

Integrated Disease Surveillance Project

Epidemiological Situation of Communicable Diseases in Kerala (2006 - 2010)



State Surveillance Unit
Directorate of Health Services
Government of Kerala, Thiruvananthapuram



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- 04** **Integrated Disease Surveillance Project (IDSP) - An Overview,**
Dr. Uma Maheswary Thankachi
- 11** **Outbreak details 2010**
- 13** **Situational Analysis of Communicable Diseases Kerala 2006-2010**
- 14 ● Malaria
 - 15 ● Dengue
 - 16 ● Chikungunya
 - 17 ● AES/JE
 - 18 ● Leptospirosis
 - 20 ● Hepatitis-A
 - 22 ● Typhoid
 - 24 ● ADD
 - 26 ● Cholera
 - 27 ● H1N1
 - 29 ● Hepatitis-B
- 30** **District Wise Situational Analysis of Communicable Diseases 2006-2010**
- 38** **Situation Analysis of Vector Borne Diseases in Kerala**
Dr. A.S. Pradeep Kumar
- 49** **Leptospirosis- A public health problem which deserve special attention**
Dr. C. K. Jagadeesan
- 51** **The H1N1 Pandemic in Kerala, 2009-2011**
Dr. Amar S. Fettle
- 57** **Collection, Storage and Transportation of Clinical Specimens**
Dr. S. Sunija
- 60** **Mosquito Vectors of Kerala**
Dr. T Dilip Kumar
- 64** **Outbreak Investigation and Response**
Prof. M . Umarul Farook
- 68** **Crimean Congo Hemorrhagic Fever (CCHF): An Inter-State Emergency**
Dr. Iype Joseph
- 71** **Team IDSP Kerala**

Integrated Disease Surveillance Project (IDSP)- An overview

Dr. Uma Maheswari Thankachi

Additional DHS (PH) & State Surveillance Officer, IDSP

Background

Towards an effort to improve and strengthen the surveillance and response system in the country, the Government of India initiated, Integrated Disease Surveillance Project (IDSP) in November 2004, with the support from World Bank. Integrated Disease Surveillance Project (IDSP) was launched by Hon'ble Union Minister of Health & Family Welfare in November 2004. It is a decentralized, State based Surveillance Program in the country. It is intended to detect early warning signals of impending outbreaks and help initiate an effective response in a timely manner.

Objectives

- To establish a decentralized state based surveillance system for communicable diseases to detect the early warning signals, so that timely and effective Public Health actions can be initiated in response to health challenges in the country at the District, State and National Level.

- To improve the efficiency of the existing surveillance activities of disease control programme and facilitate sharing of relevant information with the health administration, community and other stakeholders so as to detect disease trends over time and evaluate control strategies.

Major components:

Major components of the project are : (1) Integrating and decentralization of surveillance activities; (2) Strengthening of public health laboratories; (3) Human Resource Development Training of State Surveillance Officers, District Surveillance Officers, Rapid Response Team, other medical and paramedical staff; and (4) Use of Information Technology for collection, collation, compilation, analysis and dissemination of data.

Highlights of this programme:

- ✓ Integration and decentralization of surveillance activities
- ✓ Strengthening of public health laboratories.
- ✓ Human Resource Development which include training of the State Surveillance Officers, District Surveillance Officers, Rapid Response Teams, other medical and paramedical staff as pharmacists and health workers.
- ✓ Use of Information Technology for collection, collation, compilation, analysis and dissemination of data.

- ✓ Setting up of State and District Level surveillance units.
- ✓ Surveillance Committees at National, State and District levels to monitor the project.
- ✓ Linkages between all State Head quarters, District Head Quarters and all Government Medical Colleges on a satellite Broadband Hybrid Network which enhances speedy transfer of data, video conferencing, discussions, trainings, communications, e-learning for outbreaks and programme monitoring.

Project Implementation:

For Project implementation, Surveillance Units have been set up at Central, State and District level. Surveillance Committees at National, State and District levels are monitoring the Project. Currently linkages are being established with all State Head Quarters, District Head Quarters and all Government Medical Colleges on a Satellite Broadband Hybrid Network. The network enables 800 sites on a broadband network of which 400 sites will have dual connectivity with satellite and broadband. This network enables enhanced Speedy Data Transfer, Video Conferencing, Discussions, Training, Communication and in future e-learning for outbreaks and program monitoring under IDSP. A 24X7 call center with toll free telephone no 1075 accessible from BSNL/MTNL telephone from all states is in operation since February 2008. This receives disease alerts from anywhere in the country and diverges the information to the

respective State/District Surveillance Units for verification and initiating appropriate actions wherever required.

The project was implemented in three phases viz,

Phase I (2003-04): Maharashtra, Andhra Pradesh, Himachal Pradesh, Karnataka, Madhya Pradesh, Uttaranchal, Tamil Nadu, Mizoram & Kerala

Phase II (2004-05): Chattisgarh, Goa, Gujarat, Haryana, Rajasthan, West Bengal, Manipur, Meghalaya, Tripura, Chandigarh, Pondicherry, Delhi;

Phase III (2005-06): Uttar Pradesh, Bihar, Jammu & Kashmir, Jharkhand, Punjab, Arunachal Pradesh, Assam, Nagaland, Sikkim, A & N Island, D & N Haveli, Daman & Diu, Lakshdweep.

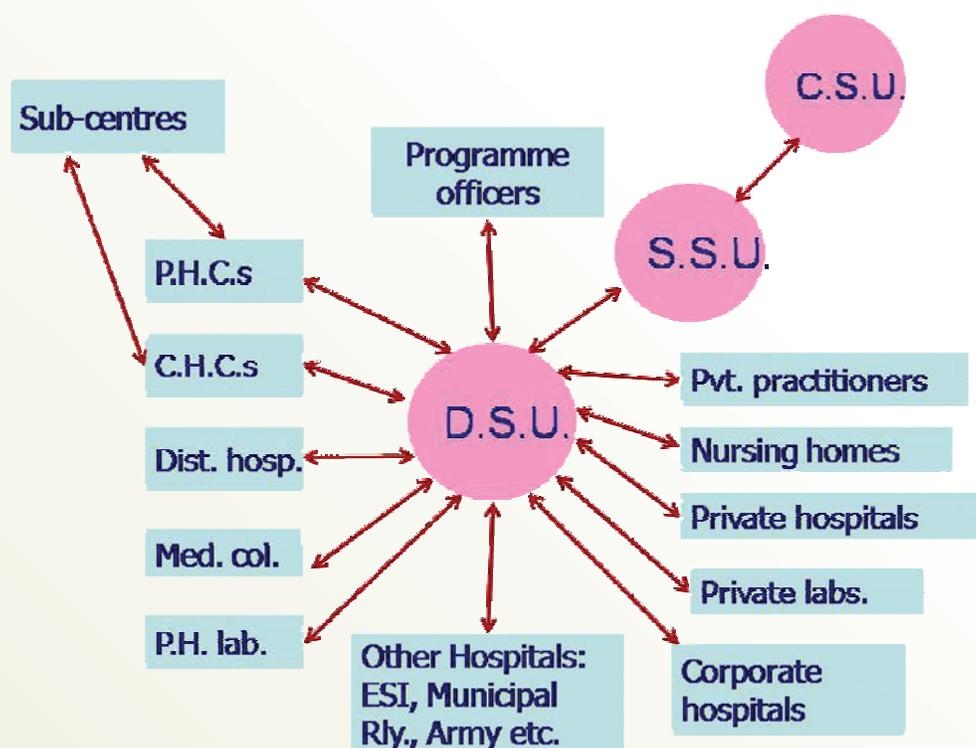
Data Collection and Analysis:

Under IDSP, data is collected on a weekly (Monday-Sunday) basis. The information is collected on three specified reporting formats, namely "S" (suspected cases), "P" (presumptive cases) and "L" (Laboratory confirmed cases) filled by Health Workers, Clinician and Clinical Laboratory staff respectively. The weekly data gives the time trends. Whenever there is a rising trend of illnesses in any area, it is investigated by the Medical Officers/Rapid Response Teams (RRT) to diagnose and control the outbreak. Emphasis is being laid on reporting of surveillance data from major hospitals both in public and private sector and also Infectious Disease hospitals. The compilation and disease outbreak alerts are the major components in IDSP routine reporting system. On an average 10-15 outbreaks are reported every week to Central Surveillance Unit, IDSP.

Greener areas:

Greener areas in the project include Non Communicable Diseases Risk Factor Survey conducted in the states of Andhra Pradesh, Tamil Nadu, Kerala, Maharashtra, Madhya Pradesh, Uttarakhand and Mizoram. This survey is to be repeated in every 3 years and all states to be covered in cycles. Urban Surveillance activities and setting up of a network of 7 major Infectious Disease Hospitals located in different regions of the country for rapid sentinel surveillance are some of the novel initiatives under IDSP. IDSP is also

DATA FLOW IN INTEGRATED DISEASE SURVEILLANCE SYSTEM



supporting activities related to Avian Influenza, H1N1 etc.

Restructuring of the project

The Integrated Disease Surveillance Project has been restructured and extended for another two years up to March 2012. With effect from 1st April 2010, the activities of the projects in 9 states (Andrapradesh, Gujarat, Karnataka, Maharashtra, Punjab, Rajasthan, Tamilnadu, Uttarakhand and West Bengal) would be supported by the World Bank funded Component of IDSP, while the activities of the remaining states would be supported by NRHM/ Domestic Component of IDSP.

IDSP Implementation in Kerala

Kerala state has been included in the first phase of the national IDSP programme. The programme was

launched in the state in November 2005. The activities started in the state with the establishment of 14 District Surveillance Units (DSUs) in the district headquarters attached to the District Medical Office (Health). At the state Headquarters a State Surveillance Unit (SSU) was also established with Addl. Director (PH) as State Surveillance Officer.

Manpower

For the proper functioning of the DSUs one of the Deputy District Medical Officers (Dy.DMOs) was designated as the District Surveillance Officer (DSO) in each district and Non technical staffs like Data Entry Operator (1), Accountant (1) & Administrative Assistant (1) were appointed as contractual staff. Later Data Managers were recruited through the National Informatics Center (NIC) of each district. Similarly for the smooth functioning of SSU Data Manager (1), Data Entry Operator (1), Finance Consultant and Training Consultant were posted on contract basis. In order to provide technical support to the SSUs and DSUs additional technical staffs like Epidemiologist, Entomologists & Microbiologists were recruited through National Health System Resource Center

(NHSRC) in 2009. Currently District Epidemiologist (4), State Entomologist (1) and Microbiologists (1) are working under IDSP in Kerala for providing technical support to the project. As a part of the restructuring of the project the recruitment of contractual staff in IDSP Kerala is currently entrusted with State NRHM.

Training:

Human resource development is an integral part of any health programme. During the initial phase of IDSP implementation in the state 75 medical officers including SSO were trained at CMC Vellore as Master Trainers.

The training in IDSP is three tiered

- ✍ Master trainers
- ✍ State and district surveillance officers and RRT members are trained at identified National Level institutes.
- ✍ Medical officers and District Lab technicians are trained by Master trainers at state level.
- ✍ Health workers and lab technicians/ assistants at peripheral institutions are trained by district officers/Medical officers at district level.

After the induction of Technical staff, training were provided to this category at the national level. Accordingly state Entomologist (1), District Epidemiologists (3), District Microbiologist (1) have undergone National level training so far.

Data Management:

Under IDSP data is collected on

weekly epidemic prone diseases on (Monday-Sunday) basis. The information is collected on three specified reporting formats namely "S" (Suspected Cases), "P" (Presumptive Cases) and "L" (Laboratory Confirmed Cases) filled by Health workers, Clinicians and Clinical Laboratory Staff. When health workers at sub centers suspect a case, they fill out form "S" (Suspect case). The doctors at primary health centers, community health center and hospitals fill form "P" (Probable case /Presumptive case). The cases that are confirmed by the laboratory fill up form "L" (Lab Confirmed Case). Data managers receive these completed forms from various center, and data compilation and analysis is done at the District, State and National levels. The weekly data gives the disease trends and occurrence of new disease. Cases representing an unusual or rising trend are investigated by a Rapid Response Team (RRTs) to diagnose and control the outbreak. Currently there are 5455 "S", 1264 "P" & 477 "L" reporting units spread across 14 districts in Kerala.

IDSP Portal

The NIC has created a single stop web portal www.idsp.nic.in with options for data entry and analysis from the district level upwards related to disease surveillance. It is quicker, easier and more powerful to update than print based media. The portal can also convert data in to charts and graphs. The data entry operators and data managers have been trained in data entry analysis and transmission. The portal also has information on media and outbreak alerts. The data collected from the reporting units under each districts are compiled and consolidated in the prescribed format and sent to the State Surveillance Unit before every Wednesday. The same data is also entered in the IDSP portal before every Wednesday. Apart from this each District Surveillance Unit prepares the Early Warning Signals of Impending Outbreaks and sent it to the SSU on every Monday. Similarly Outbreaks Reports are also prepared as and when it occurs and also sent it to the SSU & CSU on the same day via online.

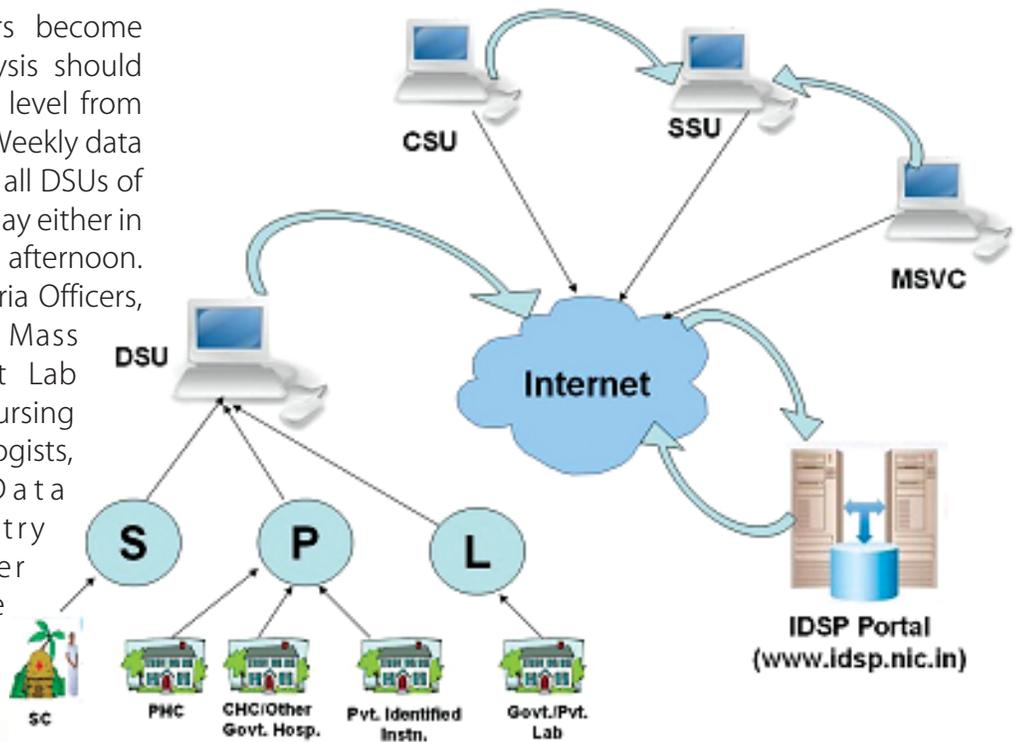
Data Analysis under IDSP

While collection of good quality of data is important for surveillance programme analysis and interpretation of

these data is of equal significance. Without this, all the hard work putting by the workers become meaningless. Data analysis should ideally be done at each level from the periphery upwards. Weekly data analysis is being done in all DSUs of the state on every Thursday either in the forenoon or in the afternoon. DMO, DSO, District Malaria Officers, Technical Assistants, Mass Media Officers, District Lab Technicians, District Nursing Officer, IDSP Epidemiologists, Microbiologist, Data Managers, Data Entry Operators and other Programme officers take part in the data analysis process. On the basis of the discussion conducted during the analysis feedback reports are prepared and communicated to the concerned reporting units for initiating action. The minutes of the review meeting conducted at DSUs are sent to the SSU. Data analysis and action are being undertaken by respective reporting units. Emphasis is being laid on reporting of surveillance data from major hospitals both in public and private sector and also infectious disease hospitals and medical colleges.

Weekly review of consolidated data forwarded from the districts is held on every Friday at the State Surveillance Unit. District wise, month wise and disease wise analysis of the data is prepared and presented in the meeting by the data manager. This is followed by a discussion based on

Reporting Structure in IDSP



epidemiological point of view. SSO, Additional Director Public Health, Dy. Director Public Health, Asst. Director Public Health, State Entomologist, Asst. Director Entomology, H1N1 Nodal officer etc participate in the review meeting. Control measures initiated at the district level if any are also evaluated in this meeting and feedback reports are given to the DSUs.

EDUSAT:

Video Conferencing facility through EDUSAT/VSAT has been established in 14 DSUs and 7 Medical Colleges in the state. Videoconferencing is indented for discussion with DMOs, DSO's, State RRTs and District RRT Members regarding outbreak investigation, verification and documentation with expert panel along with Project review and Monitoring. The communication network is also used to manage live virtual class rooms for training, e-learning and interactive electronic discussions among other things. Videoconferencing facilities are also used for training purposes. Apart from these, regular videoconferences are organized by CSU Delhi to discuss outbreak

investigations and verification and control measures.

Strengthening of Laboratories

Public health laboratory services can be treated as the cornerstone of efficient public health activities. These laboratories are mandatory for early diagnosis, tracing the spread of infection, to establishing antimicrobial susceptibility and for validating epidemiological studies so as to understand the disease profile in an area/community. Along with providing valuable data the laboratories supports for establishing diagnosis of individuals as well as for development of disease control programmes. In our State there are two identified priority laboratories, Regional Public Health Lab Kozhikode and Regional Public Health Lab Ernakulam, which are supported by IDSP.

State- Prevention of Epidemics and Infectious Diseases Cell (PEID CELL)

State PEID cell was established by Government of Kerala in 1982 in Medical College Hospital Thriuvananthapuram with a view to strengthen the surveillance system in the state. As part of strengthening of PEID cell Regional PEID (RPEID) cells were also established in all Government Medical Colleges in 1989. Surveillance data on Communicable disease pertaining to medical colleges are made available to the health services by Regional PEID cells and State PEID cell. Other activities carried out by the PEID cells includes updating knowledge on the control of disease,

conduct of research, train the health personnel and to help the State and District authorities in controlling epidemics.

State Disease Control and Monitoring Cell (SDCMC)

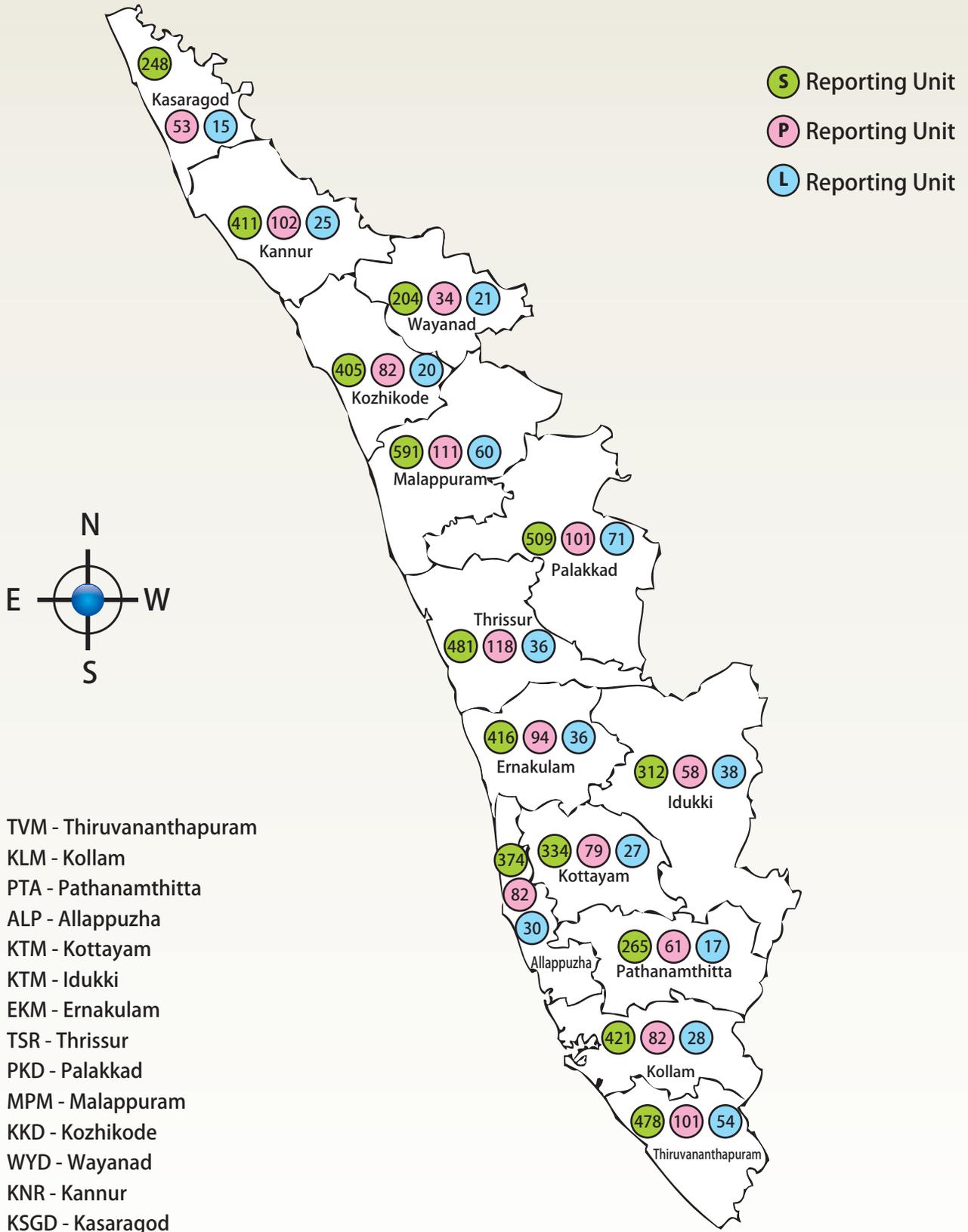
This was established in 2007 by Government of Kerala to ensure that epidemics are detected early and contained in the state. The Cell also monitors the reporting from the Government Medical Colleges in the state. Other objectives of the cell include outbreak investigation, vector monitoring, daily reporting and monthly consolidation of data.

Daily Reporting Systems of Communicable Diseases:

This was already established in the state even before the introduction of IDSP. The daily reporting for which the focus was in the pre-monsoon has been extended throughout the year following the **dengue fever outbreak** in 2003 and is being continued along with the IDSP reporting system. Apart from the weekly reporting and daily reporting system, each IDSP units in the State is involved in the surveillance activities related H1N1 control measures, IDR reporting, Vector monitoring, Disaster Management etc.

Surveillance system through IDSP keeps a close watch on health events occurring in the community and in the state as a whole. This project plays an important role in the early detection of outbreaks occurring in any part of the state. By preventing outbreaks through IDSP in the previous years, the credibility of the health services has greatly improved. By strengthening IDSP we will be able to pick up any unusual health events early enough and alert decision makers enabling them to act swiftly and effectively. 🌱

DISTRICT WISE - S, P & L REPORTING UNITS



OUTBREAKS REPORTED THROUGH IDSP IN 2010

Disease	District	Area	Month	Cases
Malaria	Trivandrum	Valiyathura	February	5
		Valiyathura	April	22
		Poovar	May	15
	Kozhikode	Nellikode	June	19
	Malappuram	Valanchery	August	9
Dengue	Eranakulam	Muvattupuzha	February	9
	Kottayam	Koruthode	April	44
		Kalaketty		21
		Thalanadu	May	8
	Idukki	Purapuzha	May	10
	Pathanamthitta	Chandanapally	May	6
		Koodal	May	15
		Municipality	May	7
Kokkathodu		June	6	
Chickungunya	Wayanad	Meenangadi	July	13
ADD	Idukki	Devikulam	March	20
	Kottayam	Ettumanoor	May	25
		Peroorthodu	November	19
	Wayanad	Noolpuzha	September	18
		Chulliode	November	19
Malappuram	Ettumanoor	April	25	
Typhoid	Palakkad	Cherplassery	January	10
		Chalavara	April	17
	Kasaragode	Chittarikkal	September	5
	Idukki	Rajakkad	September	10
Hepatitis-A	Kozhikode	Melady	January	194
		Maniyoor	January	28
		Iruvallam	February	13
	Kannur	Aralam	March	11
		Muzhakkunnu	April	8
		Chelora	October (2)	14
		Peringalam	October	30
	Kottayam	Ettumanoor	June	7
		Atirampuzha	June & November	8 & 6
		Nattakom	June & March	44
		Panachikadu	January	4
		Mundanamkunnu	October	2
	Thrissur	Madakkathara	August	6
		Erumapetty	November	6
Palakkad	Athipotta	November	21	

Disease	District	Area	Month	Cases
Chickenpox	Kottayam	Puthuppally	January	12
		Atirampuzha	March	11
		Pambady	March	14
		Ullanad	November	7
		Arpookara	December (2)	10 & 13
	Malappuram	Keezhattur	March	10
	Alappuzha	Chengannur	January	11
Dysentery	Kottayam	Karukacha	April	11
Measles	Wayanad	Meppady	January	10
	Palakkad	Chalissery	February	10
Rubella	Kottayam	Mutholy	January	4
Leptospirosis	Alappuzha	Cherthala	February	9
	Kottayam	Udayanapuram	March	21
Hooch Tragedy	Malappuram	Vandoor	September	375
Hepatitis-B	Eranakulam	Palluruthy	May	15
	Idukki	Thodupuzah	March	5
Food Poisoning	Alappuzha	Nedumudy	January	23
		Chambakulam	February	7
		Ambalapuzha	February	14
		Thrikkunnapuzha	August	117
		Punnpra	October	90
		Chunakkara	December	42
	Eranakulam	Kalady	July	37
	Kottayam	Kooropada	January	32
		Uzhavoor	March	24
		Kanjirapally	November	31
	Thrissur	Erumappetty	August	16
		Vellanikkara	December	100
	Palakkad	Challessery	April	5
		Pirayiri	May	18
	Malappuram	Pookkoottur	January	21
	Kannur	Vadassery	January	75
		Kovappuram	May	48

Situational Analysis of Communicable Diseases Kerala (2006 - 2010)

The data presented in this bulletin is based on the case definition of IDSP and is for the use of IDSP Stakeholders. The data presented in this publication are basically weekly data collected from the fourteen DSUs of IDSP in the state

MALARIA : MONTH WISE CASES & DEATHS (2006-2010)

YEAR		2006		2007		2008		2009		2010		Total	
	MONTH	Case	Death	Case	Death								
1	January	130	0	124	0	109	1	89	0	122	0	574	1
2	February	114	0	94	0	109	0	70	0	112	1	499	1
3	March	121	1	82	0	94	0	83	0	89	0	469	1
4	April	122	1	105	0	115	0	101	0	129	1	572	2
5	May	167	1	158	1	127	0	135	0	168	0	755	2
6	June	214	0	166	1	163	0	188	0	182	0	913	1
7	July	263	2	234	1	199	0	250	3	291	2	1237	8
8	August	276	1	257	0	207	0	310	1	386	1	1436	3
9	September	209	0	212	1	233	1	255	1	277	0	1186	3
10	October	182	0	192	1	223	1	226	0	240	0	1063	2
11	November	202	0	170	0	135	0	170	1	166	1	843	2
12	December	130	0	133	1	90	0	169	0	137	1	659	2
	Total	2130	6	1927	6	1804	3	2046	6	2299	7	10206	28

MALARIA : DISTRICT WISE CASES & DEATHS (2006-2010)

YEAR		2006		2007		2008		2009		2010		Total	
	DISTRICT	Case	Death	Case	Death								
1	TVM	99	1	145	0	81	0	188	0	138	1	651	2
2	KLM	150	0	134	1	89	0	72	0	118	1	563	2
3	PTA	156	0	155	0	140	0	130	0	154	0	735	0
4	ALP	220	0	152	0	136	0	118	0	115	0	741	0
5	KTM	65	0	52	0	51	0	47	1	52	0	267	1
6	IDK	72	0	91	0	66	0	62	0	54	0	345	0
7	EKM	148	3	113	0	171	1	172	2	157	2	761	8
8	TSR	222	0	177	0	214	0	162	0	219	1	994	1
9	PKD	87	0	68	0	95	0	87	0	110	0	447	0
10	MPM	191	0	184	1	246	1	161	0	347	0	1129	2
11	KKD	182	2	161	1	143	0	125	1	228	2	839	6
12	WYD	21	0	27	0	24	0	38	0	44	0	154	0
13	KNR	237	0	225	3	211	1	222	0	235	0	1130	4
14	KSGD	280	0	243	0	137	0	462	2	328	0	1450	2
	Total	2130	6	1927	6	1804	3	2046	6	2299	7	10206	28

DENGUE : MONTH WISE CASES & DEATHS (2006-2010)

YEAR		2006		2007		2008		2009		2010		Total	
	MONTH	Case	Death	Case	Death								
1	January	86	0	44	0	30	0	208	1	88	0	456	1
2	February	75	0	23	0	36	0	146	1	111	0	391	1
3	March	37	1	10	1	9	0	60	1	127	1	243	4
4	April	26	1	7	0	15	0	73	0	94	1	215	2
5	May	80	1	40	0	15	0	86	1	411	1	632	3
6	June	70	0	143	6	34	3	183	1	678	6	1108	16
7	July	133	1	145	0	80	0	196	0	434	4	988	5
8	August	145	0	94	2	75	0	191	0	227	1	732	3
9	September	105	0	64	0	64	0	116	0	111	1	460	1
10	October	116	1	29	2	63	0	88	0	120	2	416	5
11	November	83	0	29	0	81	0	47	1	104	0	344	1
12	December	63	0	29	0	231	0	31	0	92	0	446	0
	Total	1019	5	657	11	733	3	1425	6	2597	17	6431	42

DENGUE: DISTRICT WISE CASES & DEATHS (2006-2010)

YEAR		2006		2007		2008		2009		2010		Total	
	DISTRICT	Case	Death	Case	Death								
1	TVM	656	0	290	0	503	2	805	2	1145	1	3399	5
2	KLM	81	1	70	5	12	0	21	0	66	3	250	9
3	PTA	19	0	28	0	4	0	34	1	144	0	229	1
4	ALP	28	0	13	1	10	0	18	0	68	1	137	2
5	KTM	8	0	7	1	20	0	160	2	330	3	525	6
6	IDK	17	1	22	1	5	0	20	0	169	1	233	3
7	EKM	59	0	24	1	100	1	85	0	114	2	382	4
8	TSR	72	0	89	0	10	0	152	0	74	0	397	0
9	PKD	26	2	6	0	7	0	19	0	14	0	72	2
10	MPM	5	0	8	0	7	0	13	1	18	0	51	1
11	KKD	13	1	44	2	25	0	11	0	47	2	140	5
12	WYD	2	0	29	0	8	0	25	0	29	0	93	0
13	KNR	20	0	19	0	16	0	14	0	37	0	106	0
14	KSGD	13	0	8	0	6	0	48	0	342	4	417	4
	Total	1019	5	657	11	733	3	1425	6	2597	17	6431	42

CHIKUNGUNYA : MONTH WISE SUSPECTED & CONFIRMED CASES (2006-2010)

YEAR		2006		2007		2008		2009		2010		Total	
MONTH		Sus	Con	Sus	Con	Sus	Con	Sus	Con	Sus	Con	Sus	Con
1	January	1960		82	2	17	3	114	12	20	4	2193	21
2	February			17	4	0	1	173	6	76	16	266	27
3	March			3	0	40	0	84	1	73	16	200	17
4	April			26	1	63	14	80	5	36	3	205	23
5	May			5347	85	1278	21	395	20	219	13	7239	139
6	June		23	12249	274	10402	84	740	40	778	48	24169	469
7	July			3459	292	11135	141	2075	202	328	70	16997	705
8	August	8427		1843	201	1474	84	8168	282	113	21	20025	588
9	September	34026	9	831	172	194	25	1242	17	28	8	36321	231
10	October	21474	13	173	43	49	45	221	11	19	10	21936	122
11	November	3628	7	16	12	15	36	22	1	8	1	3689	57
12	December	1216	2	6	6	18	16	35	0	10	0	1285	24
Total		70731	54	24052	1092	24685	470	13349	597	1708	210	134525	2423

(Sus: Suspected) & (Con-Confirmed)

CHIKUNGUNYA: DISTRICT WISE SUSPECTED & CONFIRMED CASES (2006-2010)

YEAR		2006		2007		2008		2009		2010		Total	
DISTRICT		Sus	Con	Sus	Con	Sus	Con	Sus	Con	Sus	Con	Sus	Con
1	TVM	8311	0	1208	133	9	20	1453	93	330	55	11311	301
2	KLM	164	0	918	90	1	1	0	0	0	0	1083	91
3	PTA	697	0	3456	85	0	0	2	1	0	0	4155	86
4	ALP	58308	16	1848	110	2	2	0	0	11	3	60169	131
5	KTM	149	0	10662	111	1	0	8	7	179	12	10999	130
6	IDK	43	0	538	28	0	0	0	0	0	0	581	28
7	EKM	1840	0	1882	65	4	0	0	3	7	4	3733	72
8	TSR	93	0	333	48	36	11	74	29	45	23	581	111
9	PKD	765	0	269	271	109	50	93	36	9	3	1245	360
10	MPM	12	11	1886	16	421	23	3930	142	1	1	6250	193
11	KKD	307	24	840	54	562	69	3339	64	15	10	5063	221
12	WYD	3	0	60	13	37	11	245	60	378	55	723	139
13	KNR	21	0	77	37	90	23	3246	79	541	19	3975	158
14	KSGD	18	3	75	31	23413	260	959	83	192	25	24657	402
Total		70731	54	24052	1092	24685	470	13349	597	1708	210	134525	2423

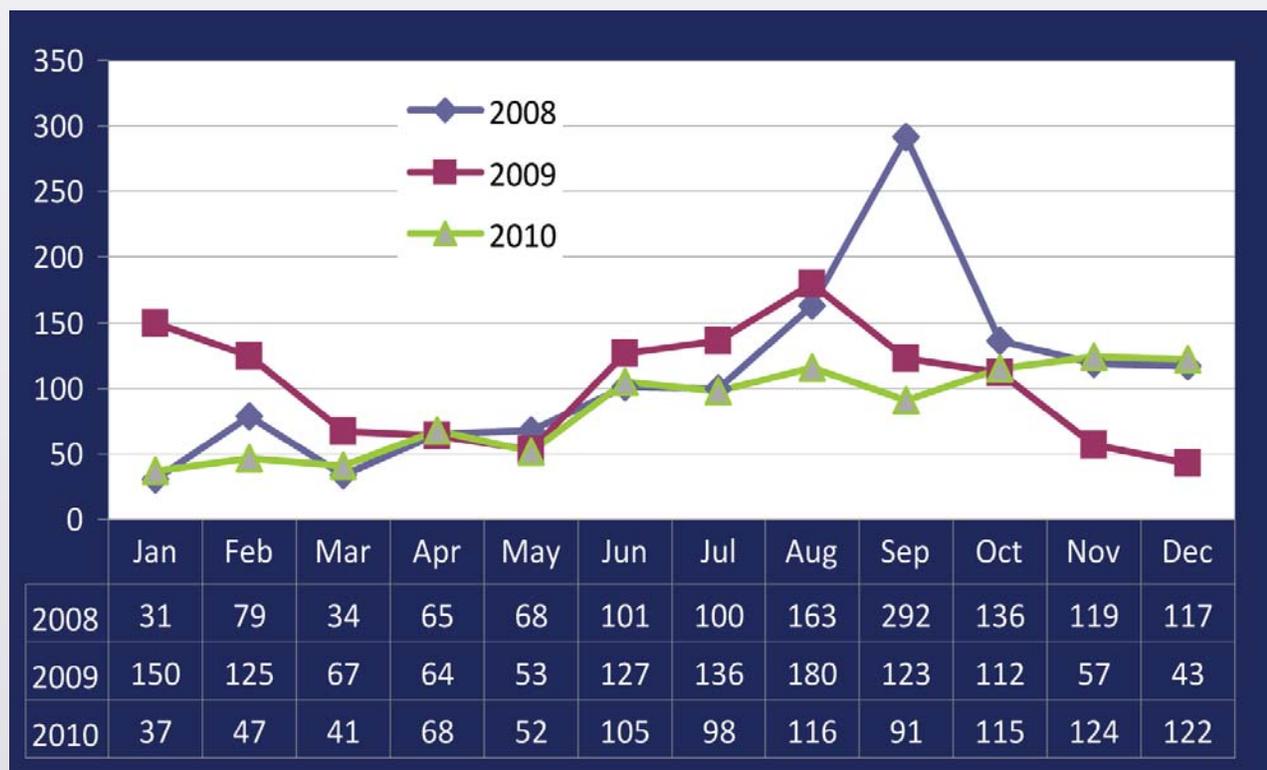
JE/AES: DISTRICT WISE CASES & DEATHS (2006-2010)

YEAR		2006		2007		2008		2009		2010		Total	
	DISTRICT	Case	Death	Case	Death								
1	TVM	0	0	0	0	9	0	20	6	3	3	32	9
2	KLM	0	0	0	0	0	0	0	0	0	0	0	0
3	PTA	0	0	0	0	0	0	0	0	0	0	0	0
4	ALP	14	1	1	0	0	0	0	0	0	0	15	1
5	KTM	0	0	0	0	0	0	0	0	16	2	16	2
6	IDK	0	0	0	0	0	0	0	0	0	0	0	0
7	EKM	0	0	0	0	0	0	0	0	0	0	0	0
8	TSR	0	0	1	1	0	0	3	3	1	0	5	4
9	PKD	0	0	0	0	0	0	0	0	0	0	0	0
10	MPM	0	0	0	0	0	0	0	0	0	0	0	0
11	KKD	0	0	0	0	0	0	0	0	0	0	0	0
12	WYD	0	0	0	0	0	0	0	0	0	0	0	0
13	KNR	0	0	0	0	0	0	0	0	0	0	0	0
14	KSGD	0	0	0	0	0	0	0	0	0	0	0	0
	Total	14	1	2	1	9	0	23	9	20	5	68	16

LEPTOSPIROSIS: MONTH WISE CASES & DEATHS (2006-2010)

YEAR	MONTH	2006		2007		2008		2009		2010		Total	
		Case	Death	Case	Death								
1	January	83	4	50	3	31	3	150	12	37	2	351	24
2	February	76	5	56	1	79	7	125	6	47	3	383	22
3	March	59	3	42	2	34	6	67	11	41	2	243	24
4	April	39	2	46	3	65	3	64	2	68	4	282	14
5	May	96	6	42	3	68	9	53	6	52	2	311	26
6	June	274	18	113	10	101	3	127	12	105	2	720	45
7	July	234	12	165	26	100	27	136	8	98	10	733	83
8	August	232	15	167	30	163	22	180	20	116	10	858	97
9	September	164	8	202	53	292	18	123	11	91	14	872	104
10	October	259	9	237	54	136	18	112	9	115	19	859	109
11	November	190	15	178	35	119	12	57	7	124	11	668	80
12	December	115	7	61	9	117	8	43	3	122	6	458	33
	Total	1821	104	1359	229	1305	136	1237	107	1016	85	6738	661

Seasonal Distribution of Leptospirosis Cases (2008- 2010)



LEPTOSPIROSIS: DISTRICT WISE CASES & DEATHS (2006-2010)

YEAR	DISTRICT	2006		2007		2008		2009		2010		Total	
		Case	Death	Case	Death								
1	TVM	196	0	113	2	358	3	483	14	312	1	1462	20
2	KLM	97	13	61	14	38	4	29	2	29	6	254	39
3	PTA	78	3	38	13	15	4	16	5	11	1	158	26
4	ALP	360	20	90	19	271	24	70	8	130	12	921	83
5	KTM	89	7	81	22	48	7	75	10	56	2	349	48
6	IDK	138	4	121	8	49	4	32	1	54	5	394	22
7	EKM	207	20	111	25	153	12	111	5	107	4	689	66
8	TSR	247	11	202	47	75	20	97	11	31	1	652	90
9	PKD	41	7	48	5	23	4	13	1	38	8	163	25
10	MPM	68	2	124	17	50	6	40	11	29	5	311	41
11	KKD	102	6	171	38	80	18	24	1	48	3	425	66
12	WYD	76	0	97	6	52	12	96	12	69	21	390	51
13	KNR	85	9	72	11	55	6	62	7	42	6	316	39
14	KSGD	37	2	30	2	38	12	89	19	60	10	254	45
	Total	1821	104	1359	229	1305	136	1237	107	1016	85	6738	661

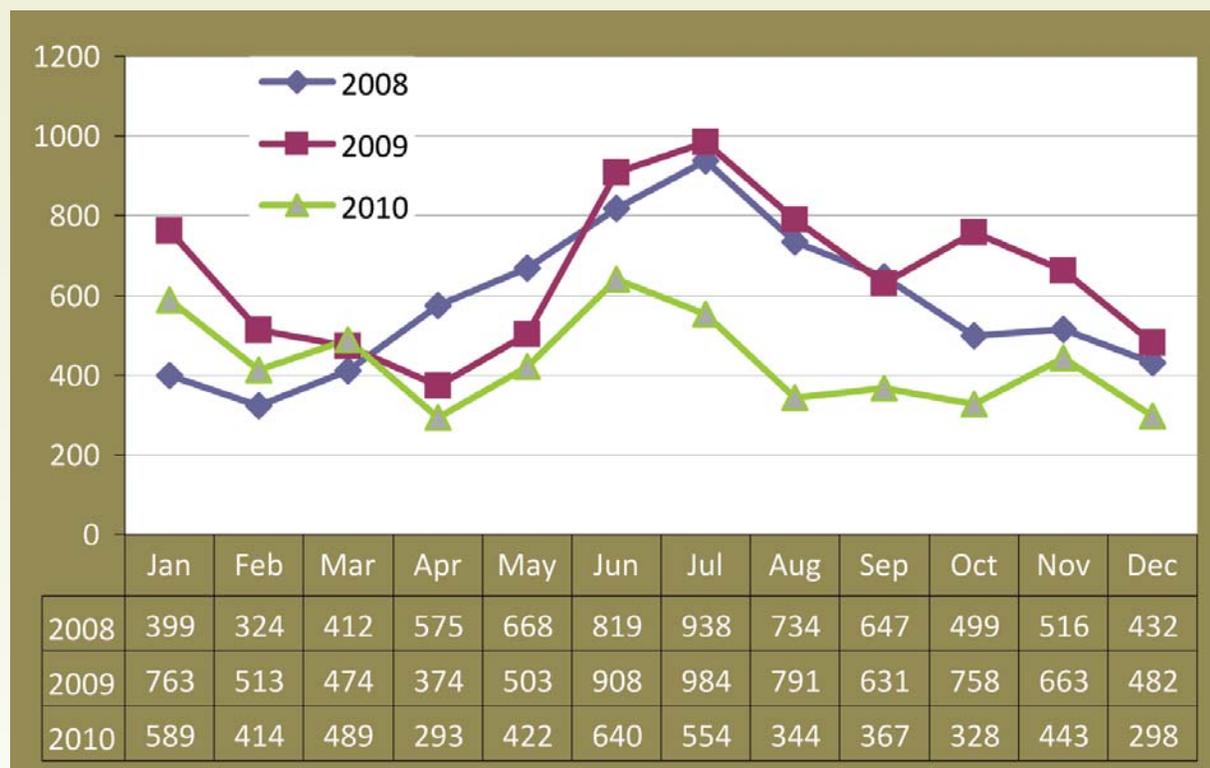
Situational Analysis of Leptospirosis Cases & Deaths (2006-2010)



HEPATITIS- A: MONTH WISE CASES & DEATHS (2006-2010)

YEAR	MONTH	2006		2007		2008		2009		2010		Total	
		Case	Death	Case	Death								
1	January	401	2	332	0	399	0	763	1	589	1	2484	4
2	February	436	0	542	0	324	0	513	3	414	0	2229	3
3	March	505	0	340	0	412	0	474	2	489	0	2220	2
4	April	400	2	313	0	575	1	374	4	293	1	1955	8
5	May	508	0	497	1	668	0	503	1	422	0	2598	2
6	June	766	2	569	0	819	2	908	2	640	1	3702	7
7	July	660	3	634	1	938	3	984	3	554	0	3770	10
8	August	678	1	604	1	734	2	791	0	344	2	3151	6
9	September	539	0	475	0	647	2	631	1	367	1	2659	4
10	October	559	1	395	0	499	2	758	2	328	0	2539	5
11	November	403	0	376	0	516	3	663	2	443	0	2401	5
12	December	430		273	1	432	1	482	1	298	0	1915	3
	Total	6285	11	5350	4	6963	16	7844	22	5181	6	31623	59

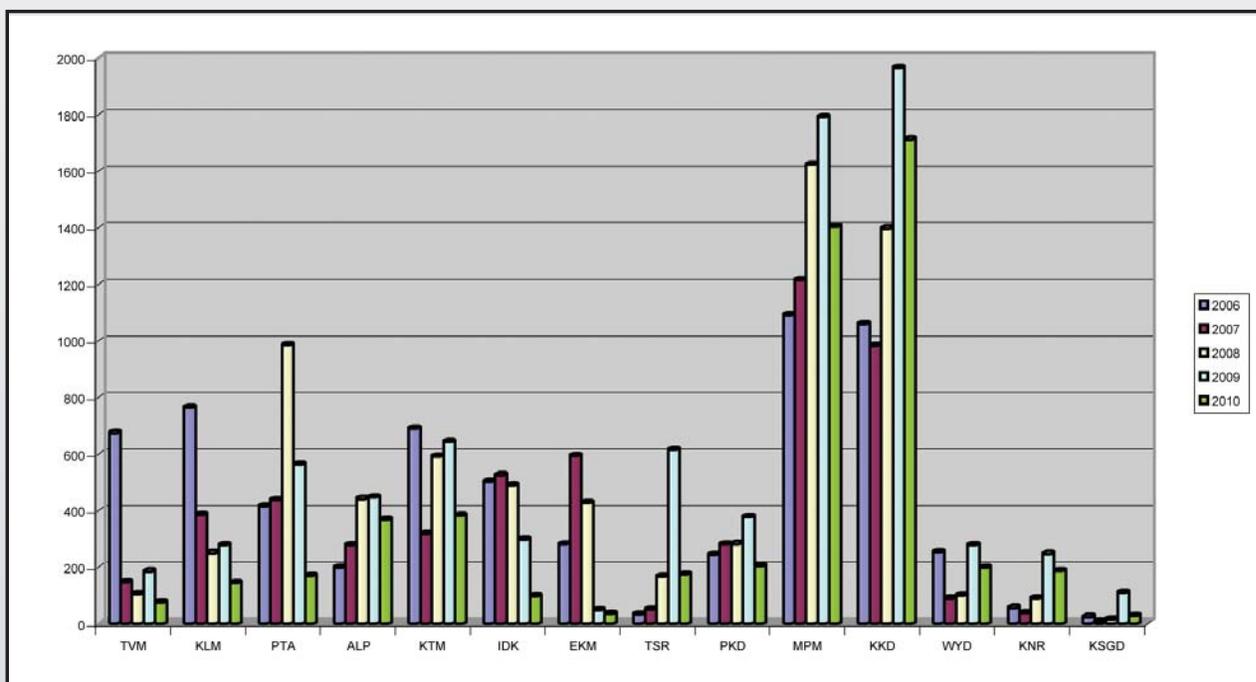
Seasonal Distribution of Hepatitis -A Cases (2008-2010)



HEPATITIS – A: DISTRICT WISE CASES & DEATHS (2006-2010)

YEAR	DISTRICT	2006		2007		2008		2009		2010		Total	
		Case	Death	Case	Death								
1	TVM	674	0	146	0	105	0	185	3	75	1	1185	4
2	KLM	765	1	385	0	250	0	278	0	145	0	1823	1
3	PTA	415	1	437	0	985	3	563	2	169	1	2569	7
4	ALP	199	0	279	0	441	0	446	1	368	0	1733	1
5	KTM	690	4	318	1	591	5	642	7	383	1	2624	18
6	IDK	501	2	525	1	490	1	299	1	98	1	1913	6
7	EKM	281	0	594	1	427	1	47	1	36	0	1385	3
8	TSR	32	0	51	0	166	4	616	4	174	0	1039	8
9	PKD	243	1	281	0	282	0	377	2	204	0	1387	3
10	MPM	1092	0	1216	0	1623	2	1791	0	1404	1	7126	3
11	KKD	1060	2	982	1	1398	0	1965	0	1713	1	7118	4
12	WYD	253	0	90	0	100	0	278	1	199	0	920	1
13	KNR	56	0	38	0	90	0	247	0	186	0	617	0
14	KSGD	24	0	8	0	15	0	110	0	27	0	184	0
	Total	6285	11	5350	4	6963	16	7844	22	5181	6	31623	59

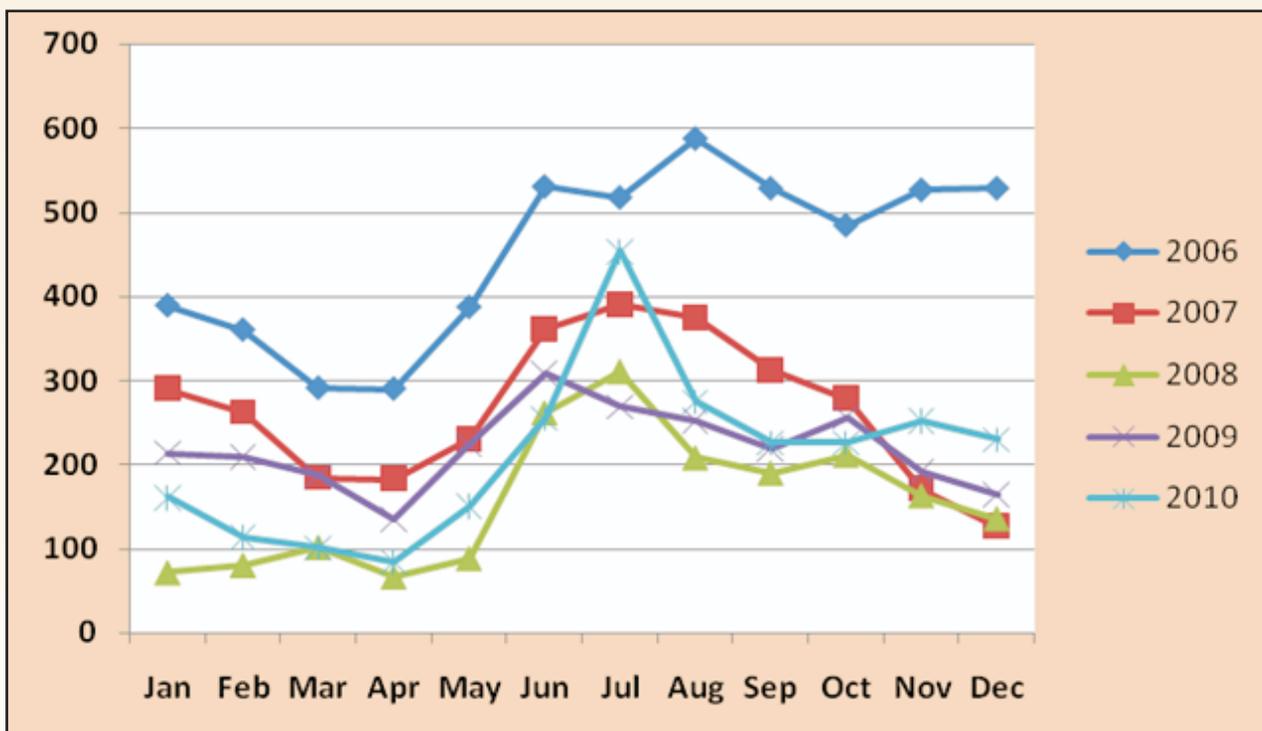
District Wise Distribution of Hepatitis-A Cases (2006- 2010)



TYPHOID: MONTH WISE CASES & DEATHS (2006-2010)

YEAR	MONTH	2006		2007		2008		2009		2010		Total	
		Case	Death	Case	Death								
1	January	389	0	290	0	72	0	214	0	161	0	1126	0
2	February	360	0	262	0	81	0	209	0	114	0	1026	0
3	March	291	0	184	0	102	0	187	0	101	0	865	0
4	April	290	0	183	0	67	0	135	0	84	0	759	0
5	May	387	0	230	0	89	0	224	0	151	0	1081	0
6	June	530	0	360	0	261	0	309	0	255	0	1715	0
7	July	517	9	390	0	310	0	269	0	454	1	1940	10
8	August	587	0	374	0	208	0	252	0	275	1	1696	1
9	September	528	0	312	0	190	0	219	0	226	0	1475	0
10	October	484	0	278	0	211	0	257	0	226	0	1456	0
11	November	526	0	171	0	163	0	192	0	252	0	1304	0
12	December	528	0	126	0	136	0	165	0	230	0	1185	0
	Total	5417	9	3160	0	1890	0	2632	0	2529	2	15628	11

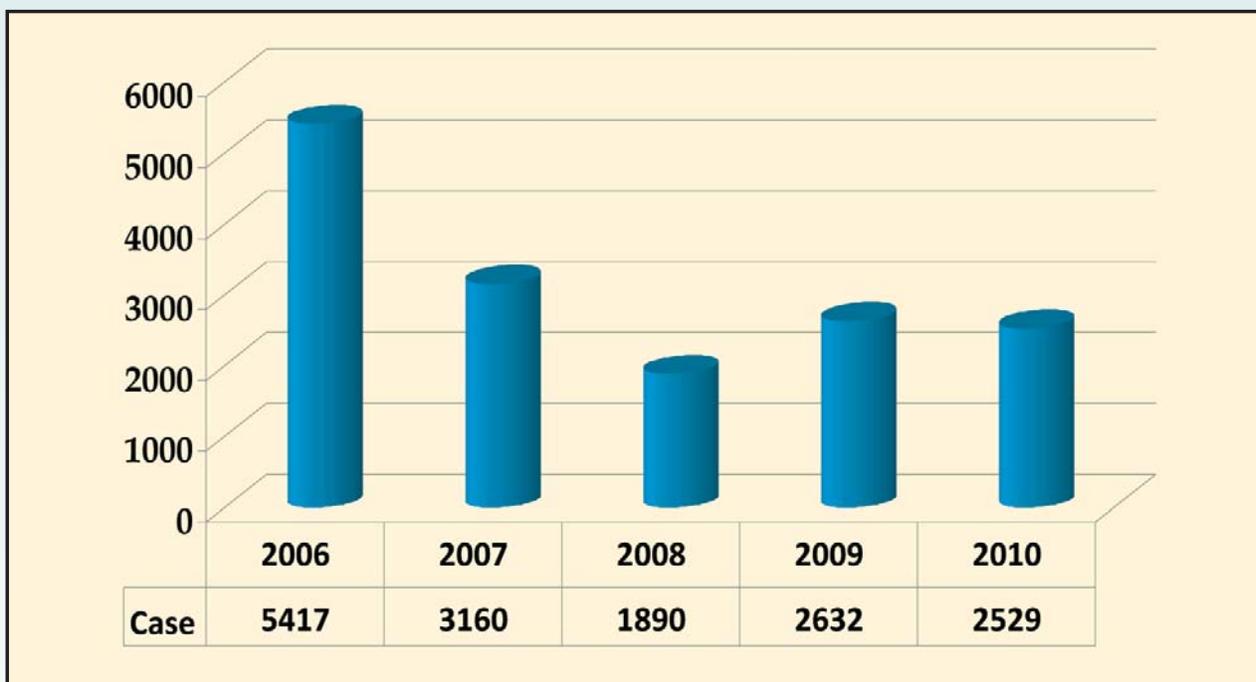
Seasonal Distribution of Typhoid Cases (2006-2010)



TYPHOID: DISTRICT WISE CASES & DEATHS (2006-2010)

YEAR		2006		2007		2008		2009		2010		Total	
DISTRICT		Case	Death	Case	Death								
1	TVM	1260	0	182	0	88	0	298	0	257	0	2085	0
2	KLM	71	0	42	0	24	0	26	0	28	0	191	0
3	PTA	53	0	66	0	20	0	55	0	34	1	228	1
4	ALP	98	0	35	0	52	0	82	0	152	0	419	0
5	KTM	38	0	11	0	44	0	61	0	43	0	197	0
6	IDK	293	0	212	0	79	0	116	0	134	0	834	0
7	EKM	657	0	279	0	245	0	192	0	77	0	1450	0
8	TSR	18	0	51	0	53	0	112	0	91	0	325	0
9	PKD	850	9	591	0	584	0	526	0	669	0	3220	9
10	MPM	1544	0	1356	0	268	0	500	0	337	0	4005	0
11	KKD	202	0	211	0	232	0	183	0	199	0	1027	0
12	WYD	270	0	50	0	104	0	114	0	218	1	756	1
13	KNR	40	0	23	0	58	0	123	0	126	0	370	0
14	KSGD	23	0	51	0	39	0	244	0	164	0	521	0
	Total	5417	9	3160	0	1890	0	2632	0	2529	2	15628	11

Year Wise Comparison of Typhoid Cases (2006-2010)

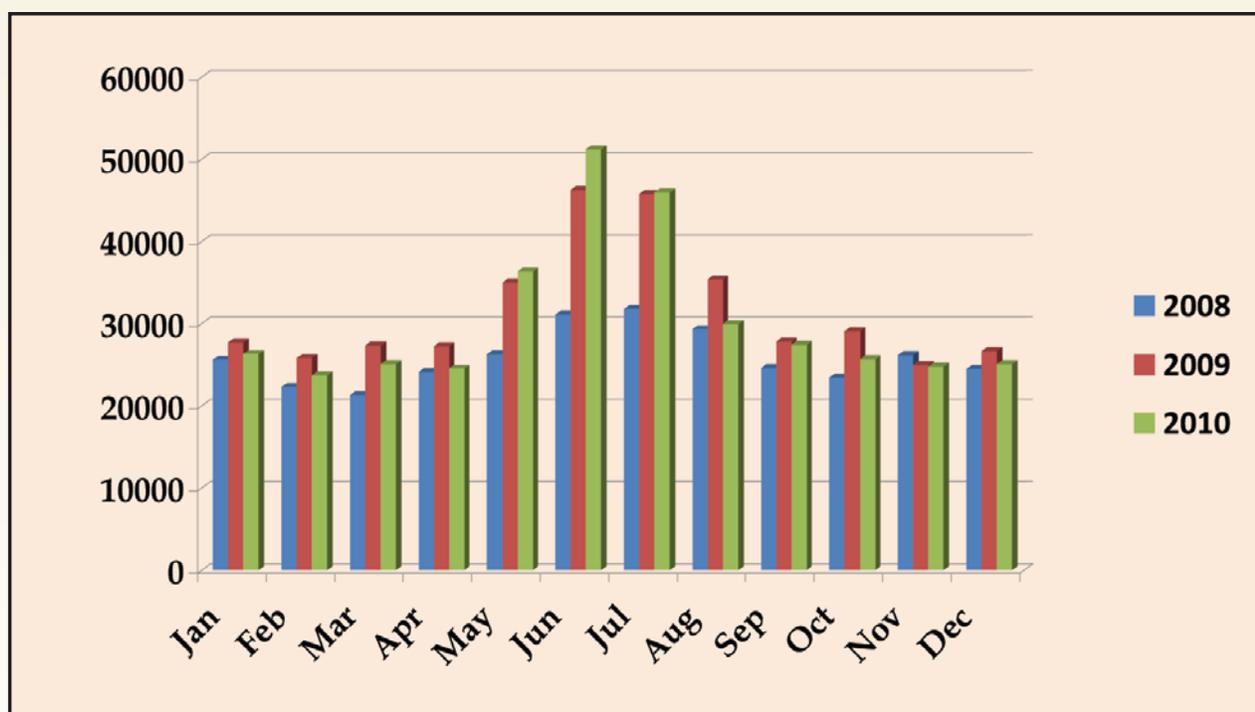


ADD: MONTH WISE CASES & DEATHS (2006-2010)

YEAR	2006		2007		2008		2009		2010		Total		
Month	Case	Death	Case	Death	Case	Death	Case	Death	Case	Death	Case	Death	
1	January	30473	0	26778	0	25632	0	27698	0	26312	0	136893	0
2	February	29750	1	25666	0	22323	0	25821	0	23745	0	127305	1
3	March	35642	0	30256	1	21282	1	27331	0	25132	0	139643	2
4	April	32248	0	26452	0	24147	0	27268	0	24558	1	134673	1
5	May	36487	0	35464	1	26248	0	35039	1	36366	1	169604	3
6	June	32744	0	46153	2	31091	0	46229	0	51238	1	207455	3
7	July	33623	1	49133	1	31758	0	45816	2	46024	0	206354	4
8	August	29450	0	33940	0	29322	0	35357	0	29947	0	158016	0
9	September	26235	0	28114	1	24632	0	27778	0	27410	1	134169	2
10	October	30535	0	23027	0	23421	0	29084	0	25679	1	131746	1
11	November	28427	0	17727	0	26177	0	24981	0	24835	0	122147	0
12	December	24872	1	19172	0	24549	0	26676	0	25053	0	120322	1
	Total	370486	3	361882	6	310582	1	379078	3	366299	5	1788327	18

Acute Diarrhoeal Disease (ADD)

Seasonal Distribution of ADD cases (2008-2010)

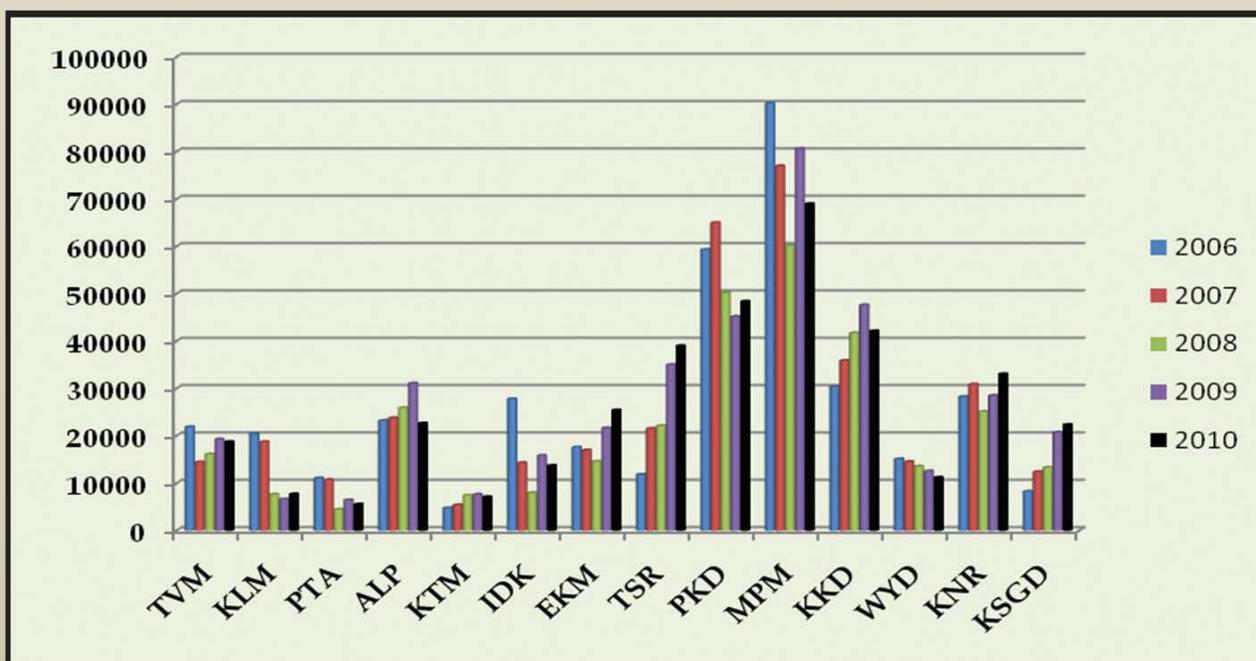


ADD: DISTRICT WISE CASES & DEATHS (2006-2010)

YEAR	2006		2007		2008		2009		2010		Total	
DISTRICT	Case	Death	Case	Death								
1 TVM	21913	0	14454	0	16148	0	19299	0	18759	1	90573	1
2 KLM	20509	0	18755	0	7655	0	6637	0	7717	0	61273	0
3 PTA	11099	0	10747	0	4464	1	6464	0	5588	0	38362	1
4 ALP	23239	0	23822	0	25945	0	31111	1	22670	0	126787	1
5 KTM	4785	0	5408	0	7428	0	7643	0	7139	0	32403	0
6 IDK	27805	0	14342	0	7979	0	15833	0	13721	0	79680	0
7 EKM	17615	0	16993	0	14608	0	21677	0	25448	0	96341	0
8 TSR	11862	0	21560	2	22164	0	35025	2	39023	1	129634	5
9 PKD	59354	1	65002	3	50226	0	45215	0	48425	0	268222	4
10 MPM	90232	1	77028	1	60212	0	80653	0	69010	1	377135	3
11 KKD	30396	1	35902	0	41716	0	47664	0	42153	0	197831	1
12 WYD	15135	0	14544	0	13580	0	12571	0	11221	2	67051	2
13 KNR	28284	0	30902	0	25130	0	28529	0	33066	0	145911	0
14 KSGD	8258	0	12423	0	13327	0	20757	0	22359	0	77124	0
Total	370486	3	361882	6	310582	1	379078	3	366299	5	1788327	18

Acute Diarrhoeal Disease (ADD)

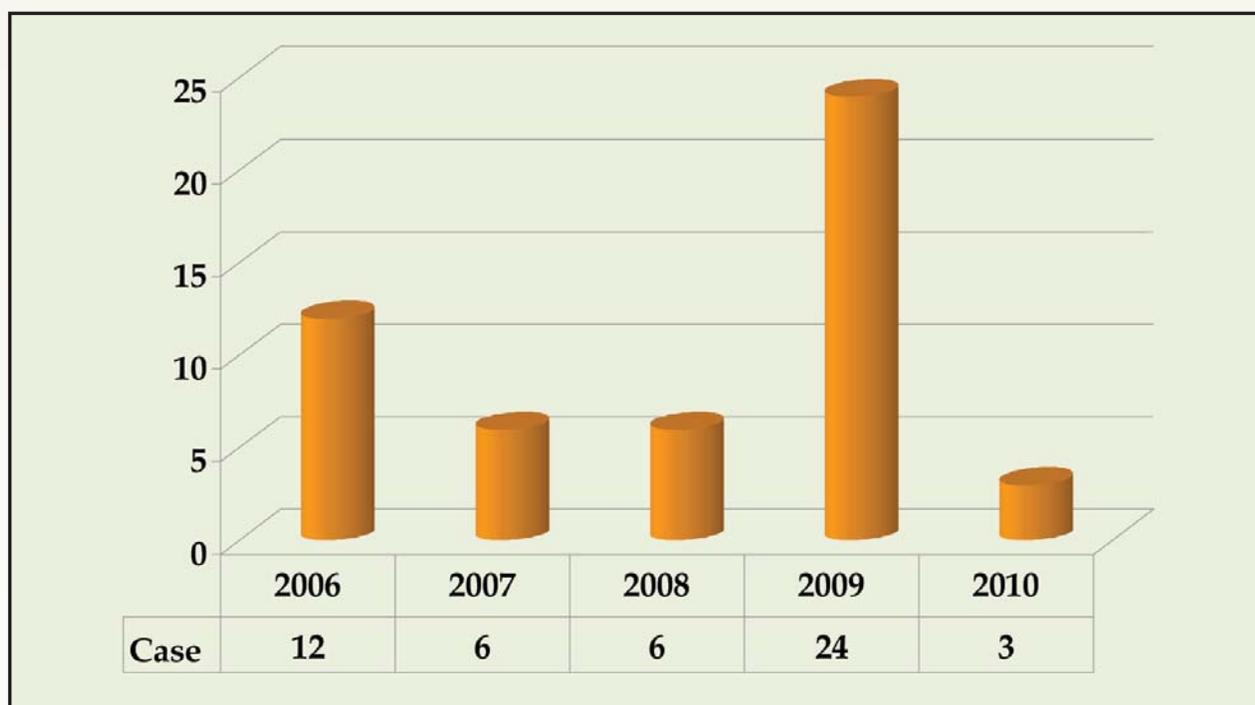
District Wise & Year Wise Distribution of ADD cases (2006-2010)



CHOLERA: DISTRICT WISE CASES & DEATHS (2006-2010)

YEAR	2006		2007		2008		2009		2010		Total	
DISTRICT	Case	Death	Case	Death								
1 TVM	0	0	0	0	0	0	1	1	0	0	1	1
2 KLM	0	0	0	0	0	0	0	0	0	0	0	0
3 PTA	0	0	0	0	0	0	1	0	0	0	1	0
4 ALP	1	0	0	0	0	0	20	1	1	0	22	1
5 KTM	0	0	0	0	0	0	1	0	2	0	3	0
6 IDK	0	0	0	0	0	0	0	0	0	0	0	0
7 EKM	9	0	0	0	0	0	0	0	0	0	9	0
8 TSR	0	0	0	0	0	0	1	0	0	0	1	0
9 PKD	2	0	5	0	4	0	0	0	0	0	11	0
10 MPM	0	0	0	0	0	0	0	0	0	0	0	0
11 KKD	0	0	0	0	2	0	0	0	0	0	2	0
12 WYD	0	0	1	1	0	0	0	0	0	0	1	1
13 KNR	0	0	0	0	0	0	0	0	0	0	0	0
14 KSGD	0	0	0	0	0	0	0	0	0	0	0	0
Total	12	0	6	1	6	0	24	2	3	0	51	3

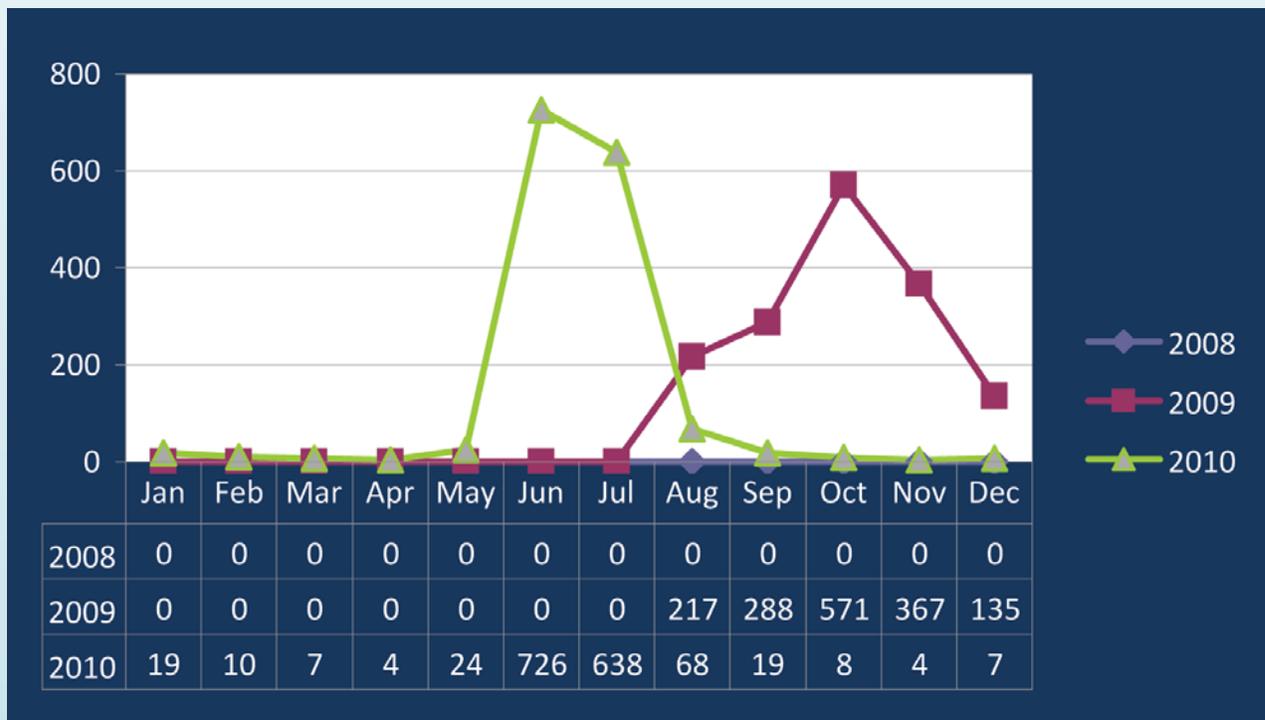
Year Wise Comparison of Cholera Cases (2006-2010)



H1N1: MONTH WISE CASES & DEATHS (2007-2010)

YEAR		2007		2008		2009		2010		Total	
MONTH		Case	Death	Case	Death	Case	Death	Case	Death	Case	Death
1	January	0	0	0	0	0	0	19	5	19	5
2	February	0	0	0	0	0	0	10	1	10	1
3	March	0	0	0	0	0	0	7	0	7	0
4	April	0	0	0	0	0	0	4	0	4	0
5	May	0	0	0	0	0	0	24	5	24	5
6	June	0	0	0	0	0	0	726	34	726	34
7	July	0	0	0	0	0	0	638	37	638	37
8	August	0	0	0	0	217	3	68	5	285	8
9	September	0	0	0	0	288	2	19	2	307	4
10	October	0	0	0	0	571	11	8	0	579	11
11	November	0	0	0	0	367	10	4	0	371	10
12	December	0	0	0	0	135	5	7	1	142	6
Total		0	0	0	0	1578	31	1534	90	3112	121

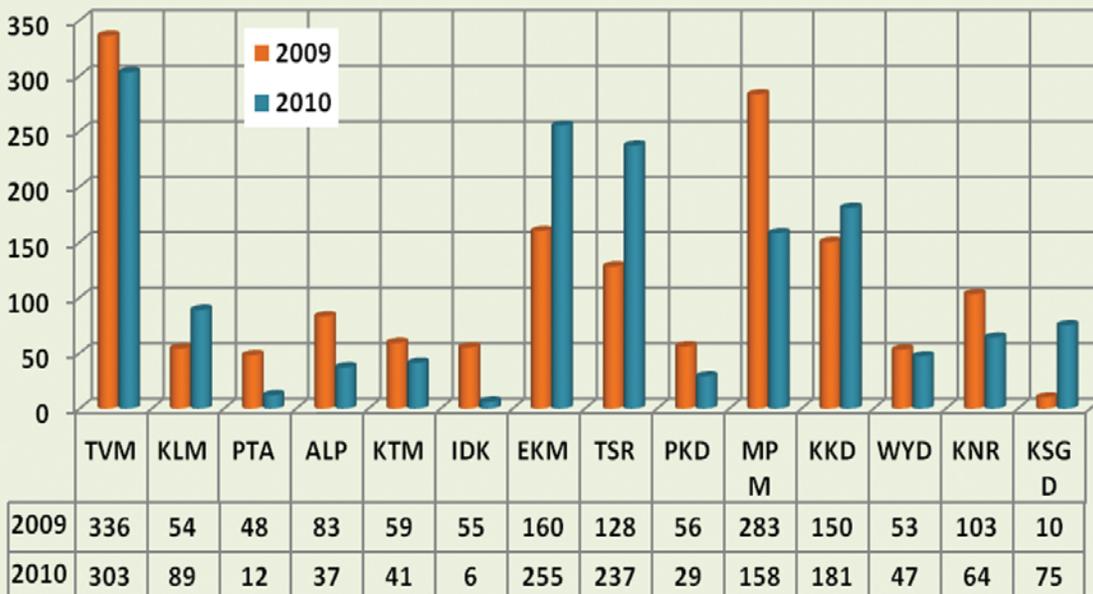
Seasonal Distribution of H1N1 Cases (2008-2010)



H1N1: DISTRICT WISE CASES & DEATHS (2008-2010)

YEAR		2008		2009		2010		Total	
DISTRICT		Case	Death	Case	Death	Case	Death	Case	Death
1	TVM	0	0	336	3	303	22	639	25
2	KLM	0	0	54	3	89	15	143	18
3	PTA	0	0	48	3	12	1	60	4
4	ALP	0	0	83	3	37	3	120	6
5	KTM	0	0	59	0	41	3	100	3
6	IDK	0	0	55	2	6	3	61	5
7	EKM	0	0	160	3	255	5	415	8
8	TSR	0	0	128	3	237	10	365	13
9	PKD	0	0	56	2	29	7	85	9
10	MPM	0	0	283	7	158	9	441	16
11	KKD	0	0	150	1	181	8	331	9
12	WYD	0	0	53	1	47	1	100	2
13	KNR	0	0	103	0	64	1	167	1
14	KSGD	0	0	10	0	75	2	85	2
Total		0	0	1578	31	1534	90	3112	121

District Wise Distribution of H1N1 Cases (2009-2010)



HEPATITIS-B: DISTRICT WISE CASES & DEATHS (2006-2010)

YEAR	2006		2007		2008		2009		2010		Total	
DISTRICT	Case	Death	Case	Death								
1 TVM	154	0	11	0	101	2	313	7	181	3	760	12
2 KLM	154	1	102	5	112	0	133	0	54	0	555	6
3 PTA	135	0	160	4	229	4	341	4	163	0	1028	12
4 ALP	48	0	7	1	9	0	23	1	23	0	110	2
5 KTM	12	1	9	1	20	3	34	4	13	1	88	10
6 IDK	23	0	9	1	19	0	31	0	31	1	113	2
7 EKM	5	0	4	0	2	0	8	0	0	0	19	0
8 TSR	1	0	5	0	2	1	13	1	14	1	35	3
9 PKD	0	0	0	0	0	0	0	0	19	0	19	0
10 MPM	7	0	9	0	5	1	17	3	6	0	44	4
11 KKD	0	0	0	0	0	0	8	0	9	1	17	1
12 WYD	0	0	16	0	1	0	2	2	83	1	102	3
13 KNR	2	0	3	0	12	0	27	0	25	0	69	0
14 KSGD	0	0	1	0	0	0	3	0	9	0	13	0
Total	541	2	336	12	512	11	953	22	630	8	2972	55

Year Wise Comparison of Hepatitis B cases- (2006 to 2010)

