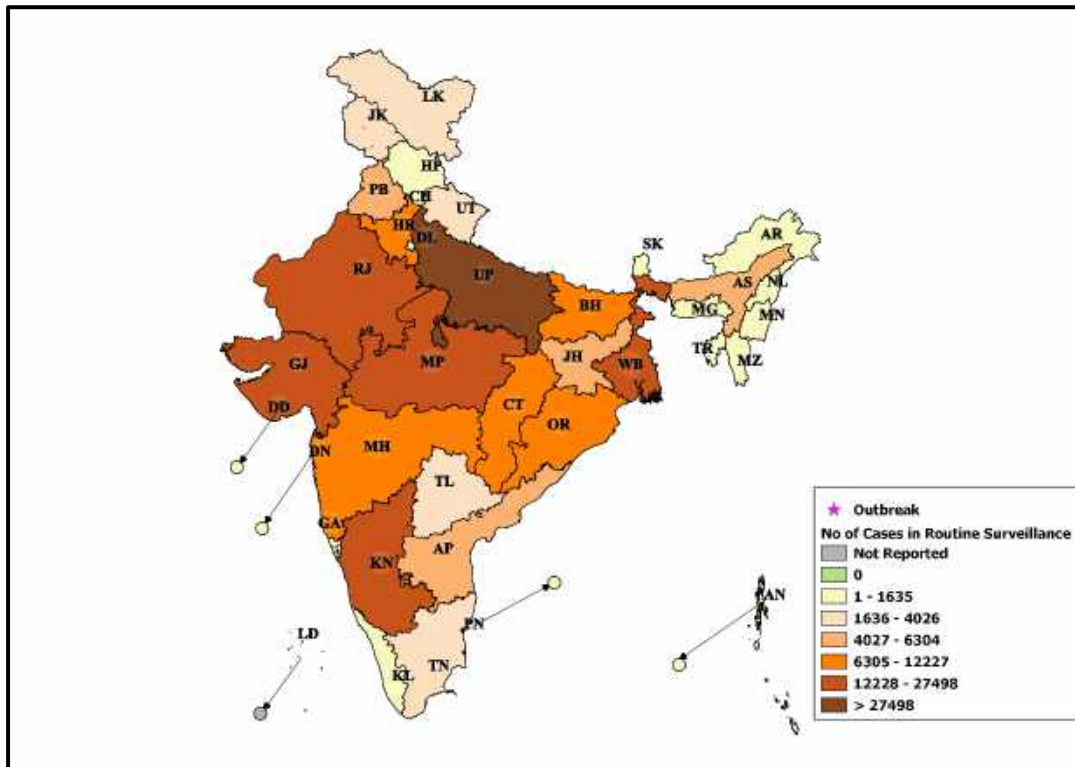


Fig 8: State/UT wise Lab Confirmed Typhoid cases and outbreaks for February 2020

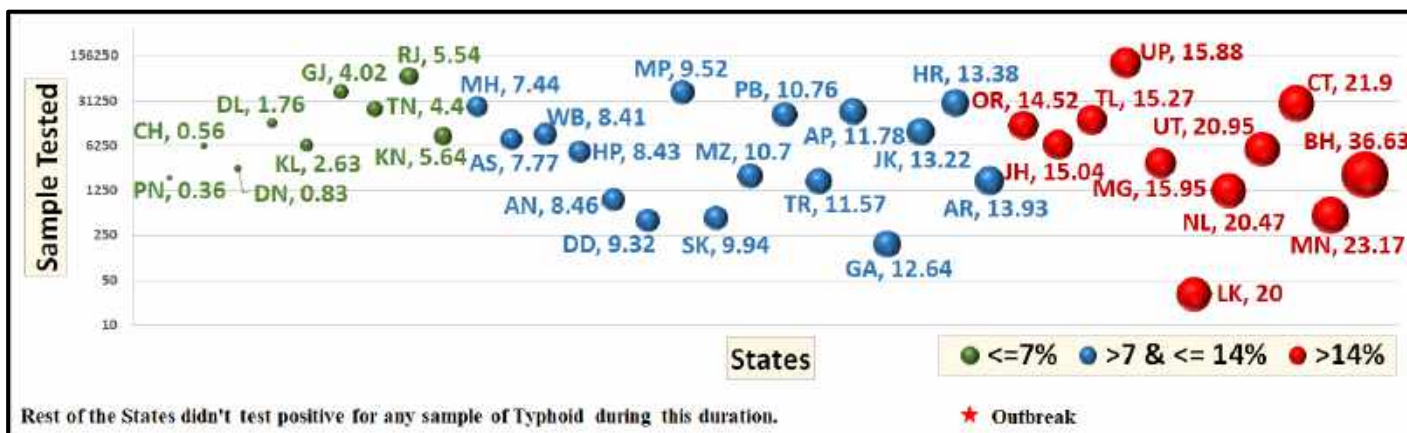
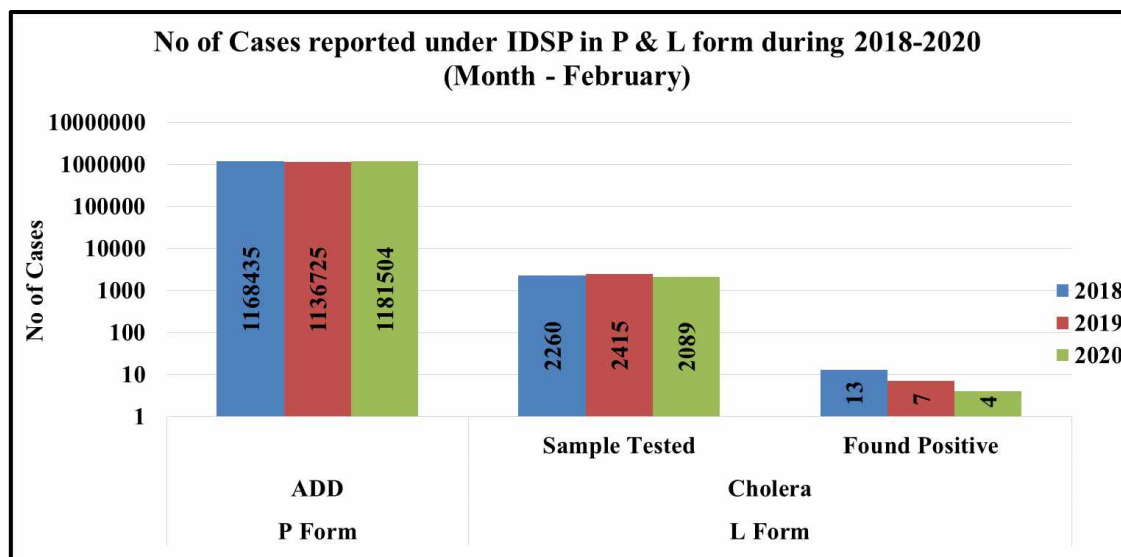


Fig. 9: No. of ADD Cases reported under IDSP in P Form & Cholera Cases in L form during February 2018 - 2020



As shown in Fig 9, number of Acute Diarrhoeal Disease cases, as reported by States/UTs in ‘P’ form was 1168435 in February 2018; 1136725 in February 2019 and 1181504 in February 2020. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2018, 2260 samples were tested for Cholera out of which 13 tested positive; in February 2019, out of 2415 samples, 07 tested positive for Cholera and in February 2020, out of 2089 samples, 04 tested positive.

Sample positivity of samples tested for Cholera has been 0.58%, 0.29% and 0.19% in February month of 2018, 2019 & 2020 respectively.

Fig 10: State/UT wise Presumptive ADD cases and outbreaks for February 2020

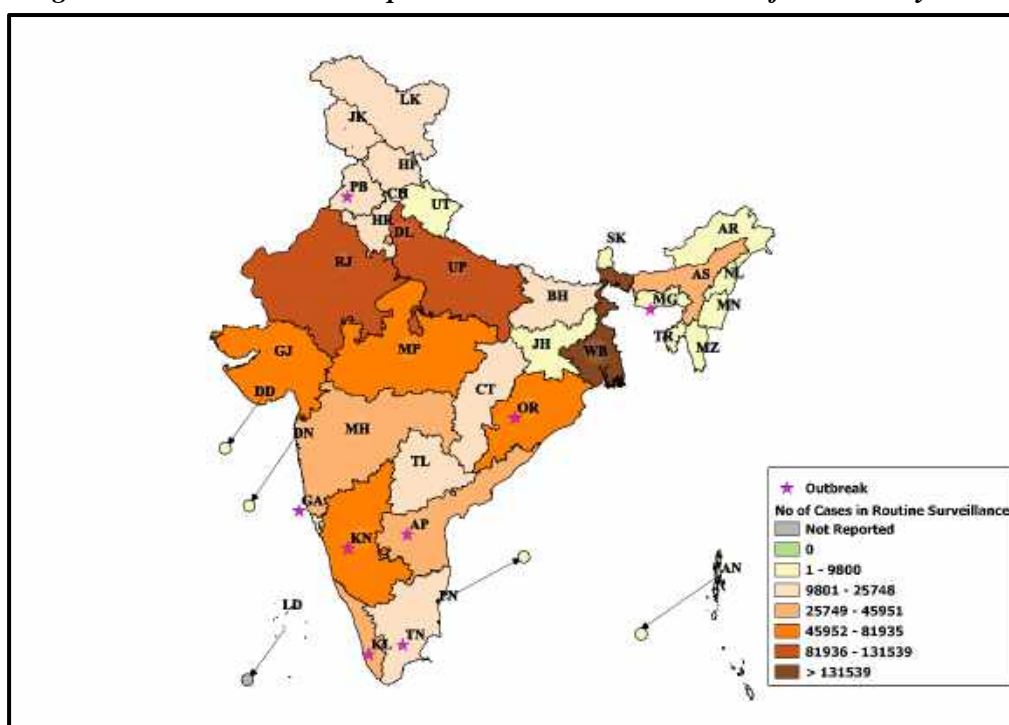


Fig 11: State/UT wise Lab Confirmed Cholera cases and outbreaks for February 2020

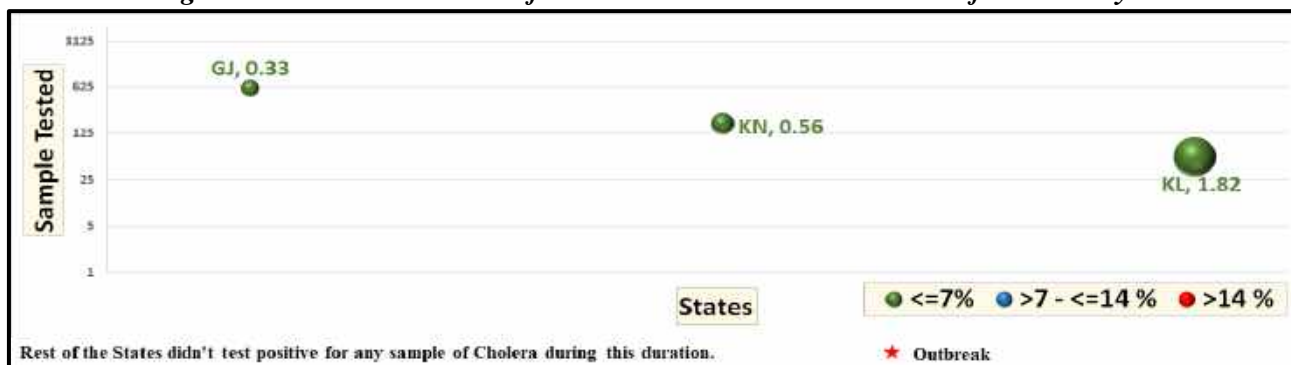
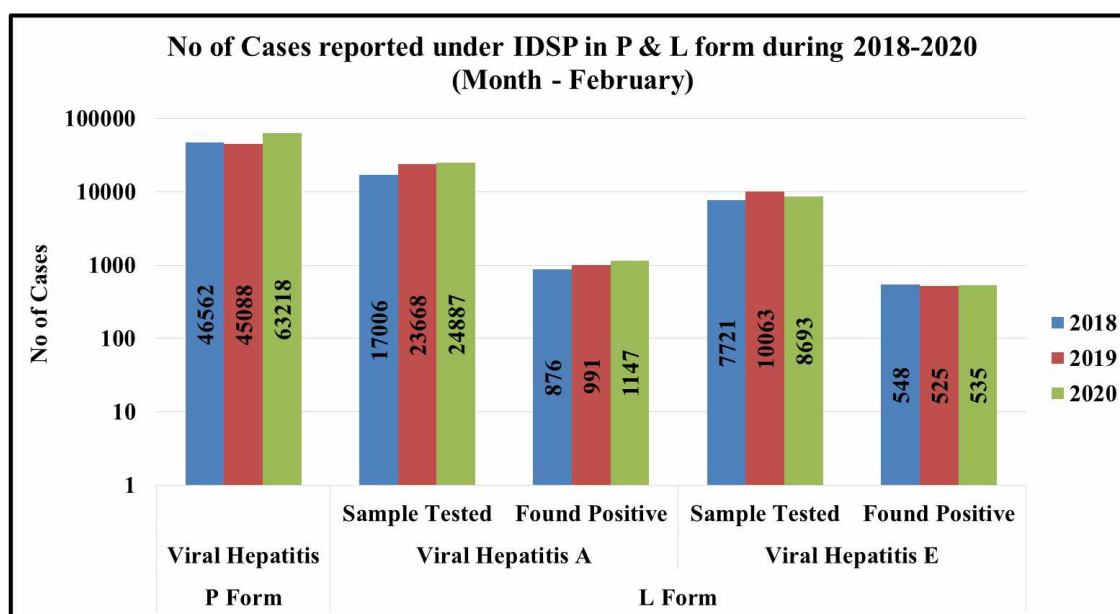


Fig 12: No of Viral Hepatitis Cases reported under IDSP in P form & Viral Hepatitis A & E cases reported under L form during February 2018 - 2020



As shown in Fig 12, the number of presumptive Viral Hepatitis cases was 46562 in February 2018, 45088 in February 2019 and 63218 in February 2020. 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 2018; 17006 samples were tested out of which 876 were found positive. In February 2019 out of 23668 samples, 991 were found to be positive and in February 2020, out of 24887 samples, 1147 were found to be positive.

Sample positivity of samples tested for Hepatitis A has been 5.15%, 4.19% and 4.61% in February month of 2018, 2019 & 2020 respectively.

As reported in L form for Viral Hepatitis E, in February 2018; 7721 samples were tested out of which 548 were found positive. In February 2019; out of 10063 samples, 525 were found to be positive and in February 2020, out of 8693 samples, 535 were found to be positive.

Sample positivity of samples tested for Hepatitis E has been 7.10%, 5.22% and 6.15% in February month of 2018, 2019 & 2020 respectively.

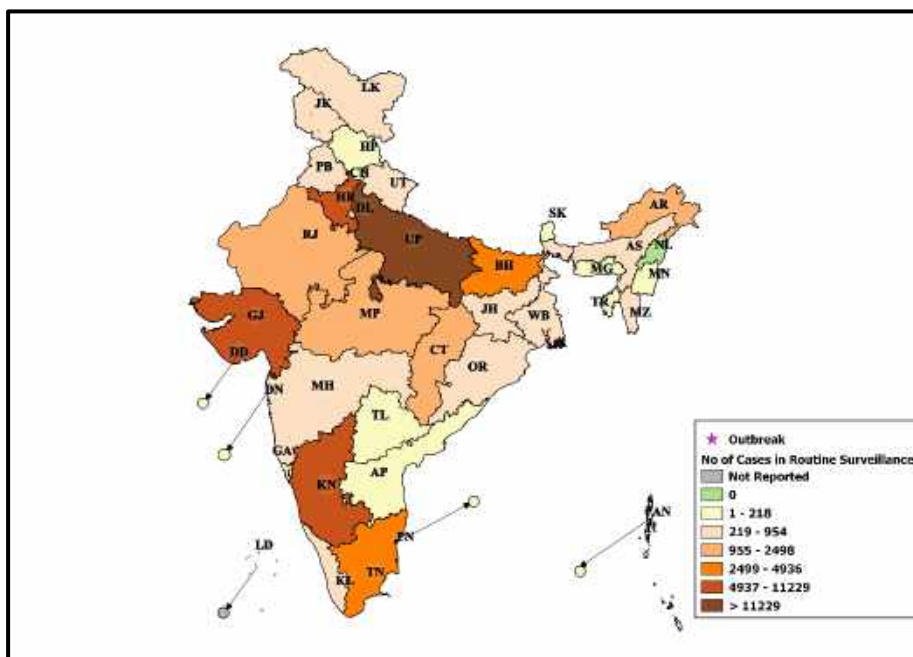


Fig 13: State/UT wise Presumptive Viral Hepatitis cases and outbreaks for February 2020

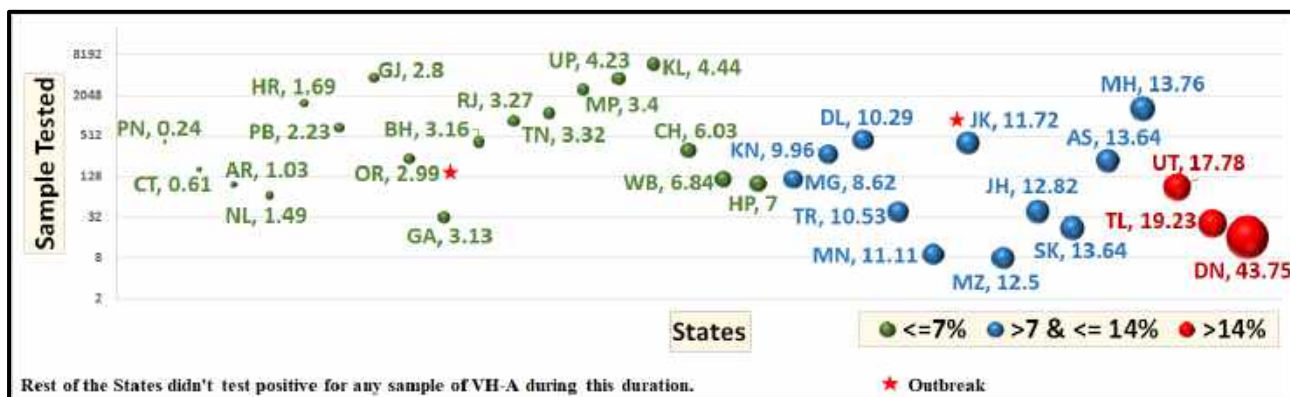


Fig 14: State/UT wise Lab Confirmed Viral Hepatitis A cases and outbreaks for February 2020

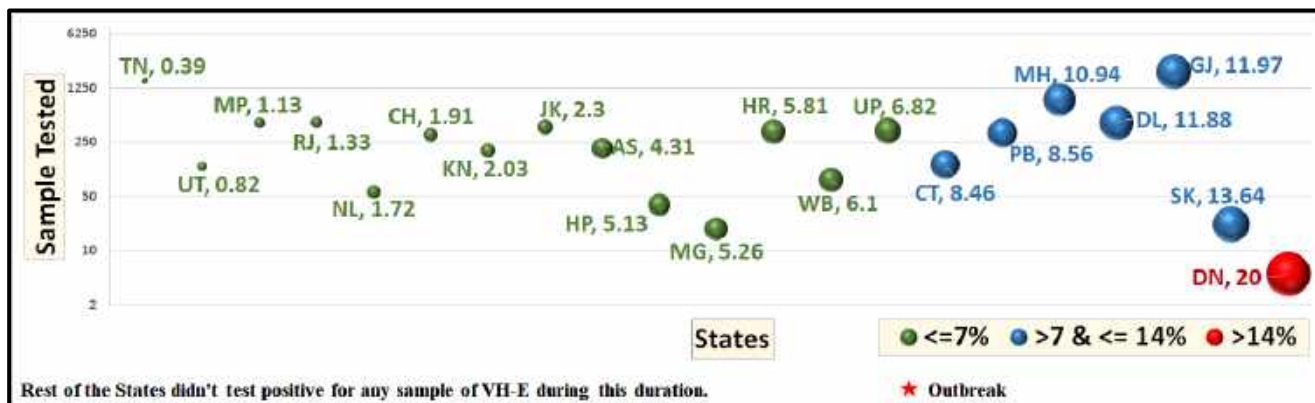
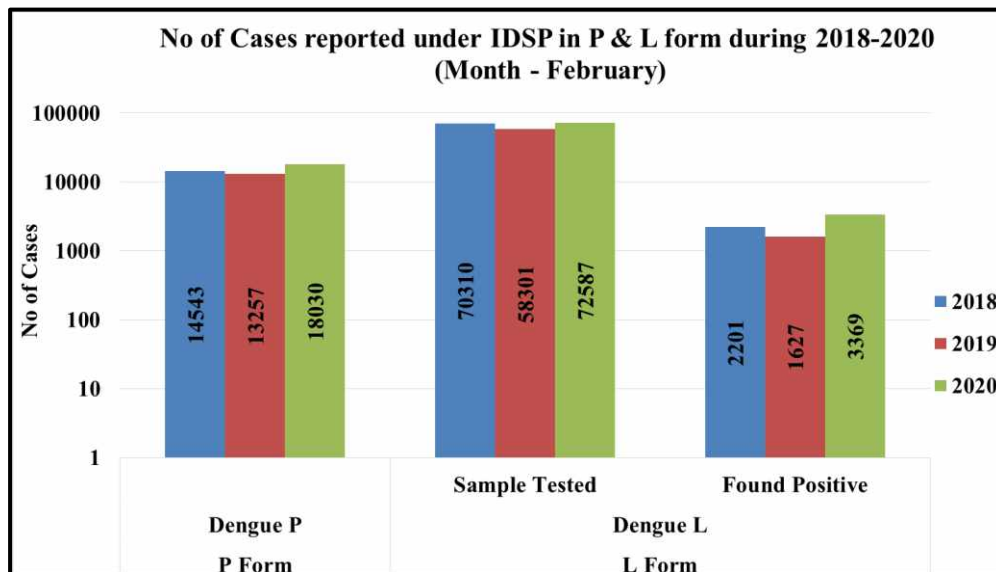


Fig 15: State/UT wise Lab Confirmed Viral Hepatitis E cases and outbreaks for February 2020

Fig 16: No. of Dengue Cases reported under IDSP in P & L form during February 2018 - 2020



As shown in Fig 16, number of presumptive Dengue cases, as reported by States/UTs in 'P' form was 14543 in February 2018; 13257 in February 2019 and 18030 in February 2020. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2018; 70310 samples were tested for Dengue, out of which 2201 were found positive. In February 2019; out of 58301 samples, 1627 were found to be positive and in February 2020, out of 72587 samples, 3369 were found to be positive.

Sample positivity of samples tested for Dengue has been 3.13%, 2.79% and 4.64% in February month of 2018, 2019 & 2020 respectively.

Fig 17: State/UT wise Presumptive Dengue cases and outbreaks for February 2020

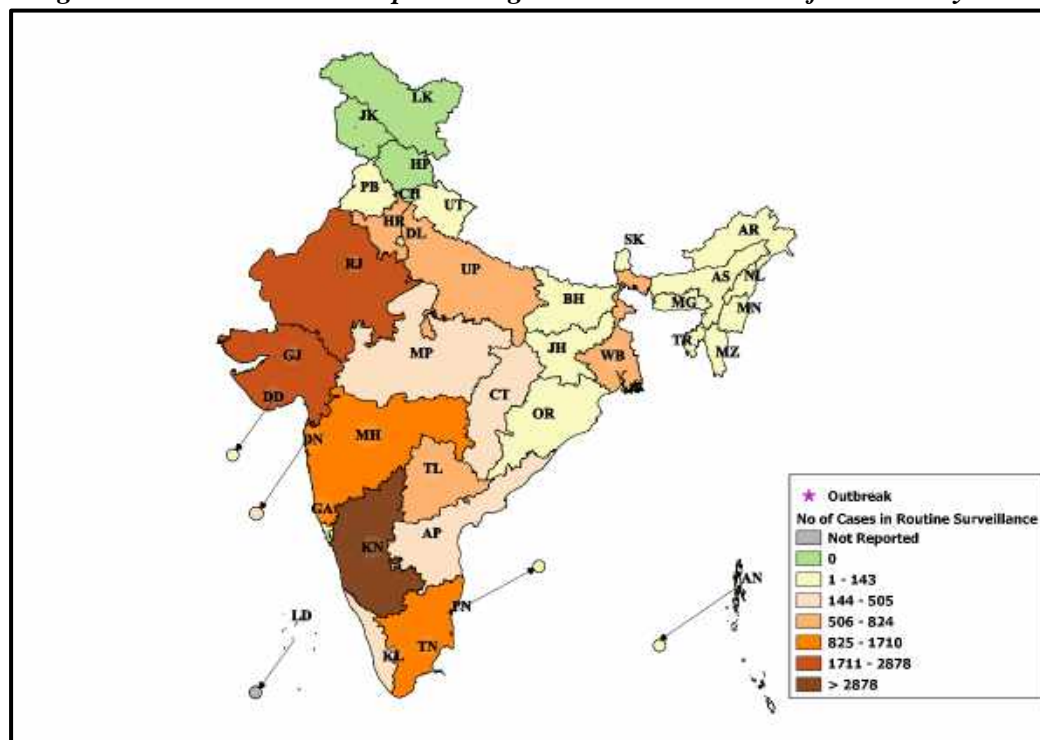


Fig 18: State/UT wise Lab Confirmed Dengue cases and outbreaks for February 2020

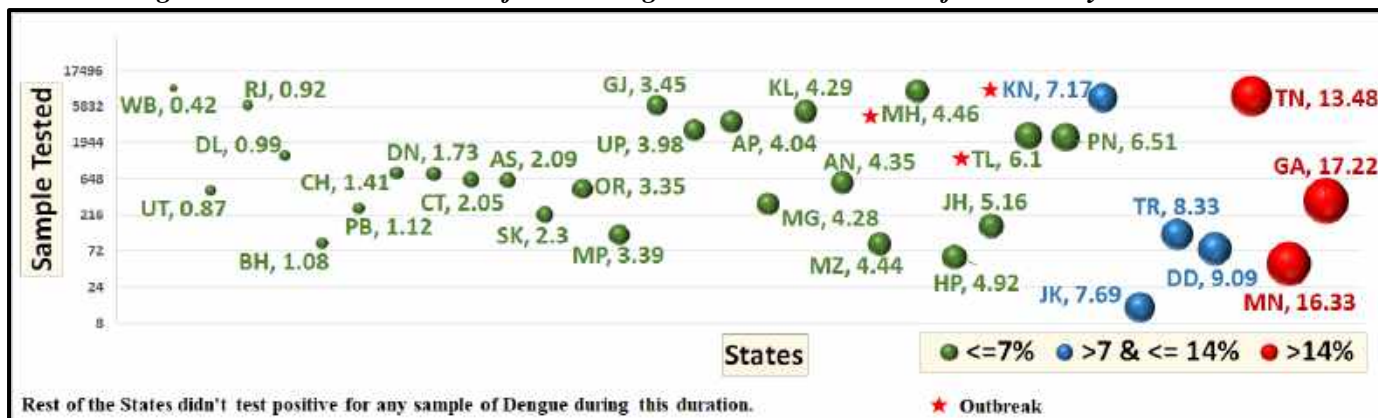
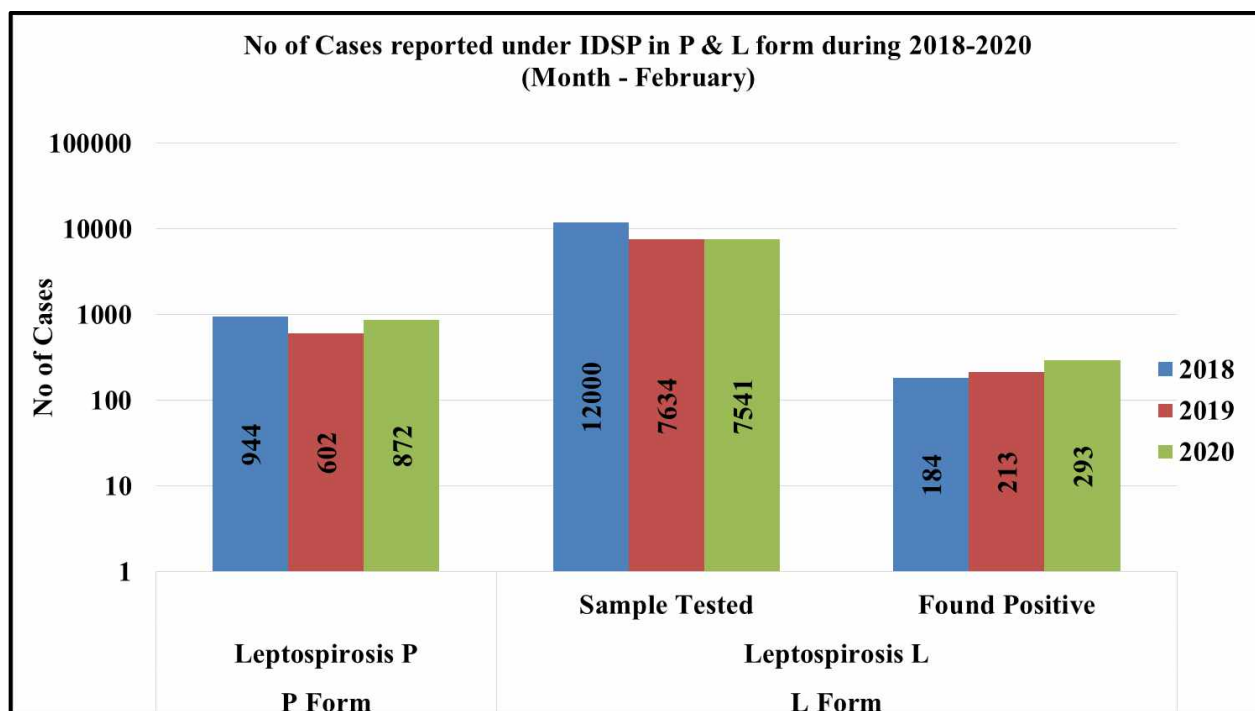


Fig 19: No. of Leptospirosis Cases reported under IDSP in P & L form during February 2018 – 2020



As shown in Fig 19, number of presumptive Leptospirosis cases, as reported by States/UTs in ‘P’ form was 944 in February 2018; 602 in February 2019 and 872 in February 2020. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2018; 12000 samples were tested for Leptospirosis, out of which 184 were found positive. In February 2019; out of 7634 samples, 213 were found to be positive and in February 2020, out of 7541 samples, 293 were found to be positive.

Sample positivity of samples tested for Dengue has been 1.53%, 2.79% and 3.89% in February month of 2018, 2019 & 2020 respectively.

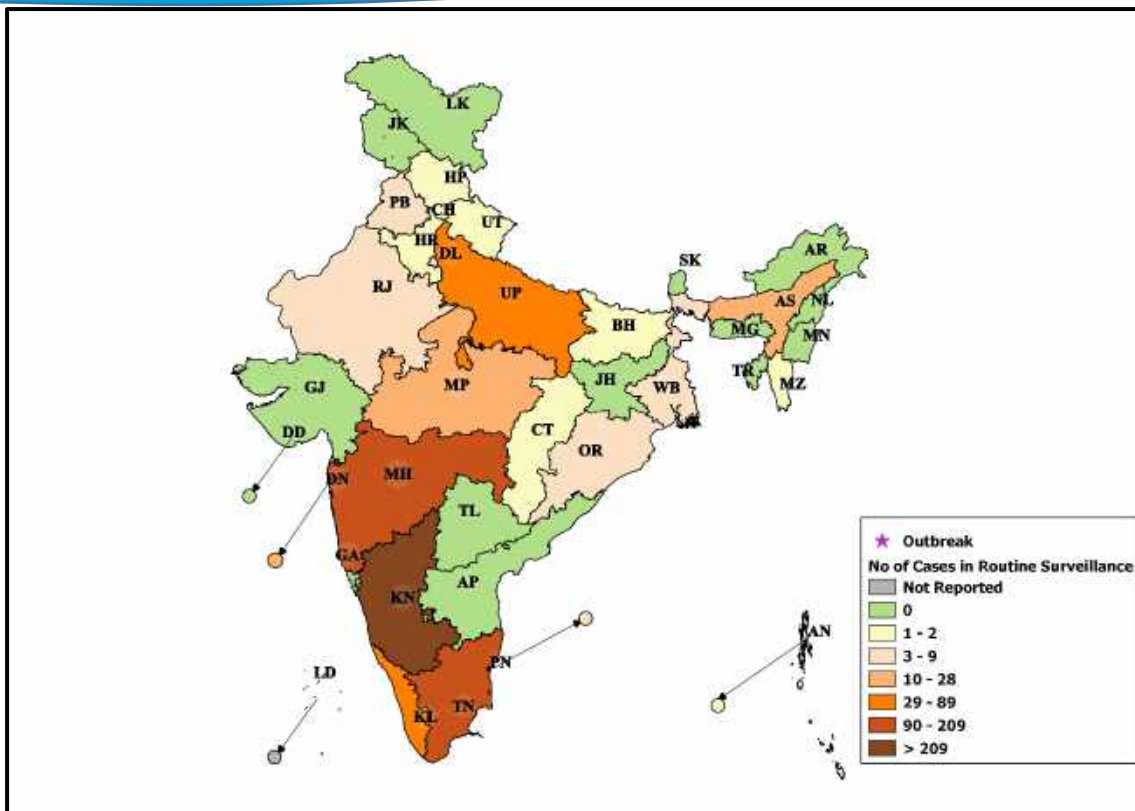


Fig 20: State/UT wise Presumptive Leptospirosis cases and outbreaks for February 2020

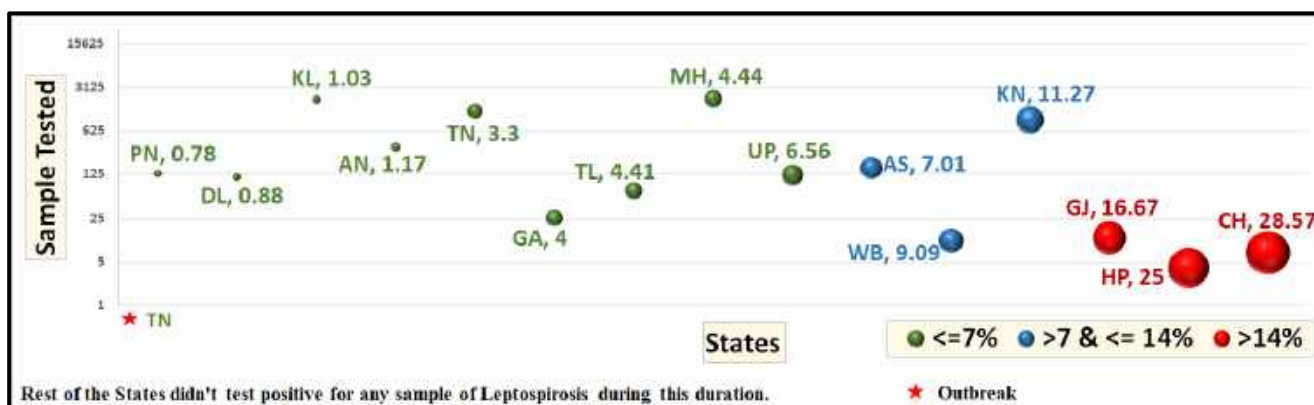
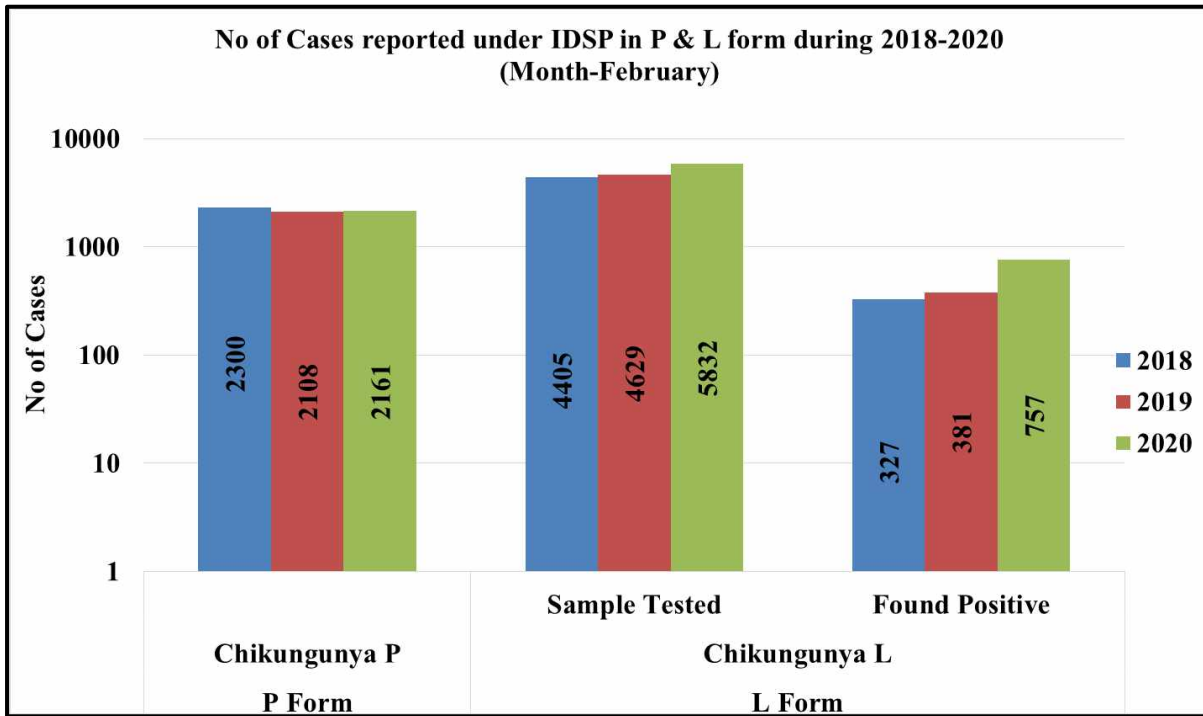


Fig 21: State/UT wise Lab Confirmed Leptospirosis cases and outbreaks for February 2020

Fig. 22: No. of Chikungunya Cases reported under IDSP in P & L form during February 2018 - 2020



As shown in Fig 22, number of presumptive Chikungunya cases, as reported by States/UTs in ‘P’ form was 2300 in February 2018; 2108 in February 2019 and 2161 in February 2020. These presumptive cases are diagnosed on the basis of standard case definitions provided under IDSP.

As reported in L form, in February 2018; 4405 samples were tested for Chikungunya, out of which 327 were found positive. In February 2019; out of 4629 samples, 381 were found to be positive and in February 2020, out of 5832 samples, 757 were found to be positive.

Sample positivity of samples tested for Chikungunya has been 7.42%, 8.23% and 12.98% in February month of 2018, 2019 & 2020 respectively.

Fig 23: State/UT wise Presumptive Chikungunya cases and outbreaks for February 2020

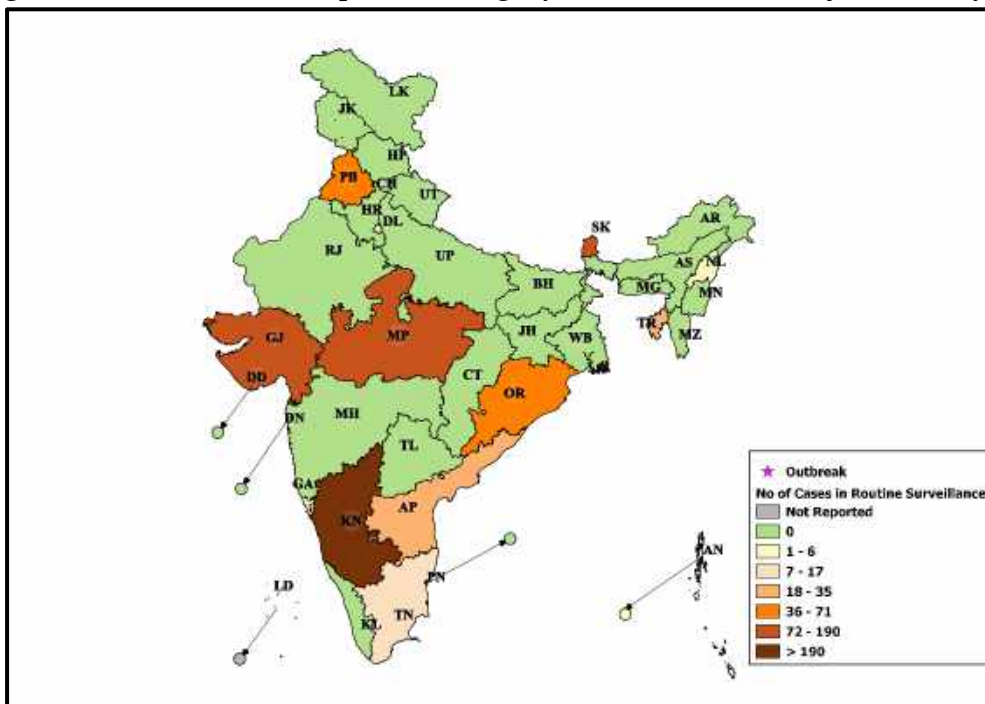


Fig 24: State/UT wise Lab Confirmed Chikungunya cases and outbreaks for February 2020

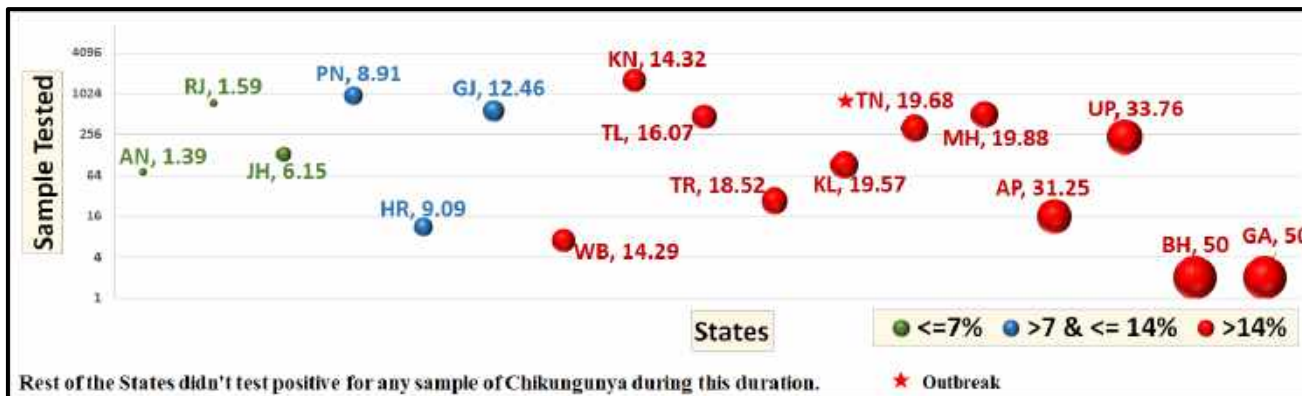
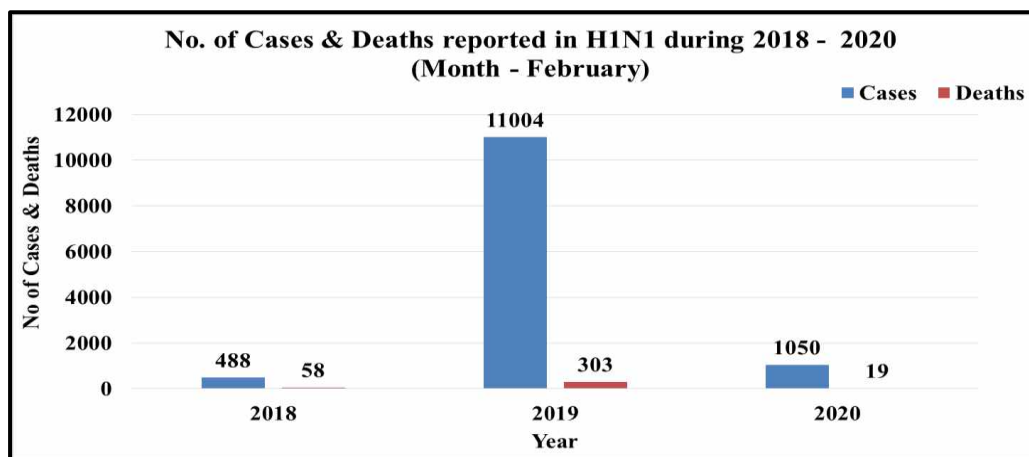


Fig 25: H1N1 cases reported under IDSP in L Form during 2018-2020 in February 2020



As shown in Fig 25. as reported in L form, in February 2018, there were 488 cases and 58 deaths. In February 2019, there were 11004 cases and 303 deaths; and in February 2020, there were 1050 cases and 19 deaths

Case fatality rate for H1N1 were 11.89%, 2.75% and 1.81% in February month of 2018, 2019 & 2020 respectively.

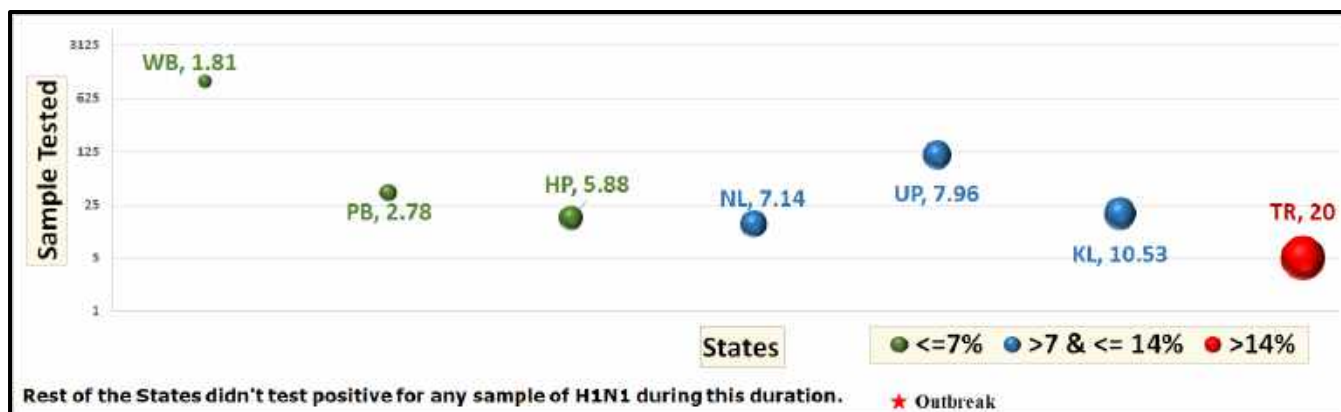


Fig 26: State/UT wise H1N1 cases and outbreaks for February 2020

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.

Acknowledgement:

This Disease Alert from IDSP acknowledges the contribution of Dr. Sujeet K Singh, NPO Project Director - IDSP & Director NCDC; Dr. Himanshu Chauhan, Joint Director & Officer In-Charge, IDSP; Dr. Pranay Verma, Deputy Director, IDSP; Dr. Sahil Goyal, Consultant(Epidemiologist), IDSP, Ms. Ritu Malik, Consultant (GIS), IDSP & Ms. Sujata Malhotra, Data Manager, IDSP.

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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