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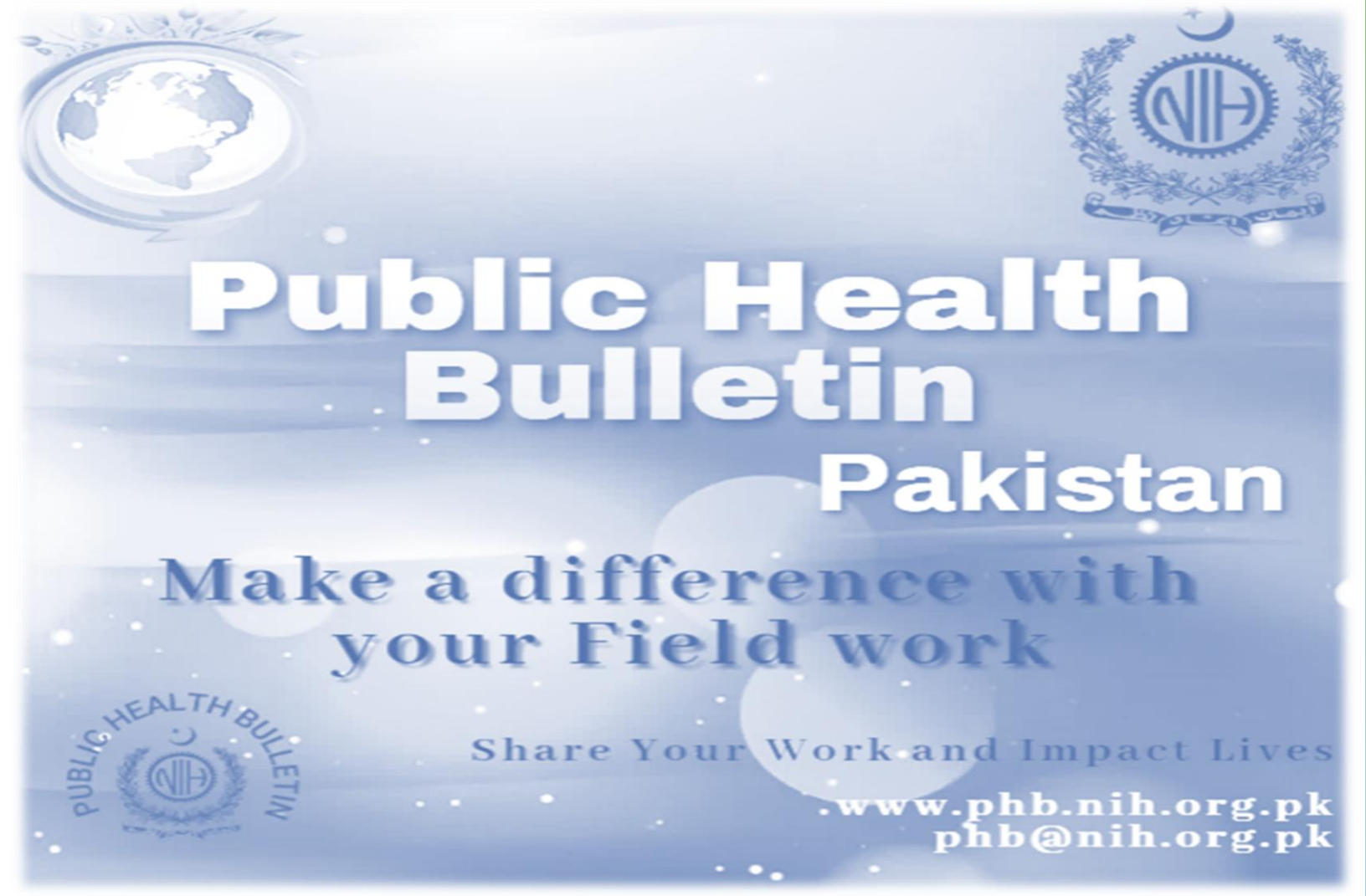
Integrated Disease Surveillance & Response (IDSR) Report

Center of Disease Control
National Institute of Health, Islamabad

http:/www.phb.nih.org.pk/

Integrated Disease Surveillance & Response (IDSR) Weekly Public Health Bulletin is your go-to resource for disease trends, outbreak alerts, and crucial public health information. By reading and sharing this bulletin, you can help increase awareness and promote preventive measures within your community.



Public Health Bulletin - Pakistan, Week 52, 2025

The Public Health Bulletin (PHB) provides timely, reliable, and actionable health information to the public and professionals. It disseminates key IDSR data, outbreak reports, and seasonal trends, along with actionable public health recommendations. Its content is carefully curated for relevance to Pakistan's priorities, excluding misinformation. The PHB also proactively addresses health misinformation on social media and aims to be a trusted resource for informed public health decision-making.

This Weeks Highlights include;

- *Role of Emerging Technologies and Artificial Intelligence in Strengthening Public Health Surveillance*
- *Dengue Outbreak Investigation Report – UC Rajjar-1, VC Amir Abad, District Charsadda (July–August 2025)*
- *Knowledge hub on Acute Watery Diarrhea (AWD) - Suspected Cholera: What You Need to Know*

By transforming complex health data into actionable intelligence, the Public Health Bulletin continues to be an indispensable tool in our collective journey toward a healthier Pakistan.

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Stay informed. Stay prepared. Stay healthy.

Sincerely,
The Chief Editor

Overview

Note: All reported cases in this report are suspected cases

- *During Week 52, the most frequently reported cases were of Acute Diarrhea (Non-Cholera) followed by Malaria, ILI, ALRI <5 years, TB, Dog Bite, B. Diarrhea, VH (B, C & D), SARI, Typhoid and AVH (A & E).*
- *Nine cases of AFP reported from KP, four from Sindh, three from AJK and one from Balochistan.*
- *Fourteen suspected cases of HIV/ AIDS reported from KP, eleven from Sindh and one from Balochistan.*
- *Eight suspected cases of Brucellosis reported from Sindh, one from GB and one from KP.*
- *Among VPDs, there is an increase in number of cases of Chickenpox this week while decrease in the cases of Measles, Meningitis, Pertussis, NT and AFP this week.*
- *Among Respiratory diseases, there is decrease in number of cases of ILI, ALRI <5 years, TB and SARI this week.*
- *Among Water/food-borne diseases, there is decrease in number of cases of AD (Non-Cholera) this week.*
- *Among Vector-borne diseases, there is decrease in number of cases of Malaria this week.*
- *Among STDs, there is increase in number of cases of HIV/AIDs this week.*
- *Among Zoonotic/Other diseases, there is decrease in number of cases of dog bite and VH (B, C & D) this week.*

IDSR compliance attributes

- *The national compliance rate for IDSR reporting in 158 implemented districts is 79%*
- *Sindh is the top reporting regions with a compliance rate of 97%, followed by AJK 88%, GB 79% and KP 76%.*
- *The lowest compliance rate was observed in ICT 74% and Balochistan 51%.*

Region	Expected Reports	Received Reports	Compliance (%)
Khyber Pakhtunkhwa	2229	1705	76
Azad Jammu Kashmir	469	412	88
Islamabad Capital Territory	38	28	74
Balochistan	1308	669	51
Gilgit Baltistan	417	328	79
Sindh	2111	2044	97
National	6572	5186	79

Public Health Actions

Federal, Provincial, Regional Health Departments and relevant programs may consider following public health actions to prevent and control diseases.

Typhoid

- **Enhance Case Detection and Reporting:** Strengthen typhoid surveillance within the Integrated Disease Surveillance and Response (IDSR) system by training healthcare providers on standard case definitions, timely notification, and outbreak detection, particularly in high-burden and underserved areas.
- **Improve Laboratory Diagnosis:** Expand laboratory diagnostic capacity for typhoid by supporting culture and sensitivity testing for MDR and XDR detection at district and provincial levels to confirm cases and guide antimicrobial stewardship.
- **Promote Water, Sanitation, and Hygiene (WASH):** Collaborate with relevant sectors to ensure access to safe drinking water, improve sanitation infrastructure, and promote hygiene practices, especially handwashing with soap.
- **Implement Vaccination Strategies:** Support the scale-up of Typhoid Conjugate Vaccine (TCV) through routine immunization and targeted campaigns in high-risk populations.
- **Raise Community Awareness:** Develop culturally appropriate health education campaigns to inform communities about transmission routes, preventive behaviors (e.g., safe food handling and hygiene), and the importance of early care-seeking.

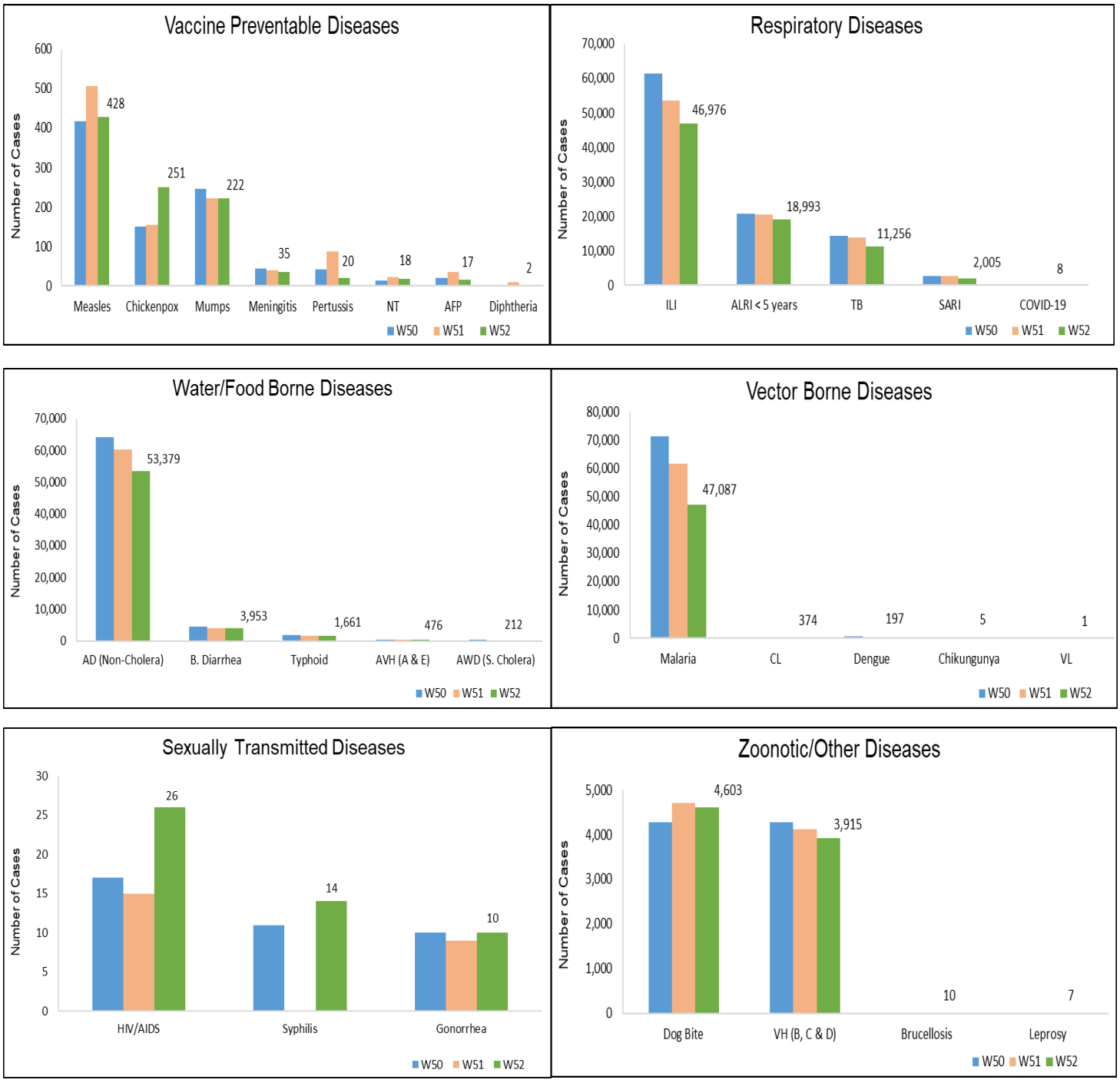
Acute Watery Diarrhea (AWD) – Suspected Cholera

- **Strengthen Surveillance and Immediate Notification:** Ensure prompt reporting of suspected AWD/cholera cases through IDSR, with rapid detection of clusters and early outbreak alerts, particularly in high-risk and underserved areas.
- **Enhance Laboratory Confirmation:** Strengthen laboratory capacity for stool sample collection, transport, and confirmation of *Vibrio cholerae* through culture or rapid diagnostic tests to guide timely response.
- **Implement Water, Sanitation, and Hygiene (WASH) Interventions:** Coordinate with WASH partners to ensure access to safe drinking water, chlorination of water sources, improved sanitation, and promotion of handwashing with soap.
- **Strengthen Outbreak Preparedness and Response:** Strengthen rapid response teams for field investigation, mapping of cases, and implementation of control measures.
  • **Promote Community Awareness and Risk Communication:** Disseminate clear public health messages on safe water use, food hygiene, early use of ORS at home, and immediate care-seeking for watery diarrhea.

Table 1: Province/Area wise distribution of most frequently reported suspected cases during Week 52, Pakistan.

Diseases	AJK	Balochistan	GB	ICT	KP	Punjab	Sindh	Total
AD (Non-Cholera)	1,154	4,564	492	271	17,289	NR	29,609	53,379
Malaria	0	2,654	0	0	2,583	NR	41,850	47,087
ILI	2,774	6,089	340	1,838	6,838	NR	29,097	46,976
ALRI < 5 years	1,371	2,385	1,149	11	1,720	NR	12,357	18,993
TB	67	90	53	8	238	NR	10,800	11,256
Dog Bite	113	264	4	0	920	NR	3,302	4,603
B. Diarrhea	19	1,038	38	3	550	NR	2,305	3,953
VH (B, C & D)	20	37	10	0	87	NR	3,761	3,915
SARI	210	984	154	0	548	NR	109	2,005
Typhoid	13	317	61	0	612	NR	658	1,661
AVH (A & E)	19	10	1	0	150	NR	296	476
Measles	8	17	4	1	351	NR	47	428
CL	0	48	1	0	276	NR	49	374
Chickenpox/ Varicella	7	11	30	2	176	NR	25	251
Mumps	7	49	2	0	119	NR	45	222
AWD (S. Cholera)	4	176	0	0	14	NR	18	212
Dengue	0	0	0	0	1	NR	196	197
Meningitis	5	1	1	0	6	NR	22	35
HIV/AIDS	0	1	0	0	14	NR	11	26
Pertussis	0	11	1	0	8	NR	0	20
NT	0	0	0	0	8	NR	10	18
AFP	3	1	0	0	9	NR	4	17
Syphilis	0	0	0	0	0	NR	14	14
Brucellosis	0	0	1	0	1	NR	8	10
Gonorrhea	0	4	0	0	5	NR	1	10
COVID-19	0	0	0	0	8	NR	0	8
Leprosy	0	0	0	0	0	NR	7	7
Chikungunya	0	0	0	0	0	NR	5	5
Diphtheria (Probable)	0	0	0	0	2	NR	0	2
VL	0	1	0	0	0	NR	0	1

Figure 1: Most frequently reported suspected cases during Week 52, Pakistan.



Sindh

- Malaria cases were maximum followed by AD (Non-Cholera), ILI, ALRI<5 Years, TB, VH (B, C & D), Dog Bite, B. Diarrhea, Typhoid and AVH (A & E).
- Malaria cases are mostly from Khairpur, Dadu and Larkana whereas ILI cases are from Khairpur, Dadu and Larkana.
- Four cases of AFP reported from Sindh. They are suspected cases and need field verification.
- Eight cases of Brucellosis reported from Sindh. They are suspected cases and need field verification.
- There is a decline in number of cases of Measles, Mumps, Meningitis, AFP, ILI, ALRI<5 Years, TB, AD(Non-Cholera), B. Diarrhea, Typhoid, Malaria, dog bite and VH (B, C & D), this week while there is increase in the cases of NT and HIV/AIDS this week.

Table 2: District wise distribution of most frequently reported suspected cases during Week 52, Sindh

Districts	Malaria	AD (Non-Cholera)	ILI	ALRI < 5 years	TB	VH (B, C & D)	Dog Bite	B. Diarrhea	Typhoid	AVH (A & E)
Badin	2,134	1,712	2,421	479	667	314	148	126	24	0
Dadu	3,756	1,982	1,046	1,313	519	95	341	348	134	80
Ghotki	1,814	827	37	828	527	308	246	74	0	0
Hyderabad	440	1,637	1,996	182	307	75	91	88	1	0
Jacobabad	672	489	1,052	437	233	98	191	68	24	0
Jamshoro	1,911	1,217	148	519	540	108	118	70	40	16
Kamber	1,780	1,337	0	373	853	61	256	119	10	0
Karachi Central	11	1,047	1,534	10	168	12	22	2	43	0
Karachi East	14	123	3	9	9	0	0	5	0	0
Karachi Keamari	6	364	126	14	20	0	0	0	0	0
Karachi Korangi	70	226	22	3	23	8	0	2	2	0
Karachi Malir	25	403	1,531	89	57	4	34	18	7	1
Karachi South	11	44	0	0	0	0	1	0	0	0
Karachi West	345	694	1,227	279	63	20	63	15	25	1
Kashmore	1,924	244	784	164	115	7	62	42	0	0
Khairpur	4,205	2,296	5,097	1,542	1,040	227	271	255	154	8
Larkana	2,971	1,153	0	286	649	18	47	193	2	0
Matiari	1,684	943	41	220	579	109	88	42	0	2
Mirpurkhas	1,291	1,536	3,911	496	638	32	163	91	8	58
Naushero Feroze	1,092	1,207	765	540	280	72	177	90	26	0
Sanghar	2,783	1,222	110	576	994	1,333	205	74	19	2
Shaheed Benazirabad	1,759	1,152	2	268	318	80	117	64	76	0
Shikarpur	1,837	754	10	188	218	259	215	102	3	0
Sujawal	544	864	2	620	111	37	69	61	8	0
Sukkur	1,887	934	2,163	318	393	110	124	96	3	0
Tando Allahyar	954	493	1,130	162	310	149	48	44	3	2
Tando Muhammad Khan	471	748	99	249	431	51	104	56	0	0
Tharparkar	2,017	1,761	1,723	1,078	461	27	0	61	13	12
Thatta	1,891	1,152	2,114	606	46	134	101	23	4	110
Umerkot	1,551	1,048	3	509	231	13	0	76	29	4
Total	41,850	29,609	29,097	12,357	10,800	3,761	3,302	2,305	658	296

Figure 2: Most frequently reported suspected cases during Week 52, Sindh.

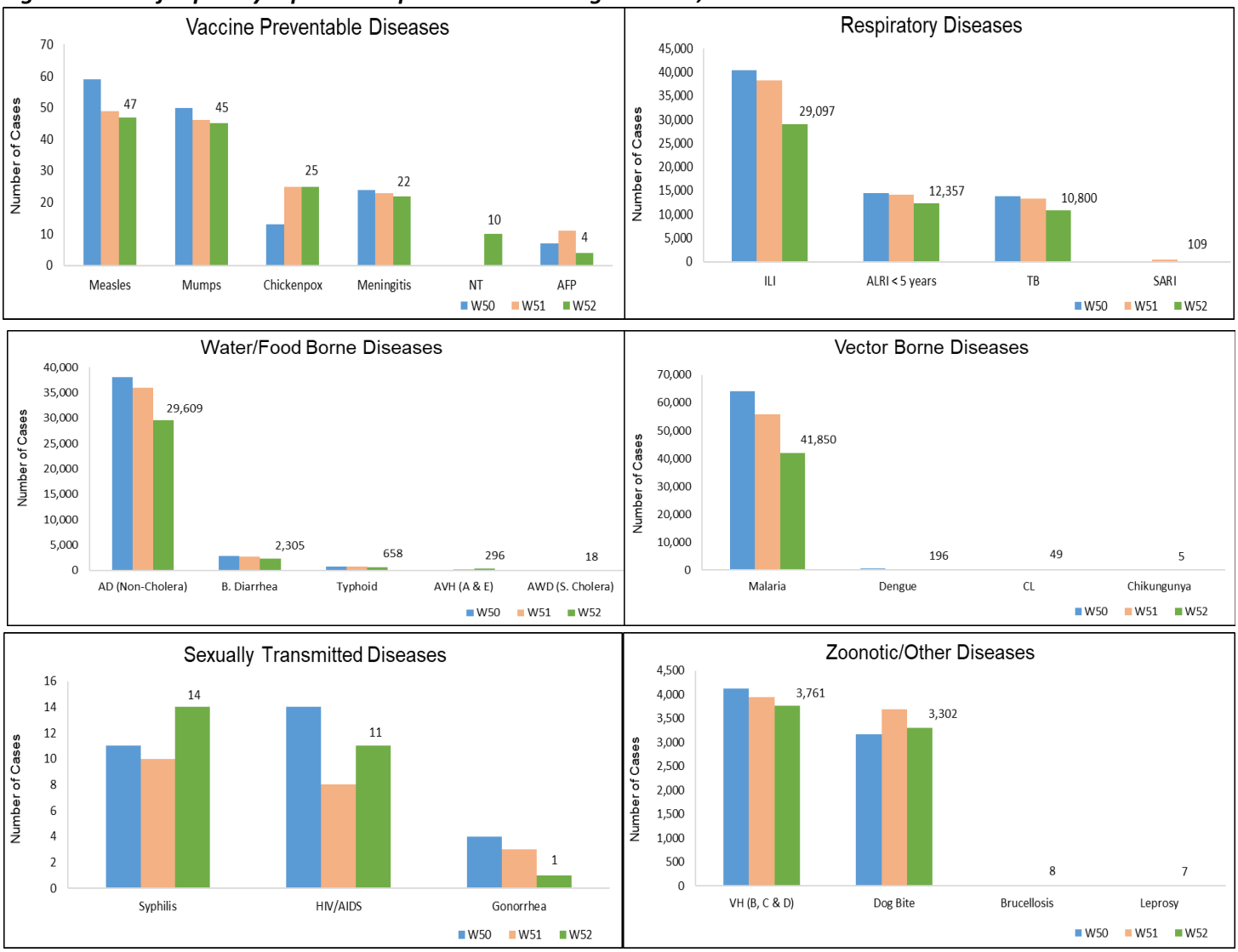
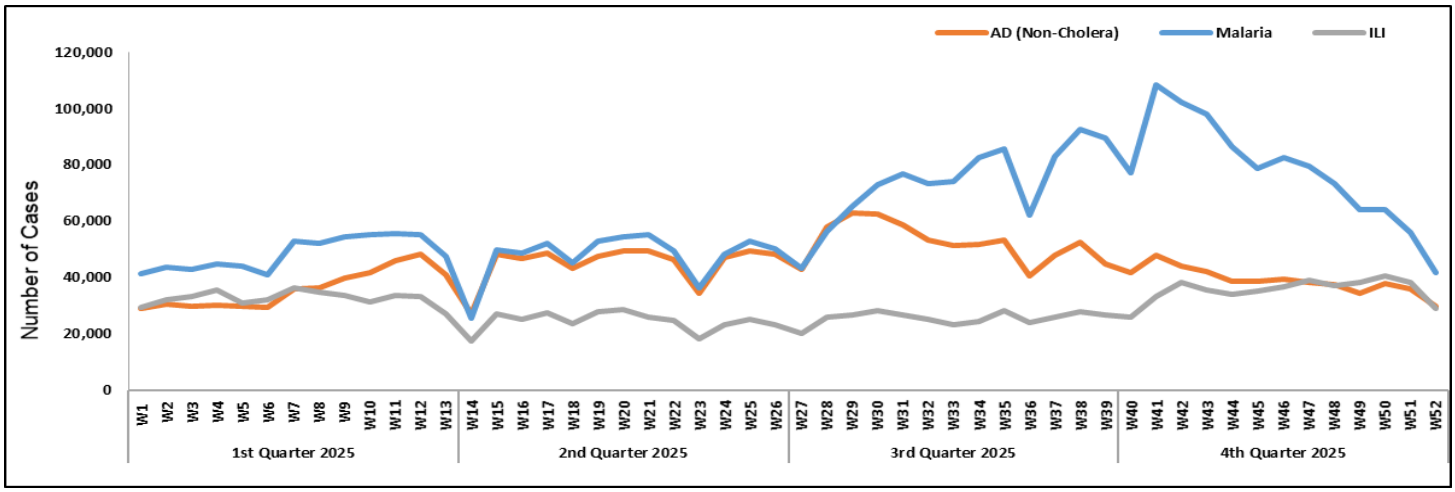


Figure 3: Week wise reported suspected cases of Malaria, AD (Non-Cholera) & ILI, Sindh.



Balochistan

- ILI, AD (Non-Cholera), Malaria, ALRI <5 years, B. Diarrhea, SARI, Typhoid, Dog Bite, AWD (S. Cholera) and TB cases were the most frequently reported diseases from Balochistan province.
- ILI cases are mostly reported from Sibi, Pishin and Kharan while AD (Non-Cholera) cases are mostly reported from Kech (Turbat) Usta Muhammad and Sibi.
- One case of AFP reported from Balochistan. Field investigation is required to confirm the cases.
- Chicken pox, Meningitis, AFP, ILI, ALRI < 5 years, TB, AD (non – cholera), B. Diarrhea, Typhoid, Malaria, HIV/AIDS and Dog Bite showed an increase in the number of cases. At the same time, a decline has been observed in the number of cases of Measles, Mumps and Pertussis.

Table 3: District wise distribution of most frequently reported suspected cases during Week 52, Balochistan.

Districts	ILI	AD (Non-Cholera)	Malaria	ALRI < 5 years	B. Diarrhea	SARI	Typhoid	Dog Bite	AWD (S. Cholera)	TB
Awaran	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barkhan	56	56	20	17	14	0	22	2	11	0
Chagai	312	133	32	0	27	0	7	0	0	1
Chaman	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dera Bugti	0	14	17	42	1	0	1	0	0	0
Duki	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Gwadar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Harnai	7	155	52	201	66	0	0	3	0	0
Hub	114	127	91	53	0	2	0	0	0	1
Jaffarabad	131	209	284	20	49	38	5	2	0	23
Jhal Magsi	102	92	403	106	0	3	10	2	0	8
Kachhi (Bolan)	412	302	419	151	183	25	0	4	53	0
Kalat	0	0	0	0	0	0	0	0	0	0
Kech (Turbat)	662	472	115	23	179	NR	NR	NR	NR	NR
Kharan	697	167	16	2	47	40	21	0	3	0
Khuzdar	82	79	26	0	11	4	15	0	0	0
Killa Abdullah	209	153	1	18	26	114	20	10	30	0
Killa Saifullah	0	191	132	287	48	83	23	0	0	20
Kohlu	51	20	10	4	6	1	4	NR	NR	NR
Lasbella	99	271	212	156	5	14	4	22	0	0
Loralai	376	147	19	76	23	106	12	0	0	0
Mastung	223	109	18	112	10	55	7	5	1	1
MusaKhel	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Naseerabad	30	320	211	56	17	54	39	161	2	16
Nushki	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Panjgur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Pishin	739	199	15	180	104	128	20	5	29	1
Quetta	432	212	6	45	13	26	2	0	12	3
Sherani	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sibi	850	395	296	299	67	239	45	2	34	10
Sohbat pur	1	182	89	170	54	3	12	21	0	0
Surab	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Usta Muhammad	216	428	100	246	48	18	8	13	0	0
Washuk	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Zhob	17	31	0	49	1	29	10	0	0	6
Ziarat	271	100	70	72	39	2	30	12	1	0
Total	6,089	4,564	2,654	2,385	1,038	984	317	264	176	90

Figure 4: Most frequently reported suspected cases during Week 52, Balochistan.

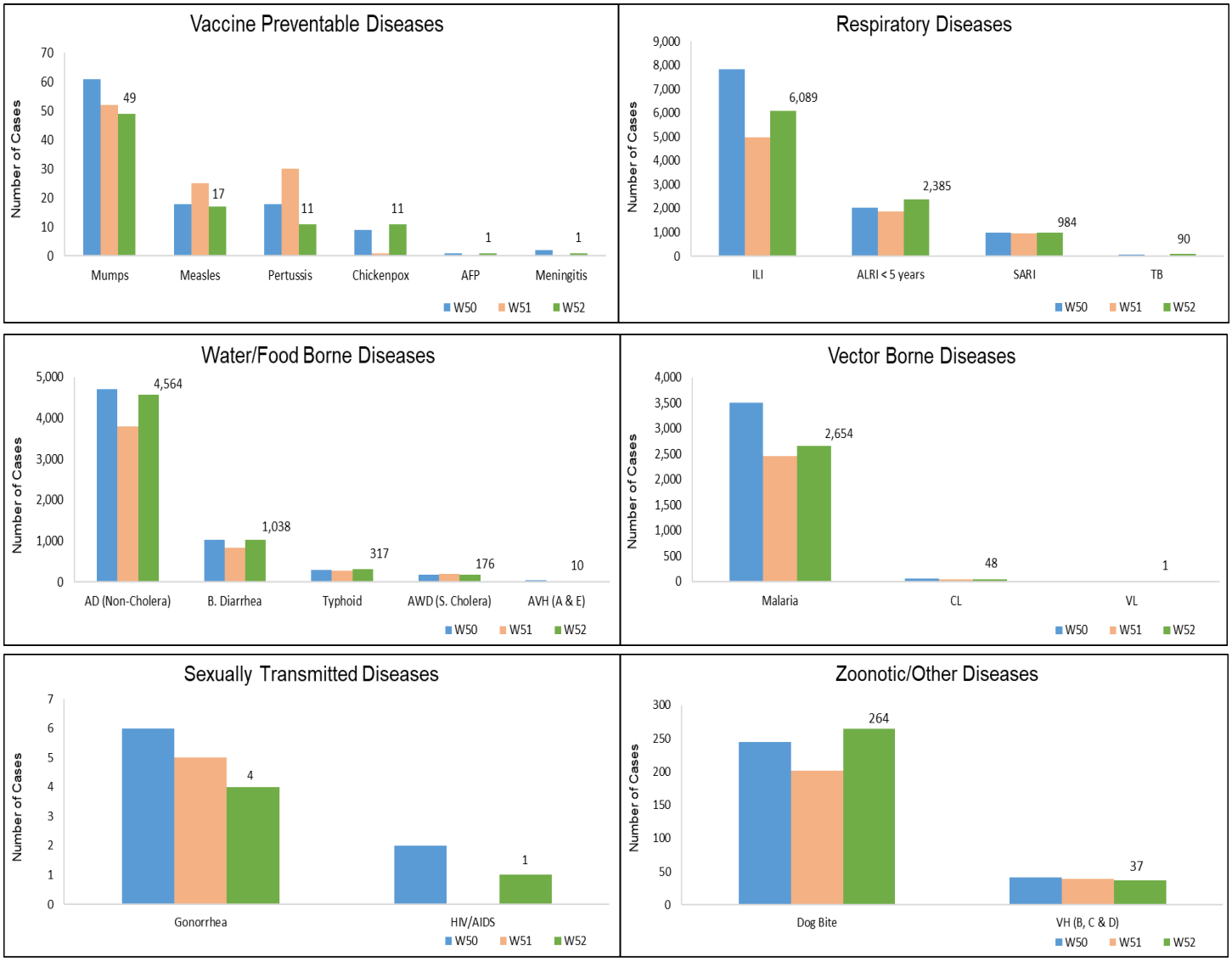
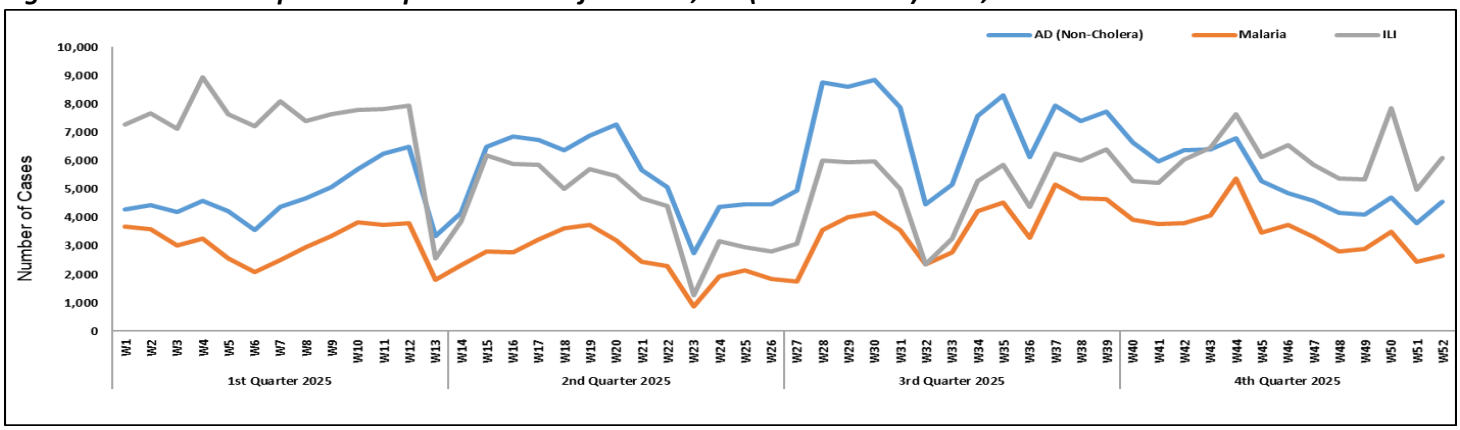


Figure 5: Week wise reported suspected cases of Malaria, AD (Non-Cholera) & ILI, Balochistan



Khyber Pakhtunkhwa

- Cases of AD (Non-Cholera) were maximum followed by ILI, Malaria, ALRI<5 Years, Dog Bite, Typhoid, B. Diarrhea, SARI Measles and CL.
- Chickenpox, Mumps, ILI, ALRI < 5years, HIV/AIDS and Dog bite cases showed an increase in number while Measles, AFP, Pertussis, NT, Meningitis, Diphtheria, SARI, AD (non - cholera), Malaria, CL and VH (B, C & D) showed a decline in number this week.
- Nine cases of AFP reported from KP. All are suspected cases and need field verification.
- Fourteen cases of HIV/AIDs reported from KP. Field investigation is required.
- One suspected case of Brucellosis reported from KP which requires field verification.

Table 4: District wise distribution of most frequently reported suspected cases during Week 52, KP.

Districts	AD (Non-Cholera)	ILI	Malaria	ALRI < 5 years	Dog Bite	Typhoid	B. Diarrhea	SARI	Measles	CL
Abbottabad	490	237	0	64	61	29	3	13	15	0
Bajaur	386	2	81	14	92	3	13	85	12	12
Bannu	542	4	890	12	2	94	10	0	57	0
Battagram	197	517	5	6	6	NR	NR	NR	10	NR
Buner	126	0	86	0	6	7	0	0	0	0
Charsadda	1,273	2,433	193	546	3	160	67	1	11	0
Chitral Lower	251	31	2	23	17	2	8	22	2	12
Chitral Upper	75	18	1	6	0	8	3	8	0	0
D.I. Khan	1,424	0	218	31	12	0	25	0	22	1
Dir Lower	748	1	54	10	59	14	66	0	14	0
Dir Upper	577	82	7	47	5	0	5	0	0	0
Hangu	202	21	64	0	17	1	7	0	2	45
Haripur	708	984	0	105	19	40	8	57	0	0
Karak	238	38	59	83	9	4	7	0	35	78
Khyber	462	0	126	37	40	64	66	0	1	58
Kohat	318	0	50	5	32	4	14	0	1	19
Kohistan Lower	62	0	0	0	1	1	4	0	2	0
Kohistan Upper	171	0	1	1	0	0	14	0	0	0
Kolai Palas	72	0	0	2	0	2	1	0	0	0
L & C Kurram	2	2	0	0	1	0	1	0	0	0
Lakki Marwat	184	5	167	20	70	2	2	0	3	0
Malakand	366	282	16	36	0	0	0	25	21	8
Mansehra	666	240	NR	5	NR	NR	8	5	NR	NR
Mardan	728	290	33	223	20	25	24	0	12	0
Mohmand	46	161	71	2	10	1	8	179	5	28
North Waziristan	65	8	39	31	1	30	6	35	13	0
Nowshera	1,041	105	82	13	6	4	13	12	6	3
Orakzai	80	3	4	0	3	0	8	0	0	0
Peshawar	2,430	325	16	128	4	16	52	10	43	0
Shangla	604	0	112	44	66	24	2	0	9	0
South Waziristan (Lower)	26	138	18	29	14	9	1	18	2	6
SWU	28	25	7	14	0	1	0	21	0	3
Swabi	882	540	46	102	127	11	19	48	31	0
Swat	1,314	184	17	56	196	51	55	0	21	0
Tank	327	38	88	5	1	0	5	0	0	0
Tor Ghar	38	10	20	9	8	1	7	0	0	3
Upper Kurram	140	114	10	11	12	4	18	9	1	0
Total	17,289	6,838	2,583	1,720	920	612	550	548	351	276

Figure 6: Most frequently reported suspected cases during Week 52, KP.

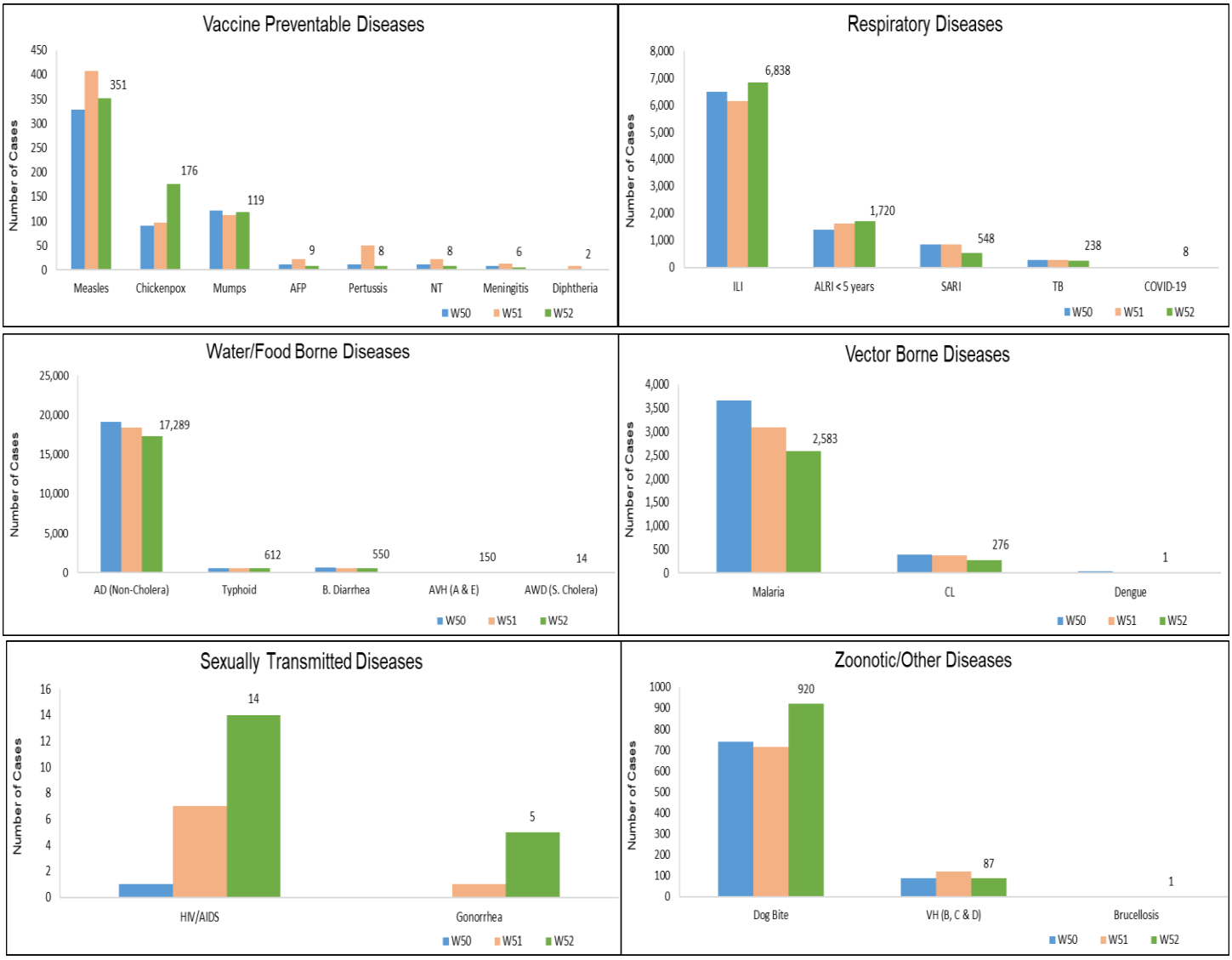
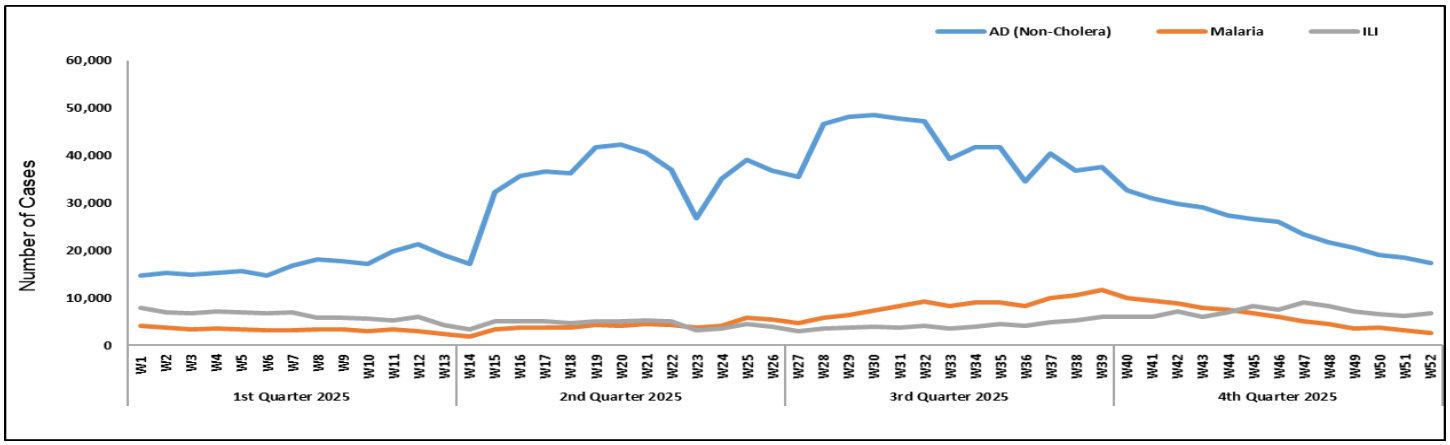


Figure 7: Week wise reported suspected cases of Malaria, AD (Non-Cholera) & ILI, KP.



ICT, AJK & GB

ICT: The most frequently reported cases from Islamabad were ILI followed by AD (Non-Cholera), ALRI < 5years, TB, B.Diarrhea and Chickenpox. An increase in number was observed in ILI and AD (Non-Cholera) cases this week.

AJK: ILI cases were maximum followed by ALRI < 5years, AD (Non-Cholera), SARI, Dog Bite, TB, VH (B, C & D), B.Diarrhea , Typhoid, AVH (A & E), Measles, Chicken pox and Mumps cases. An increase in number of suspected cases was observed for Chickenpox, Meningitis, AFP and VH (B, C & D) while decrease in the cases of Measles, Mumps, ILI, ALRI <5 years, TB, AD(Non-Cholera) and dog bite.

GB: ALRI <5 Years cases were the most frequently reported diseases followed by AD (Non-Cholera), ILI, SARI, Typhoid, TB, B. Diarrhea, Chickenpox/ Varicella, AVH (A & E) and VH (B, C & D) cases. An increase in cases is observed for ALRI <5 years, SARI and Chickenpox this week while a decrease in the cases of Typhoid and B.Diarrhea has been observed in the same time.

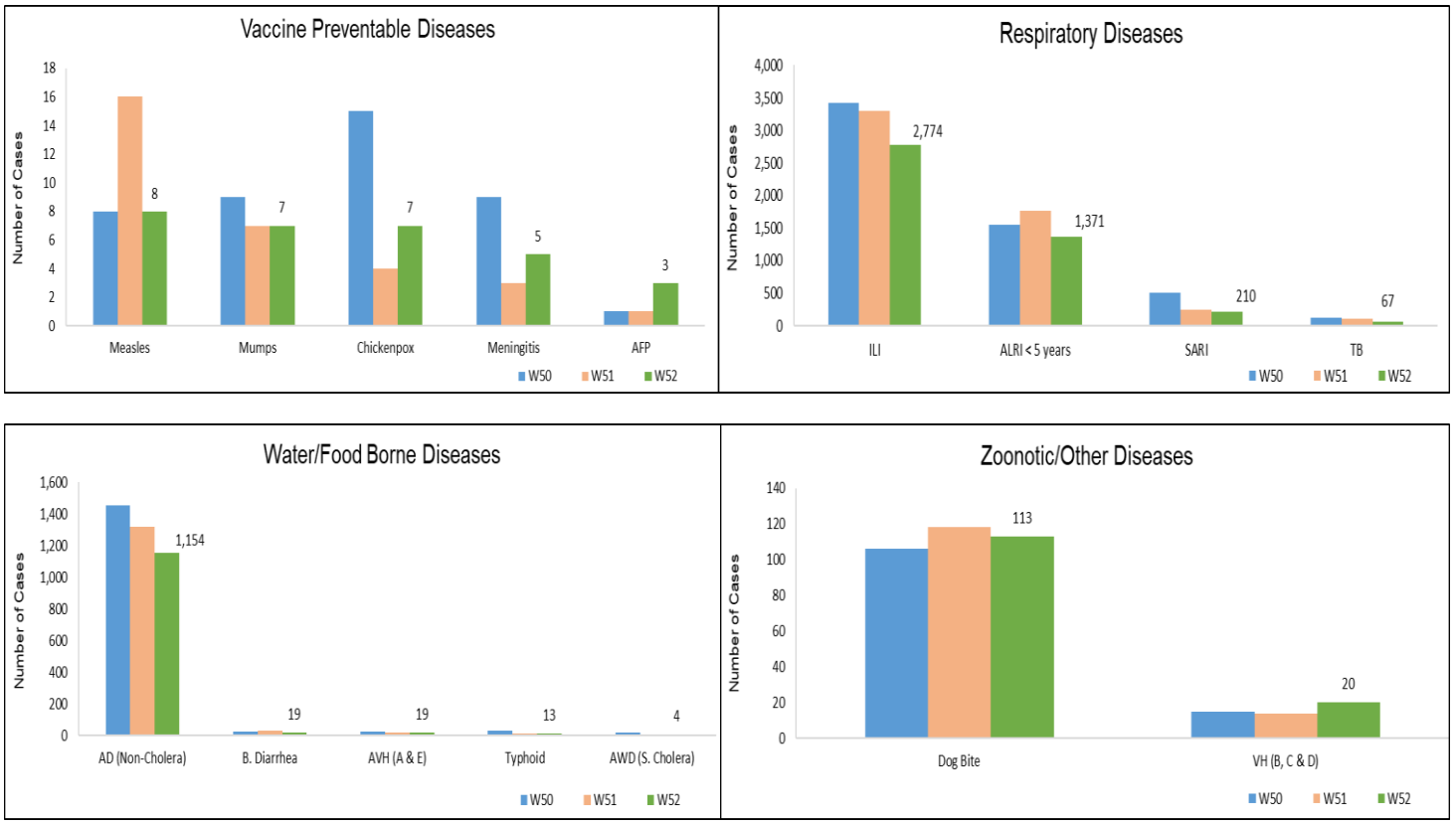


Figure 8: Most frequently reported suspected cases during Week 52, AJK.

Figure 9: Week wise reported suspected cases of ILI and ALRI < 5 years, AJK.

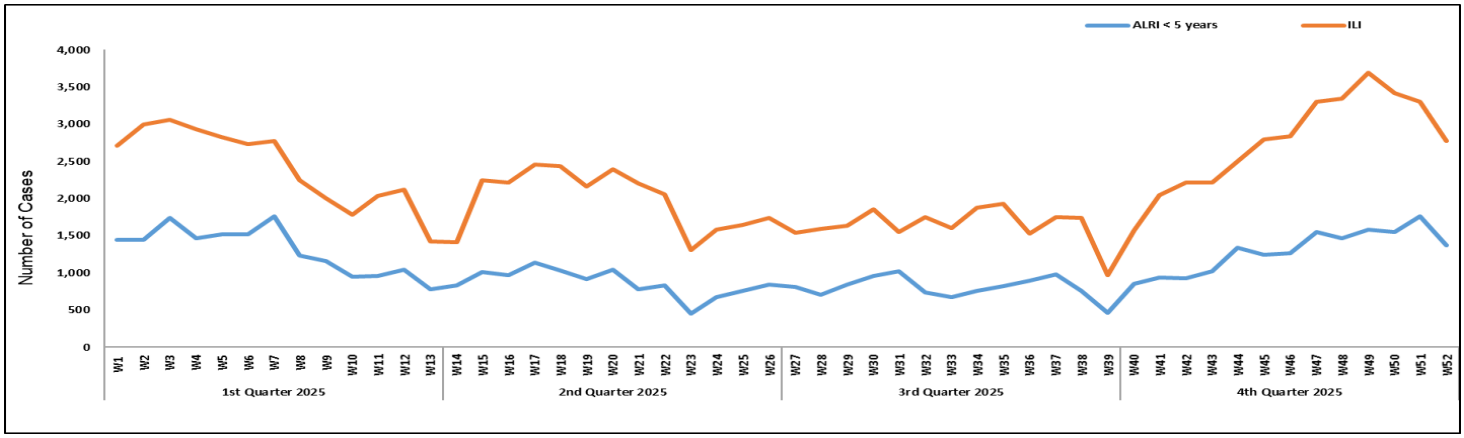


Figure 10: Most frequently reported suspected cases during Week 52, ICT.

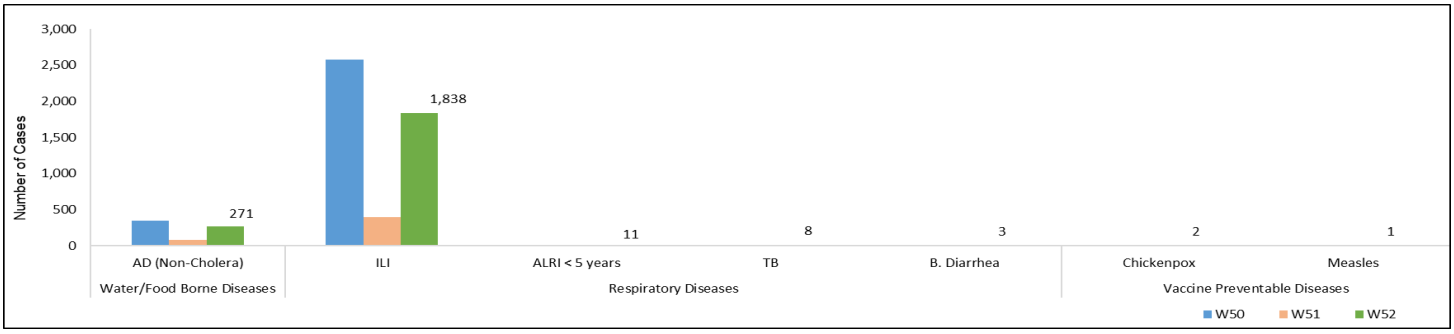


Figure 11: Week wise reported suspected cases of ILI, ICT.

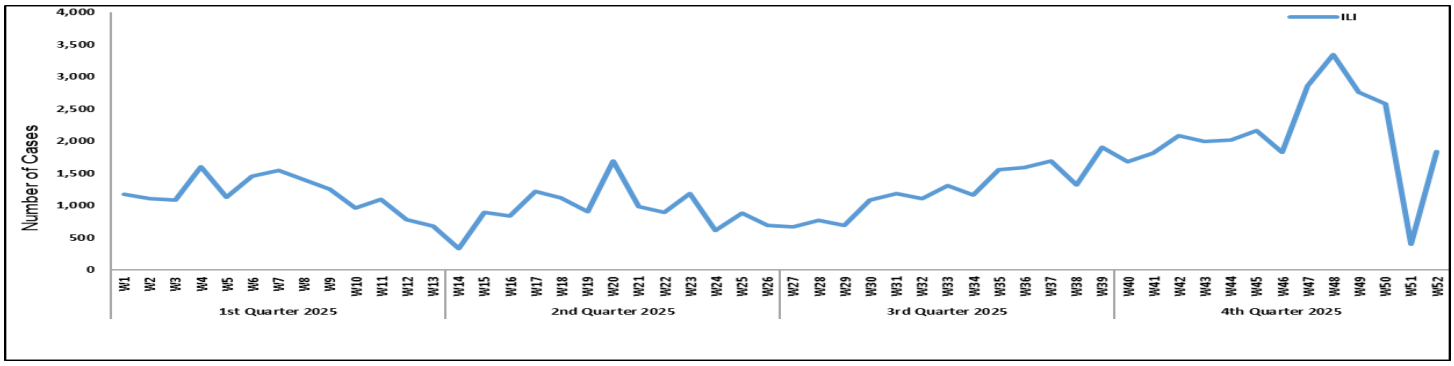


Figure 12: Most frequently reported suspected cases during Week 52, GB.

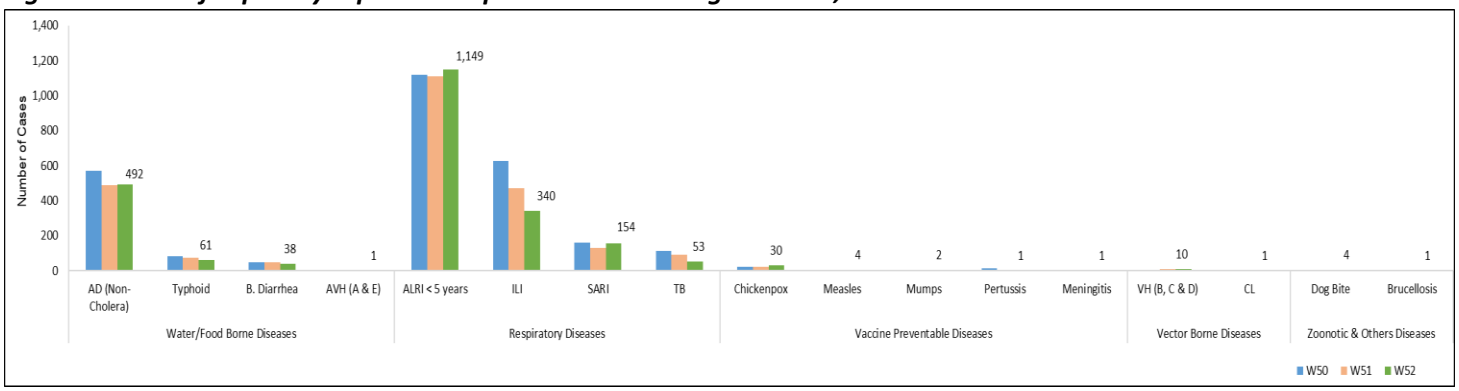


Figure 13: Week wise reported suspected cases of ALRI < 5 years, GB

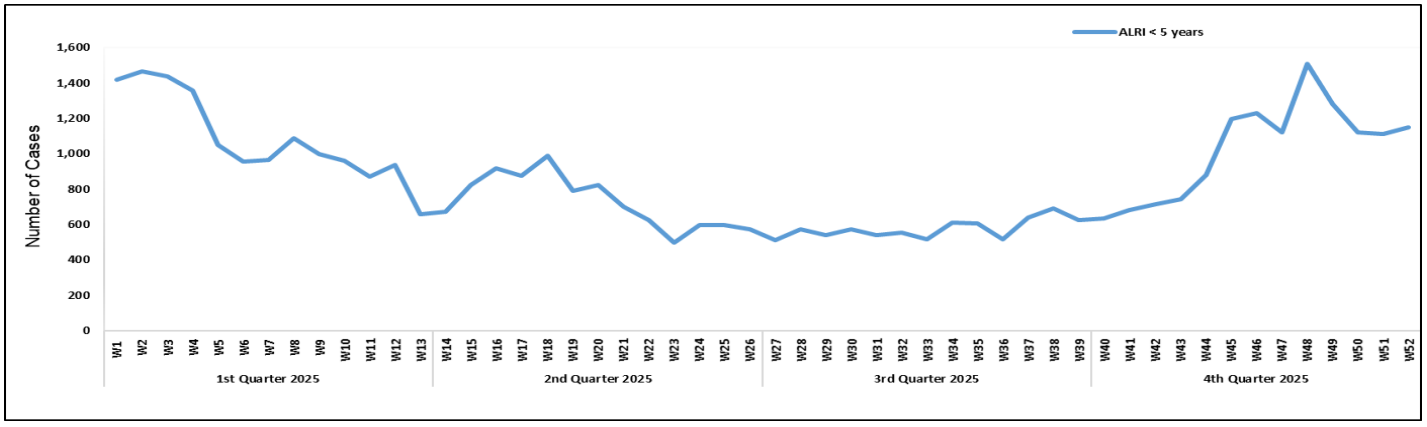


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Table 5: Public Health Laboratories confirmed cases of IDSR Priority Diseases during Epi Week 52.

Diseases		Sindh		Balochistan		KPK		ISL		GB		Punjab		AJK	
		Total Test	Total Pos	Total Test	Total Pos	Total Test	Total Pos	Total Test	Total Pos	Total Test	Total Pos	Total Test	Total Pos	Total Test	Total Pos
AWD (S. Cholera)		23	0	-	-	-	-	-	-	-	-	-	-	-	-
Stool culture & Sensitivity		155	0	-	-	-	-	-	-	-	-	-	-	-	-
Malaria		5982	218	881	96	541	16	-	-	106	0	-	-	-	-
CCHF		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dengue		2499	133	14	2	85	0	-	-	-	-	-	-	-	-
VH (B)		9807	329	800	34	145	18	-	-	878	14	-	-	236	2
VH (C)		9816	926	806	18	159	14	-	-	955	2	-	-	303	4
VH (D)		109	10	-	-	-	-	-	-	-	-	-	-	-	-
VH (A)		104	27	-	-	-	-	-	-	-	-	-	-	-	-
VH (E)		75	13	-	-	-	-	-	-	-	-	-	-	-	-
Covid-19		-	-	-	-	80	0	-	-	-	-	-	-	-	-
TB		555	61	139	26	11	5	-	-	90	0	-	-	30	1
HIV/ AIDS		2436	26	582	1	296	0	-	-	183	0	-	-	237	0
Syphilis		613	21	51	1	9	0	-	-	100	0	-	-	-	-
Typhoid		568	8	81	11	-	-	-	-	116	5	-	-	-	-
Diphtheria		3	0	-	-	-	-	-	-	-	-	-	-	-	-
ILI		12	4	-	-	40	0	-	-	-	-	-	-	-	-
Pneumonia (ALRI)		182	47	-	-	-	-	-	-	-	-	-	-	-	-
Meningitis		6	0	-	-	-	-	-	-	-	-	-	-	-	-
Measles		198	62	30	14	243	87	25	11	1	0	207	34	5	3
Leishmaniosis (cutaneous)		8	0	31	12	2	0	-	-	-	-	-	-	-	-
Chikungunya		2	1	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis		9	0	-	-	-	-	-	-	-	-	-	-	-	-
Mpox		-	-	-	-	1	1	-	-	-	-	-	-	-	-
SARI		24	6	-	-	-	-	-	-	-	-	-	-	-	-
Covid-19	ILI	2	0	-	-	-	-	-	-	6	0	-	-	-	-
	SARI	-	-	-	-	78	0	-	-	20	0	-	-	-	-
Influenza A	ILI	2	0	-	-	-	-	97	11	6	0	84	12	-	-
	SARI	-	-	-	-	78	7	366	19	20	0	259	47	-	-
Influenza B	ILI	2	0	-	-	-	-	-	-	6	0	-	-	-	-
	SARI	5	1	-	-	78	0	366	1	20	0	-	-	-	-
RSV	ILI	2	0	-	-	-	-	97	29	6	0	-	-	-	-
	SARI	-	-	-	-	78	4	366	195	20	0	-	-	-	-

IDSR Reports Compliance

- Out of 158 IDSR implemented districts, compliance is low from KP , ICT and Balochistan. Green color highlights >50% compliance while red color highlights <50% compliance

Table 6: Compliance of IDSR reporting districts Week 52, Pakistan.

Provinces/Regions	Districts	Total Number of Reporting Sites	Number of Reported Sites for current week	Compliance Rate (%)
Khyber Pakhtunkhwa	Abbottabad	111	102	92%
	Bannu	238	129	54%
	Battagram	59	31	53%
	Buner	34	17	50%
	Bajaur	44	36	82%
	Charsadda	59	58	98%
	Chitral Upper	34	30	88%
	Chitral Lower	35	34	97%
	D.I. Khan	114	113	99%
	Dir Lower	74	62	84%
	Dir Upper	37	34	92%
	Hangu	22	18	82%
	Haripur	72	68	94%
	Karak	36	36	100%
	Khyber	53	45	85%
	Kohat	61	61	100%
	Kohistan Lower	11	9	82%
	Kohistan Upper	20	10	50%
	Kolai Palas	10	10	100%
	Lakki Marwat	70	68	97%
	Lower & Central Kurram	42	2	5%
	Upper Kurram	41	30	73%
	Malakand	42	21	50%
	Mansehra	133	111	83%
	Mardan	80	68	85%
	Nowshera	56	52	93%
	North Waziristan	13	9	69%
	Peshawar	156	133	85%
	Shangla	37	35	95%
	Swabi	64	62	97%
	Swat	77	74	96%
	South Waziristan (Upper)	93	37	40%
	South Waziristan (Lower)	42	29	69%
	Tank	34	32	94%
	Torghar	14	13	93%
	Mohmand	68	17	25%
	Orakzai	69	9	13%
Azad Jammu Kashmir	Mirpur	37	37	100%
	Bhimber	92	87	95%
	Kotli	60	60	100%
	Muzaffarabad	45	44	98%
	Poonch	46	46	100%
	Haveli	39	39	100%
	Bagh	54	19	35%
	Neelum	39	24	62%

	Jhelum Velley	29	29	100%
	Sudhnooti	27	27	100%
Islamabad Capital Territory	ICT	23	23	100%
	CDA	15	5	33%
Balochistan	Gwadar	26	0	0%
	Kech	44	37	84%
	Khuzdar	74	10	14%
	Killa Abdullah	26	26	100%
	Lasbella	55	53	96%
	Pishin	69	30	43%
	Quetta	55	17	31%
	Sibi	36	33	92%
	Zhob	39	11	28%
	Jaffarabad	16	15	94%
	Naserabad	32	32	100%
	Kharan	30	30	100%
	Sherani	15	0	0%
	Kohlu	75	5	7%
	Chagi	36	24	67%
	Kalat	41	40	98%
	Harnai	17	17	100%
	Kachhi (Bolan)	35	18	51%
	Jhal Magsi	28	27	96%
	Sohbat pur	25	25	100%
	Surab	32	0	0%
	Mastung	46	46	100%
	Loralai	33	27	82%
	Killa Saifullah	28	22	79%
	Ziarat	29	28	97%
	Duki	31	0	0%
	Nushki	32	0	0%
	Dera Bugti	45	18	40%
	Washuk	46	0	0%
	Panjgur	38	0	0%
	Awaran	23	0	0%
	Chaman	24	0	0%
	Barkhan	20	18	90%
	Hub	33	26	79%
	Musakhel	41	0	0%
	Usta Muhammad	34	34	100%
Gilgit Baltistan	Hunza	32	32	100%
	Nagar	25	20	80%
	Ghizer	38	0	0%
	Gilgit	44	43	98%
	Diamer	62	54	87%
	Astore	55	55	100%
	Shigar	27	18	67%
	Skardu	53	52	98%
	Ganche	29	29	100%

	Kharmang	46	25	54%
Sindh	Hyderabad	72	72	100%
	Ghotki	64	64	100%
	Umerkot	62	62	100%
	Naushahro Feroze	107	101	94%
	Tharparkar	276	263	95%
	Shikarpur	60	59	98%
	Thatta	52	49	94%
	Larkana	67	65	97%
	Kamber Shadadkot	71	71	100%
	Karachi-East	21	13	62%
	Karachi-West	20	20	100%
	Karachi-Malir	35	23	66%
	Karachi-Kemari	22	21	95%
	Karachi-Central	12	11	92%
	Karachi-Korangi	18	18	100%
	Karachi-South	6	4	67%
	Sujawal	55	55	100%
	Mirpur Khas	106	105	99%
	Badin	124	123	99%
	Sukkur	64	63	98%
	Dadu	90	90	100%
	Sanghar	100	100	100%
	Jacobabad	44	44	100%
	Khairpur	170	166	98%
	Kashmore	59	59	100%
	Matiari	42	42	100%
	Jamshoro	75	74	99%
	Tando Allahyar	54	52	96%
	Tando Muhammad Khan	41	41	100%
	Shaheed Benazirabad	122	114	93%

Table 7: Compliance of IDSR reporting Tertiary care hospitals Week 52, Pakistan.

Provinces/Regions	Districts	Total Number of Reporting Sites	Number of Reported Sites for current week	Compliance Rate (%)
AJK	Mirpur	2	0	0%
	Bhimber	1	0	0%
	Kotli	1	0	0%
	Muzaffarabad	2	1	50%
	Poonch	2	0	0%
	Haveli	1	0	0%
	Bagh	1	0	0%
	Neelum	1	0	0%
	Jhelum Vellay	1	0	0%
	Sudhnooti	1	0	0%
Sindh	Karachi-South	3	2	67%
	Sukkur	1	1	100%
	Shaheed Benazirabad	1	1	100%
	Karachi-East	1	1	100%
	Karachi-Central	1	1	100%
KP	Peshawar	3	1	33%
	Swabi	1	0	0%
	Nowshera	1	0	0%
	Mardan	1	0	0%
	Abbottabad	1	0	0%
	Swat	1	1	100%

Letter to Editor

Role of Emerging Technologies and Artificial Intelligence in Strengthening Public Health Surveillance

Dear Editor,

Chemical and biological threats whether natural, accidental, or deliberate, remain persistent risks to public health security, national stability, and health system preparedness. Conventional surveillance systems, while foundational, are increasingly strained by the scale, speed, and complexity of contemporary health threats. Emerging technologies, particularly artificial intelligence (AI), machine learning, genomics, biosensors, and big data analytics, now offer a substantive opportunity to strengthen surveillance, early detection, and response capabilities.

The application of AI and related technologies in public health surveillance is fundamentally aimed at improving early warning, enabling near–real-time detection of abnormal health events, strengthening risk assessment and forecasting, and supporting timely, evidence-based decision-making. By integrating clinical, laboratory, environmental, and syndromic data streams, these tools allow faster identification of outbreaks and potential chemical or biological events that may otherwise go undetected until escalation.

In the short term, AI-enabled surveillance systems can improve data quality, timeliness, and completeness; enhance outbreak detection; optimize resource allocation; and support rapid response through automated alerts and decision-support platforms. Over the longer term, sustained and institutionalized use of these technologies can reinforce integrated disease surveillance frameworks, improve national preparedness for public health emergencies, enable predictive modeling of emerging threats, and contribute to the development of resilient and adaptive health systems.

By improving surveillance sensitivity, interoperability, and analytical depth, emerging technologies substantially enhance public health intelligence and situational awareness. Their adoption must, however, be accompanied by robust governance, ethical safeguards, and strong intersectoral collaboration to address data protection, equity, and dual-use risks.

Strategic investment in technology-driven surveillance is no longer optional. It is central to building a proactive, data-driven public health system capable of preventing, detecting, and responding effectively to chemical and biological threats.

Yours sincerely,

Rukhsana Sarwar

Statistical Assistant

CDC, NIH

Notes from the field:

Dengue Outbreak Investigation Report – UC Rajjar-1, VC Amir Abad, District Charsadda (July–August 2025)

Introduction

Dengue fever is a mosquito-borne viral infection caused by four distinct serotypes of the dengue virus (DENV 1–4) and transmitted by Aedes aegypti and Aedes albopictus. Globally, dengue affects more than 100 countries, with an estimated 390 million infections annually, and about 96 million presents clinically (WHO, 2024). The disease burden is greatest in tropical and subtropical regions, including South and Southeast Asia. In Pakistan, dengue has become endemic with frequent post-monsoon outbreaks, major ones reported in 2010, 2019, and 2022. Khyber Pakhtunkhwa (KP) remains

among the most affected provinces, with repeated outbreaks due to climatic conditions and poor vector control. This investigation aimed to determine the magnitude and extent of the dengue outbreak in UC Rajjar-1, identify affected populations and associated risk factors, and recommend preventive and control measures to avert future outbreaks.

Objectives

- To determine the magnitude and extent of the dengue outbreak.
- To identify the most affected areas, age groups, and gender.
- To identify key risk factors contributing to the outbreak.
- To recommend evidence-based measures to prevent and control future dengue outbreaks.

Methods

A case-control study was conducted among residents of Union Council Rajjar-1 (catchment population: 49,985), District Charsadda, from 15 July to 29 August 2025.

Study population included laboratory-confirmed dengue cases (for cases) while age and gender matched residents of the same area without dengue infection (for controls). Suspected case was defined as "any person having fever of 2–10 days with two or more of the following: headache, retro-orbital pain, myalgia, arthralgia, rash, bleeding manifestations, abdominal pain, or irritability in infants". Probable case was defined as "any suspected case with laboratory evidence such as thrombocytopenia (<100,000/mm^3) or leukopenia (<4,000/mm^3)". While Confirmed case was "any probable case confirmed by NS1 antigen, IgM antibody, PCR, or a fourfold rise in IgG titer". Data were collected via active case finding, record review, structured questionnaires and line lists from health facilities. Blood samples were tested for NS1 antigen and dengue IgM antibodies to confirm infection. Data were analyzed in Microsoft Excel. Frequencies, proportions, and attack rates were calculated by age, gender, and area. Odds ratios were used to assess associations between risk factors and disease status.

Results

A total of 409 confirmed dengue cases were reported between 13 July and 29 August 2025. The mean age of patients was 32 years. The male-to-female ratio was 3:2 (189 females and 221 males), indicating higher infection among males (60%). The overall attack rate was 2.27%, with gender-specific attack rates of 2.36% in males and 2.18% in females. Age-specific attack rates were highest among individuals aged ≥70 years (9.4%), followed by 60–69 years (7.6%) and 40–49 years (4.4%). The most affected areas within UC Rajjar-1 included Amir Abad and surrounding villages. Clinical symptoms included fever (100%), headache (90%), arthralgia (80%), myalgia (75%), vomiting (45%), skin rash (30%), and nasal bleeding (12%). Risk factor analysis showed that non-use of long-lasting insecticidal nets (LLINs) significantly increased the risk of dengue (OR = 1.97; 95% CI: 1.06–3.66; p = 0.039). Other contributing factors included the presence of stagnant water around homes, uncovered water containers, inadequate insecticide spraying, and failure to conduct pre-monsoon larvicidal activities. Laboratory testing confirmed that all cases were NS1-positive, consistent with active transmission of dengue virus during the study period.

Discussion

This investigation confirmed a dengue outbreak in UC Rajjar-1, District Charsadda, during July–August 2025. The outbreak coincided with monsoon rains, which favor breeding of Aedes mosquitoes. The observed male predominance and clustering in older age groups are consistent with occupational exposure and mobility patterns. The high attack rates in older adults may be linked to lower immunity and increased

outdoor activity. Risk factor analysis indicated that households without LLINs or recent insecticide spraying were more likely to experience dengue infection, aligning with global findings that vector control lapses contribute to outbreak amplification. Poor sanitation, uncovered water containers, and inadequate community engagement also played a significant role. These findings are comparable with previous dengue outbreaks reported in Pakistan and South Asia, where weak surveillance, inadequate vector management, and delayed response were recurring challenges (Khan et al., 2023; WHO EMRO, 2022). Strengthening surveillance and community-level vector control remains critical to sustaining control gains and preventing resurgence.

Conclusion

The dengue outbreak in UC Rajjar-1, District Charsadda, was confirmed and primarily attributed to Aedes aegypti proliferation following monsoon rains, poor waste management, and weak vector control measures. Males aged 20–49 years and residents of Amir Abad were most affected. Effective vector control, larval source reduction, and improved community awareness are essential to prevent recurrence.

Recommendations

- Strengthen dengue surveillance at the UC and district levels for timely case detection and response.
- Implement integrated vector management, including pre-monsoon larval source reduction, fogging, and IRS in high-risk areas.
- Promote community awareness through schools, mosques, and local media on eliminating standing water and personal protection.
- Enhance laboratory capacity for timely diagnosis and confirmation of dengue cases.
- Encourage the use of protective clothing and insect repellents to minimize mosquito bites.
- Improve coordination among public health, sanitation, and municipal departments for effective outbreak preparedness.
- Ensure regular monitoring and evaluation of vector control and public education interventions.

References

1. World Health Organization. Dengue and Severe Dengue: Fact Sheet, 2024. Geneva: WHO; 2024.
2. WHO Regional Office for the Eastern Mediterranean. Dengue Situation Update – Pakistan 2022. Cairo: WHO EMRO; 2022.
3. Khan J, Hussain S, Rehman A. Epidemiological trends and control strategies for dengue in Pakistan: A review. East Mediterr Health J. 2023;29(2):165–172.

Knowledge Hub

Acute Watery Diarrhea (AWD) - Suspected Cholera: What You Need to Know

Acute Watery Diarrhea (AWD) is a clinical syndrome characterized by the sudden onset of three or more loose or watery stools in a 24-hour period. While AWD can be caused by many pathogens, in many parts of the world, it is treated as **suspected cholera** until proven otherwise, due to the potential for rapid spread and high fatality rates.

What is Cholera?

Cholera is an acute diarrheal infection caused by ingestion of food or water contaminated with the bacterium ***Vibrio cholerae***.[1] It remains a global threat to public health and an indicator of inequity and lack of social development.[2]

- **Suspected Case:** Any patient aged 2 years or older presenting with AWD (especially in areas with a known outbreak).
- **Confirmed Case:** A suspected case where *V. cholerae* O1 or O139 is isolated from a stool sample.

How It Spreads

Cholera is spread through the **fecal-oral route**.[3] This occurs when a person consumes water or

food contaminated by the feces of an infected person.[4] It is often linked to inadequate management of clean water and sanitation.[5]

- **Water Sources:** Contaminated surface water, wells, or municipal supplies.[6]
- **Food:** Raw or undercooked shellfish, "street food," or produce washed with contaminated water.[7]
- **Person-to-Person:** Direct spread is rare but possible through contaminated hands in a household setting.

Signs & Symptoms

Most people infected with *V. cholerae* do not develop symptoms, but the bacteria are present in their feces for 1–10 days after infection. In symptomatic cases, 80% are mild to moderate. However, about 20% develop **severe acute watery diarrhea**.[8]

- **"Rice-water" Stools:** Profuse, pale, milky-looking liquid stools.[9]
- **Vomiting:** Often occurs early in the illness.
- **Leg Cramps:** Caused by the rapid loss of salts (electrolytes) like sodium, chloride, and potassium.[10]
- **Dehydration:** This is the most dangerous aspect, occurring within hours of symptom onset.

Complications

If untreated, severe cholera can lead to **death within hours** due to:

- **Hypovolemic Shock:** Massive loss of body fluids leading to heart failure.[11]
- **Electrolyte Imbalance:** Can cause seizures or cardiac arrest.
- **Kidney Failure:** Due to prolonged low blood pressure and lack of fluid flow.

Treatment

The primary goal of treatment is **rehydration**. Most cases (up to 80%) can be treated successfully with Oral Rehydration Solution (ORS).[12]

1. **Rehydration:**
    - **Mild/Moderate:** Use **Oral Rehydration Solution (ORS)**. A patient may need up to 6 liters in the first day.
    - **Severe:** Requires immediate **Intravenous (IV) fluids** (usually Ringer's Lactate) followed by ORS as soon as the patient can drink.[13]
2. **Zinc Supplementation:** Essential for children under 5 to reduce the duration and volume of diarrhea.
3. **Antibiotics:** Recommended only for severe cases to reduce the volume of diarrhea and the duration of shedding the bacteria.

Prevention and WASH

The long-term solution for AWD and cholera control lies in **WASH** (Water, Sanitation, and Hygiene).[14]

- **Safe Water:** Drink and use water that has been boiled, chlorinated, or filtered.[15]
- **Hygiene:** Wash hands with soap and safe water after using the toilet and before handling food.[16]
- **Food Safety:** Cook food thoroughly, eat it hot, and peel fruits and vegetables yourself.[17]
- **Cholera Vaccines:** Oral Cholera Vaccines (OCV) are used in conjunction with WASH improvements in high-risk areas.[18] They provide protection for about 3 years.

More Information

For guidelines on outbreak response and clinical management, visit:

- **World Health Organization (WHO) - Cholera:**
    - https://www.who.int/news-room/fact-sheets/detail/cholera
- **Centers for Disease Control and Prevention (CDC) - Cholera:**
    - https://www.cdc.gov/cholera/index.html
- **Global Task Force on Cholera Control (GTFCC):**
    - https://www.gtfcc.org/

Cholera

Sources of infection

Foodborne and waterborne, transmitted by consumption of food and drink contaminated with the bacterium *Vibrio cholerae*.

Types of exposure & prevention

Direct contact with bacterium in water or food. It can spread very quickly, especially in conditions created by emergencies. Cholera can be fatal. Prevent it by:

- Only drinking boiled and clean water
- Using clean water for washing and preparing food, and making ice
- Washing your hands often with soap and safe water
- Cooking food completely, keeping it covered, and eating it hot
- Washing yourself and your children, and diapers and clothes away from drinking-water sources.

Symptoms

Diarrhea that looks like "rice water" in large amounts | Vomiting | Leg cramps | Weakness | Dehydration

Actions to take in case of symptoms:

Cholera can make a healthy person weak quickly and can cause death within 24 hours.
Oral rehydration salts (ORS) can successfully treat 80% of patients.
You can continue to breastfeed infants and young children even if you have been diagnosed with cholera.

What is ORS?

ORS is sodium and glucose solution prepared by diluting 1 sachet of readily available ORS sachet in 1 litre of clean and safe water. You can also make it at home by mixing the following:

1. **Half a teaspoon of salt**
2. **Six teaspoons of sugar**
3. **One litre of clean and safe drinking-water or lightly salted rice water**

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