



ROYAL CENTER FOR DISEASES CONTROL
QUARTERLY BULLETIN: First Quarter 2022

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Highlights on National Early Warning and Alerts Response Surveillance (NEWARS) and SARS-COV-2 Surveillance:

a) **NEWARS:**

- i) Over all reporting rate for notifiable diseases had decrease compared to previous quarter,
- ii) A majority of the immediately notifiable diseases/syndromes reported were suspected measles/rubella cases; Out of nine suspected samples collected from measles and rubella, one of the sample tested positive for measles IgM and for rubella IgM respectively,
- iii) Five Dengue fever cases were reported during the quarter
- iv) Four outbreaks of Influenza like Illness were reported during the month; all tested negative for SARS-CoV-2.

b) **COVID-19:**

- i) An outbreak of SARS-COV-2 which started on 2nd week of January had continued throughout the quarter.
- ii) Total of 26581 new cases were detected during the quarter bringing the total number of cases to 29139 as of 31st March 2021.
- iii) The highest number of cases were recorded in this quarter

1. National Early Warning Alert and Response Surveillance (NEWARS)

1.1 Reporting status of health centers under 20 Dzongkhags

In the 1st quarter, a total of 3180 weekly reports were expected from 265 health centers across the country. The overall reporting rate was lower in this quarter could be due to the prolonged lockdown in most of the dzongkhag, 75.0% of reports were reported in the NEWARS Information System. Out of those expected reports, 60.0% were reported in time while 20.0% were not reported (Figure 1).

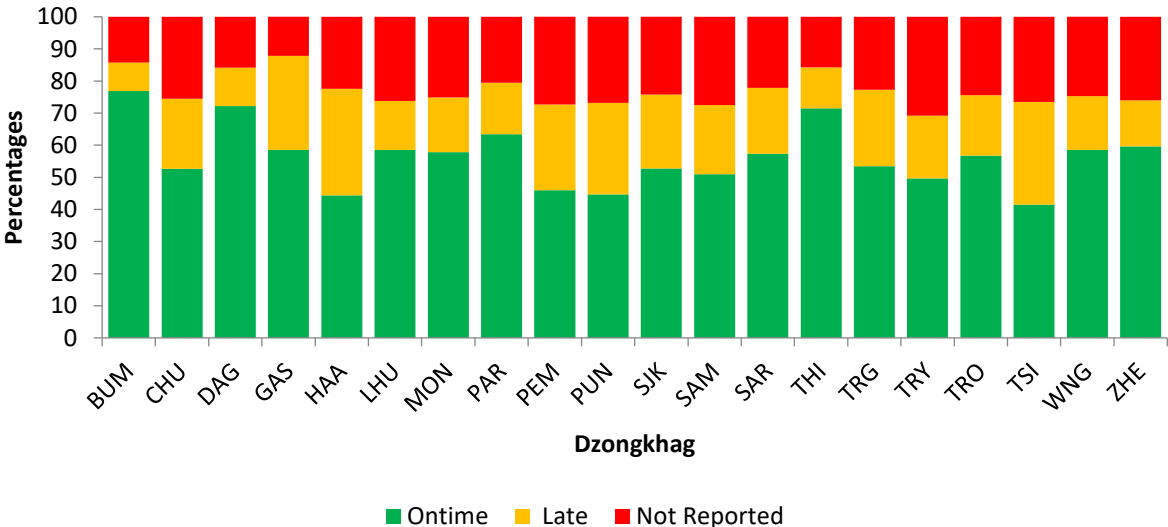


Figure 1: Dzongkhag-wise weekly reporting status for 3rd quarter 2021

BUM (Bumthang), CHU (Chukha), DAG (Dagana), GAS(Gasa), LHU (Lhuntshe), MON (Mongar), Par (Paro), PEM (Pemagatshel), PUN (Punakha), SJK (Samdrupjongkhar), SAM (Samtse), SAR (Sarpang), THI (Thimphu), TRG (Trashigang), TRY (Trashiyangtse), TRO (Trongsa), TSI (Tsirang), WANG (Wangduephodrang), ZHE (Zhemgang)

Overall Chukha, Samtse, and Trashiyangtse Dzongkhag had the lowest reporting rate.

1.2 Status of Notifiable Diseases/Syndromes reported by health centers:

Among 11 weekly reportable diseases/syndromes, the highest number of cases reported was ARI- 22325 (88.0%) followed by AWD- 2695 (11.0%), (Table 1). The total number of cases reported was lower in this quarter compared to the previous quarter. This could be due to the prolonged lockdown in most of the dzongkhag following the SARS-CoV-2 outbreaks.

Table 1: Notifiable diseases/syndromes reported by Dzongkhags

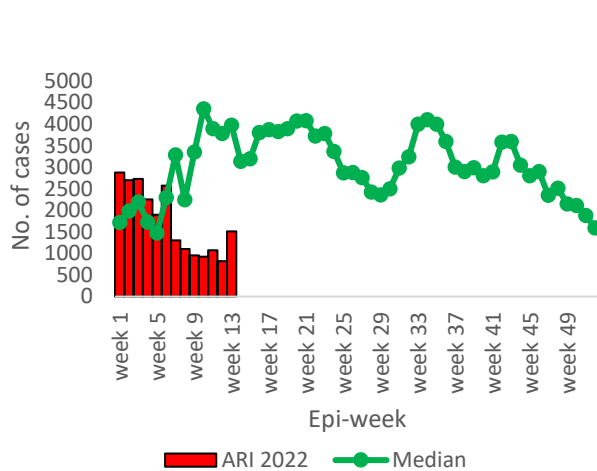
DZO	ABD	AJS	ARI	AWD	FDP	FWR	MUM	RKS	SAR	TYP
BUM	45	5	1318	457	0	0	0	0	0	0
CHU	17	0	1673	346	1	0	0	0	15	0
DAG	21	12	2374	315	0	35	0	0	44	0
GAS	17	41	1350	216	0	0	1	1	5	1
HAA	15	28	1934	135	0	2	0	0	24	0
LHU	2	0	1362	109	0	0	1	0	1	0
MON	13	1	2142	107	0	0	0	0	1	0
PAR	13	1	1592	99	1	0	0	0	0	0
PEM	6	23	621	92	0	0	0	0	10	1
PUN	0	0	390	82	0	0	1	0	0	0
SJK	22	22	1499	77	0	0	0	0	5	0
SAM	9	13	1220	72	0	0	0	0	1	0
SAR	6	15	984	71	0	0	0	0	1	0
THI	10	1	376	62	0	5	0	0	0	0
TRG	7	0	700	57	0	1	0	0	1	0
TRY	7	43	838	46	0	0	0	0	19	0
TRO	8	0	423	43	0	1	0	0	70	0
TSI	17	3	555	32	0	1	1	1	16	1
WNG	7	9	645	23	0	0	0	0	0	0
ZHE	1	0	116	11	0	0	0	0	0	0
Total	243	219	22112	2452	2	45	4	2	213	3

Abbreviations: ABD (Acute Bloody Diarrhea), AWD (Acute Watery Diarrhea), AJS (Acute Jaundice Syndrome), ARI (Acute Respiratory Infection), MUM (Mumps), FWR (Fever with Rash), FDP (Food borne Illness), TPF (Typhoid/Paratyphoid fever), SARI (Severe Acute Respiratory Infection), RKS (Rickettsioses).

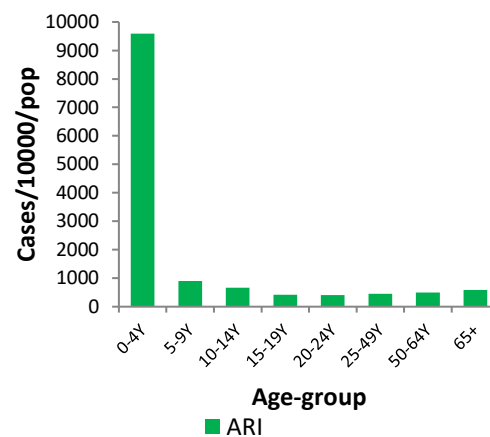
1.3 Descriptive analysis of most common notifiable diseases:

1.3.1 Respiratory Illness (ARI and SARI) syndrome

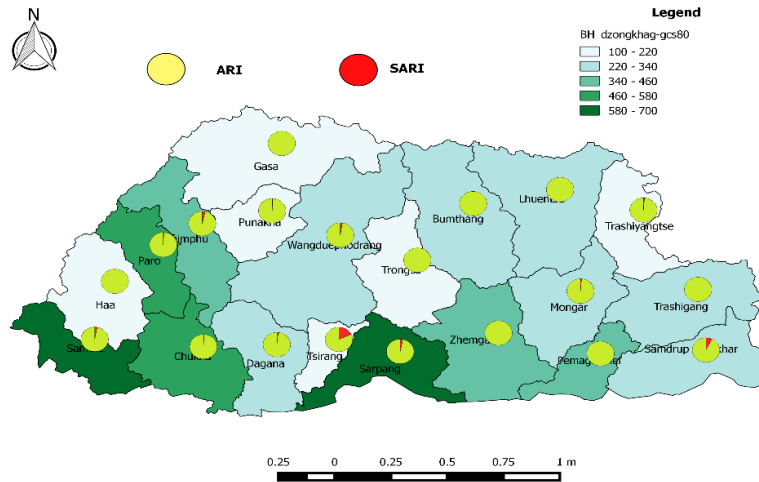
A total of 22325 cases of respiratory illness were reported (ARI-99.0% and SARI-1.0%). The trend of ARI was found consistently lower compared with the median of the last three years of the same quarter (**Figure 2A**). The most commonly affected age group by respiratory illness was observed in the younger age group (**Figure 2B**). By district, Samtse and Sarpang reported the maximum number of ARI, while Tsirang, reported the maximum number of SARI cases (**Figure 2C**).



A: Incidence by Epi-week



B: Incidence by age group

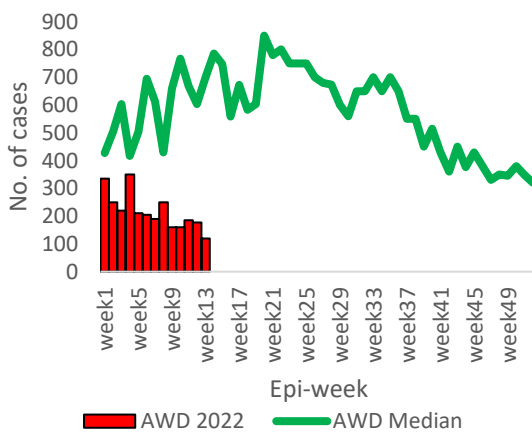


C: Incidence by district

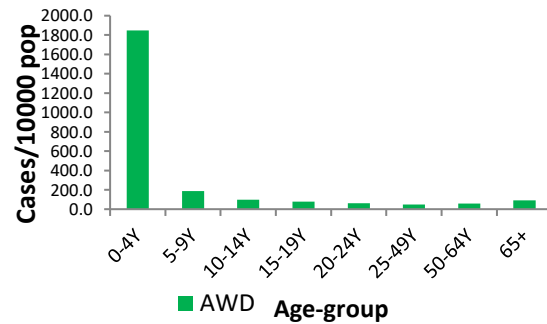
Figure 2: Respiratory illness incidence by epidemiological weeks, age groups and place.

1.3.2 Diarrheal syndrome: (Acute Watery Diarrhea [AWD] and Acute Bloody Diarrhea [ABD])

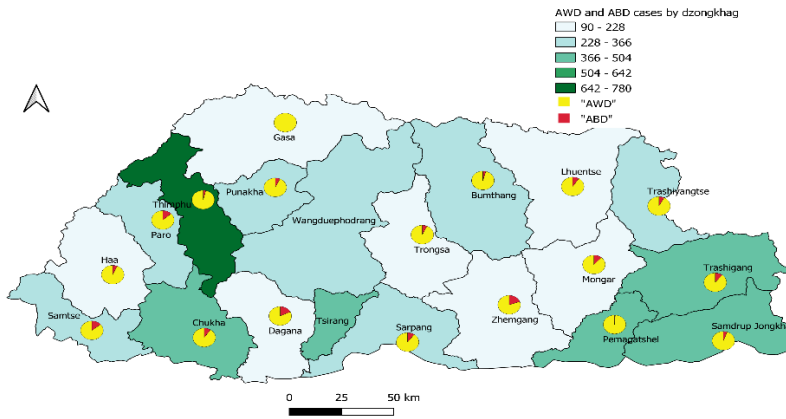
A total of 2756 cases of diarrheal syndromes were reported (AWD: 92.0% and ABD: 8.0%). The trend for diarrheal diseases was found declining: it is as at-par with the median for the last three years (**Figure 3A**). A high incidence of diarrheal syndromes was observed in children 0-4 years (**Figure 3B**). Diarrheal diseases were reported from all the dzongkhag while Thimphu reported maximum AWD cases and Samtse reported the maximum number of ABD cases (**Figure 3C**).



A: Incidence by Epi-week



B: Incidence by age groups

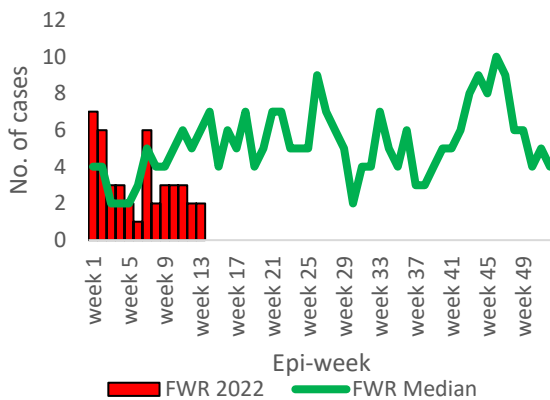


C: Incidence by district

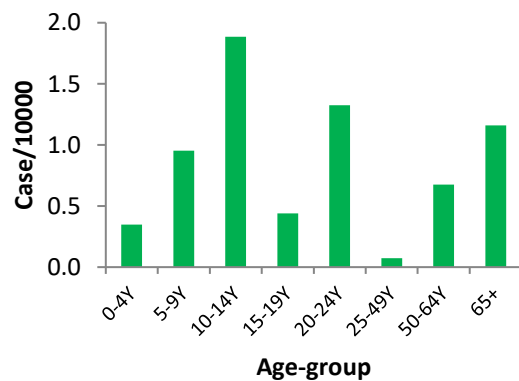
Figure 3: Diarrheal syndrome (AWD and ABD) incidence by Epi-week, age group and place

1.3.3 Fever with Rashes syndrome

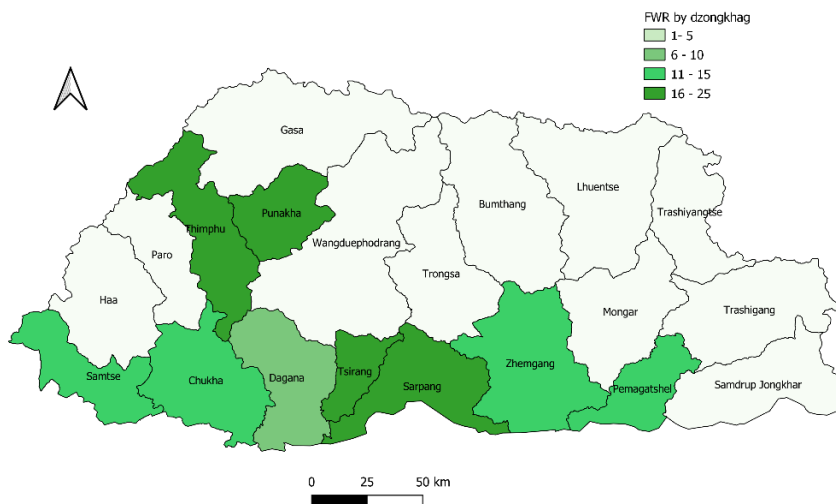
A total of forty-five cases of fever with rash (FWR) syndrome were reported (**Figure 4A**). The trend was lower compared with the previous quarter: the overall weekly records showed that the number of cases declined consistently. A majority of FWR were reported in the age group < 14 years (**Figure 4B**). A maximum number of cases were reported from Punakha Dzongkhag (**Figure 4C**)



A: Incidence by Epi-week



B: Incidence by age groups



C: Incidence by district

Figure 4: Fever with Rashes Syndrome (FWR) incidence by Epi-week, age group and place

1.4 Immediately Notifiable Diseases/syndromes

A majority of the immediately notifiable diseases/syndromes reported were suspected measles/rubella cases. Two suspected cases of Bacterial Meningitis, one pertussis, and four dengue were reported during the quarter (**Figure 5**).

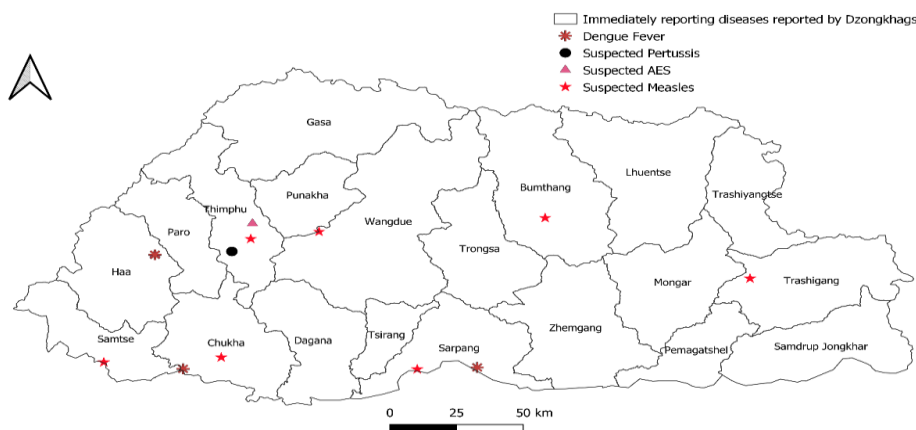


Figure 5: Distribution of immediately notifiable diseases/syndrome by dzongkhag

1.5 Events/Outbreaks Reported

A total of four outbreaks were reported in this quarter; all outbreaks were of Influenza-like Illness was reported from Trashiyangtse (2) Trongsa (1) and Mongar (1), (**Figure 6 and Table 2**). No outbreak of other diseases was reported during the quarter. All outbreaks were responded to by the respective health centers and the District Health Rapid Response Team (DHRRT) upon the recommendations of RCDC. There was no mortality following the outbreak. All tested negative for SARS-CoV-2.

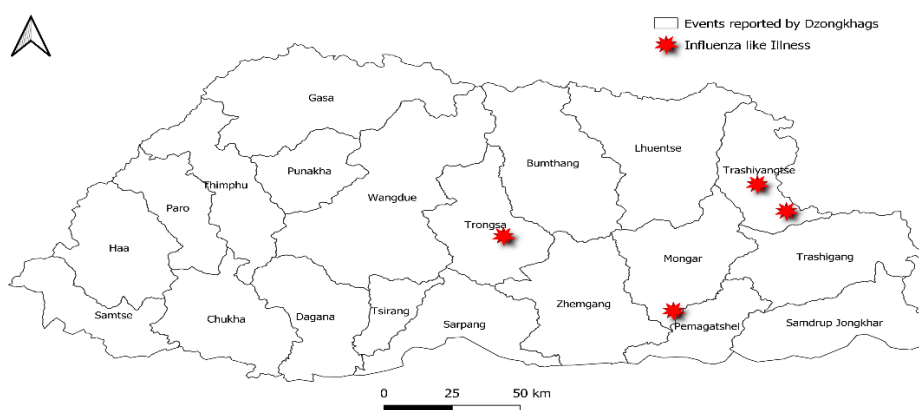


Figure 6: Distribution of events by dzongkhag

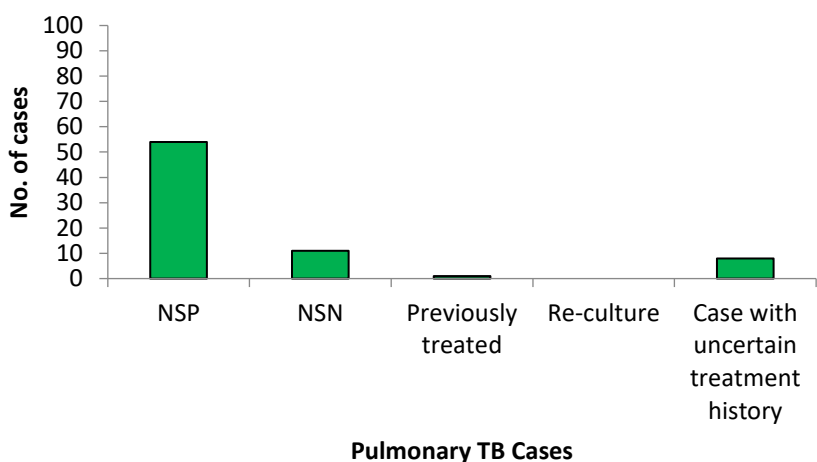
Table 2: Report of events (outbreak) by date of reported

SL. No	Name of outbreak	Dzongkhag	Location	No of cases	Date of notification	Investigated by	Lab Investigation
1	Influenza-like illness	T/yangtse	Khamdang	20	27/01/2022	DHRRT	Done
2	Influenza-like illness	T/yangtse	Baylling	50	20/01/2022	DHRRT	Done
3	Influenza-like illness	Mongar	Werringla	24	17/01/2022	DHRRT	Done
4	Influenza-like illness	Trongsa	Trongsa	21	10/01/2022	DHRRT	Done

2 Sentinel surveillance

2.1.1 Drug-Resistant Surveillance for Tuberculosis

A total of 141 suspected tuberculosis patient samples were received at National Tuberculosis Reference Laboratory (NTRL) for culture and drug susceptibility testing for anti-tuberculosis drugs. Of those 74 (52.5%) were pulmonary tuberculosis (PTB) cases, 46 (32.6) were culture follow-up samples from MDR-TB patients under treatment, 13 (9.2%) were extra-pulmonary tuberculosis cases and 8(5.7%) were pulmonary samples received for TB screening for VISA purpose.

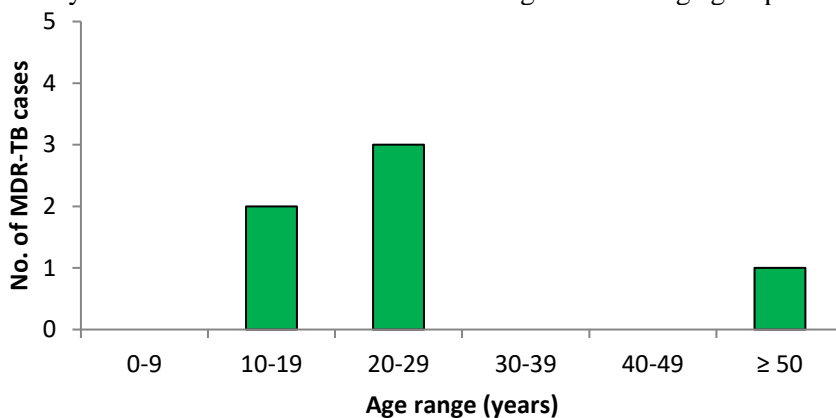


Among the PTB cases, new smear-positive (NSP) constituted 73.0% (n=54) of the cases, followed by 15.0% (n=11) of new smear negative cases, 11.0% (n=8) did not have record of case type and 1.5% (n=1) with history of previous TB treatment (**Figure 7**).

Figure 7: Classification of Pulmonary TB samples

2.1.2 Drug Sensitivity Test

A total of 40 out of 141 (28.37%) patients had complete drug susceptibility testing (DST) reports using a rapid molecular line probe assay. A total of six multi-drug resistant tuberculosis (MDR-TB) cases were detected among patients with complete drug susceptibility reports. Five were new cases and one was a previously treated case. MDR-TB cases were highest in the age group of 10-29 years (**Figure 8**).



MDR-TB cases had 2nd line DST reports tested using rapid molecular line probe assay and all were sensitive to both Fluoroquinolones and aminoglycoside.

Figure 8: Distribution of MDR-TB cases by age group

2.2 COVID-19 Integrated Influenza surveillance

A total of 563,099 samples were tested for COVID-19 and detected 28,776 (5.1 %) new cases from week 1 to 13 through enhanced surveillance (**Figure 9**). All cases were detected from community outbreaks and quarantine facilities with the omicron variants. The cases were reported from all the districts of the country (**Figure 11-A**).

A total of 288 samples were tested for Influenza and detected 95 (33.0 %) influenza positives (**Figure 9**). While 256 samples were tested from ILI patients and 32 samples from SARI patients respectively. The influenza subtype (Flu A/H3) was found most predominating strain during the quarter (**Figure 10**). The highest cases were reported from Paro hospital followed by Trongsa hospital, including ARI outbreaks (**Figure 11-B & Table 3**).

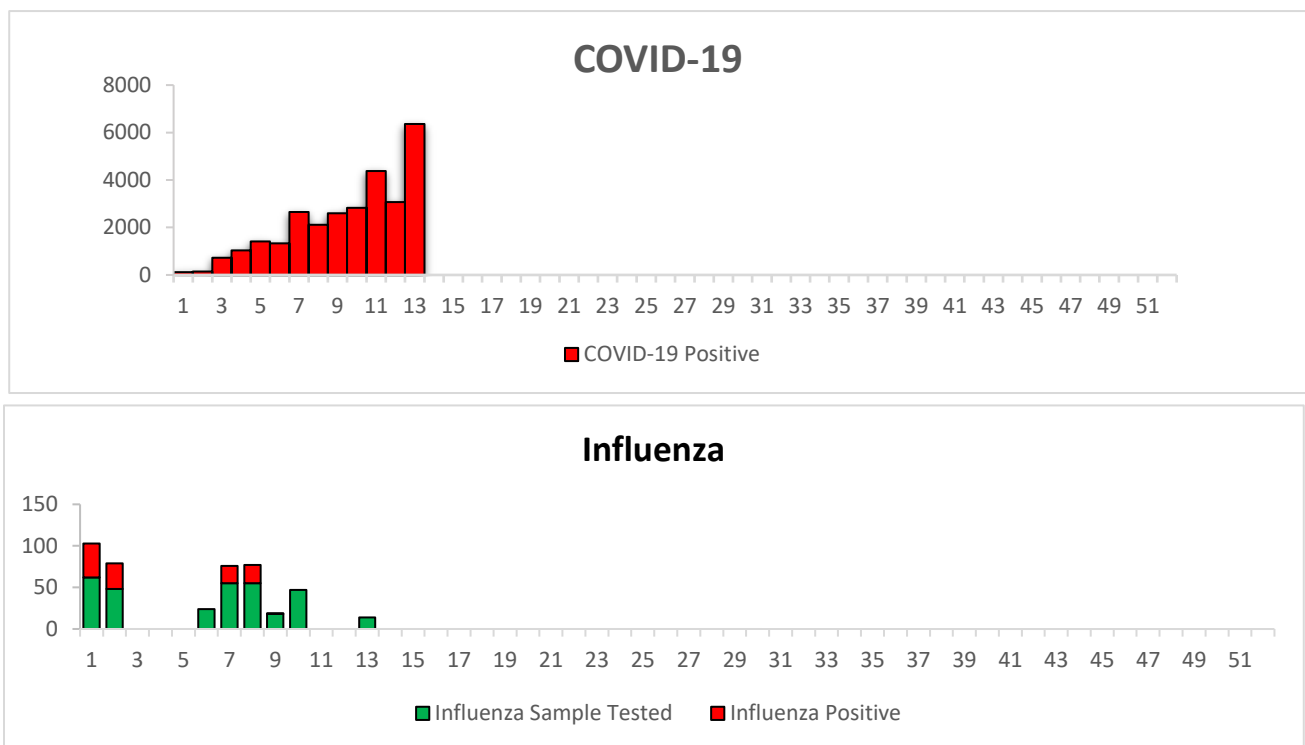


Figure 9 Number of SARS-CoV-2 positives and Influenza positives tested weekly

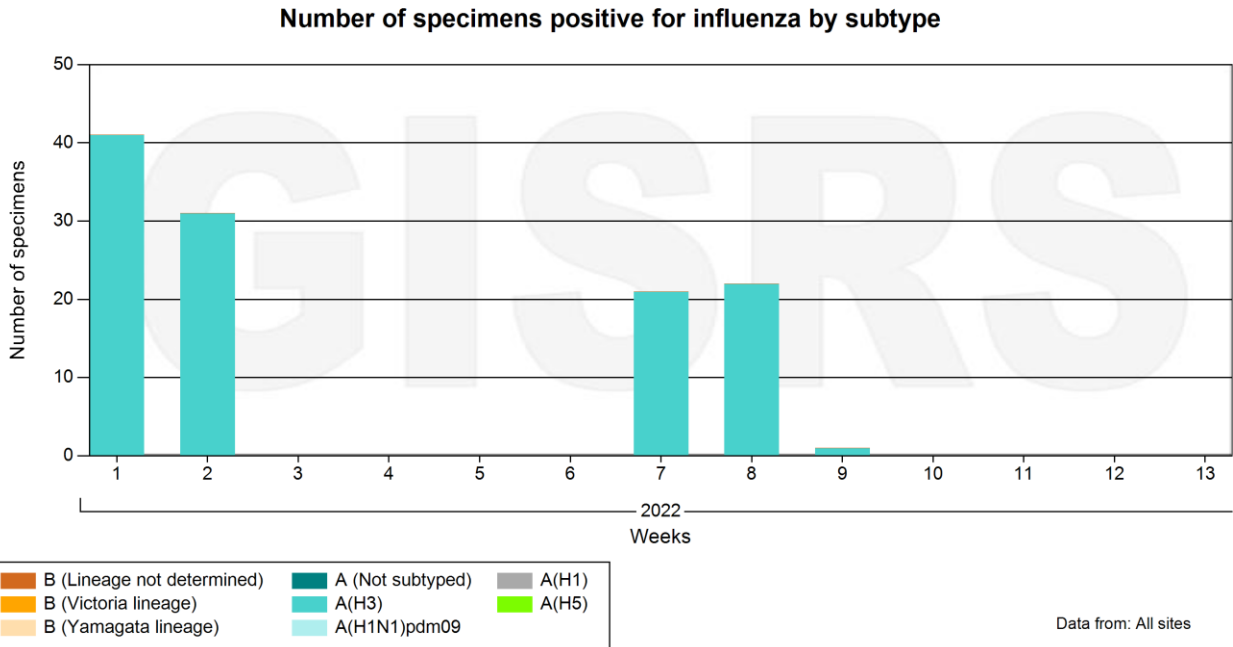
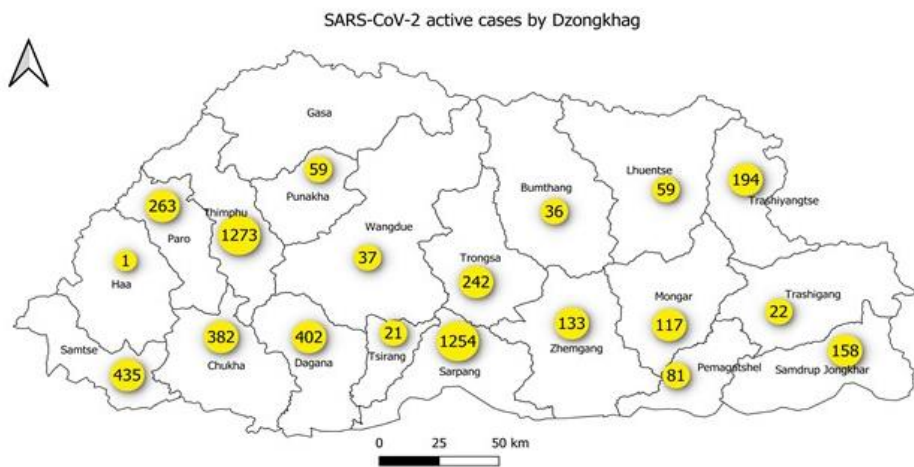


Figure 10: Number of specimens positive for Influenza by subtype (Source: [Global Influenza Surveillance and Response System \(GISRS\)](#))

Total no. of SARS-CoV-2 Active cases by Dzongkhag as of March 31, 2022



Source: RCDC

Figure 11-A: COVID-19 positives reported from districts and Hospitals in first quarter

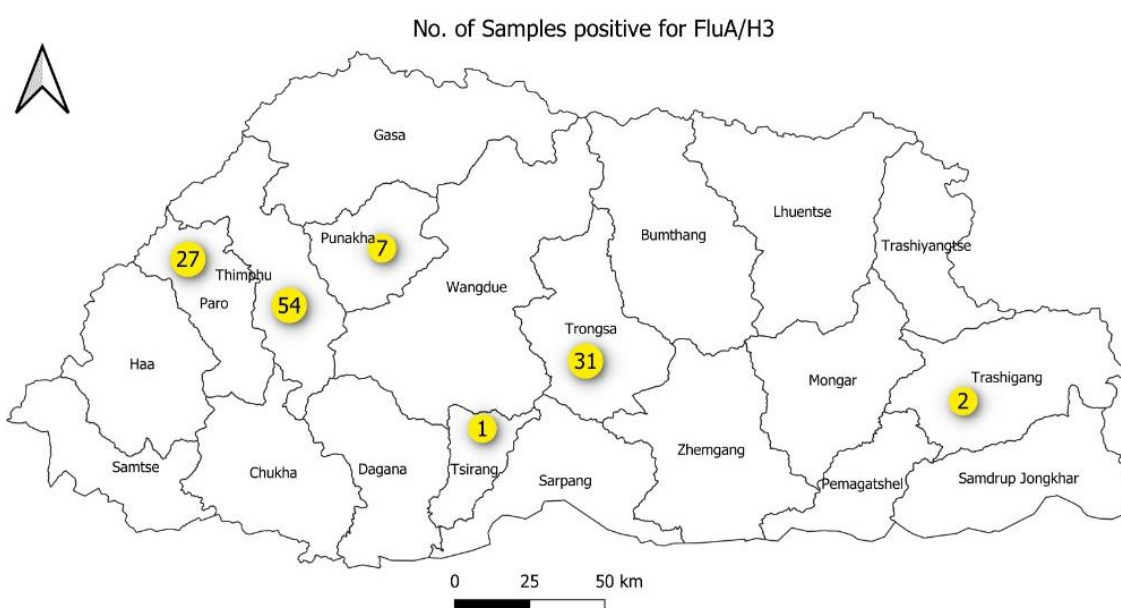


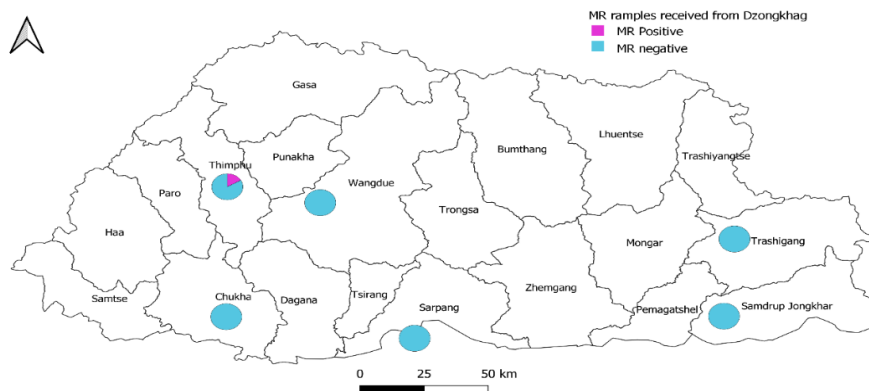
Figure 11-B: Influenza positives reported from districts and Hospitals in first quarter

Table 3: Summary table for Influenza subtypes and sample tested for first quarter

Site/Hospital	FLU A/H3		FLU A/H3 Total	Negative		Negative Total	Grand Total
	ILI	SARI		ILI	SARI		
Chukha				2		2	2
Gedu					2	2	2
Haa				3		3	3
JDWNRH	20		20	12	6	18	38
Lungtenphu	3		3	14		14	17
Paro	27		27	98	4	102	129
Punakha	7		7	1		1	8
Thimphu		4	4		16	16	20
Trashigang	2		2	2		2	4
Trongsa	31		31	24		24	55
Tsimalakha				8		8	8
Tsirang	1		1			0	1
Wangdue				1		1	1
Grand Total	91	4	95	165	28	193	288

2.3 laboratory-based surveillance for vaccine preventable diseases

During the first quarter of the year, 14 samples were received for MR testing, one for AES and 0 for *Bordetella pertussis*. IgM ELISA was performed on these samples for the given tests. There was one positive each for measles and rubella (**Figure 12**), samples being referred from COVID-19 Hospital in



Taba, Thimphu, and JDWNRH respectively. Detection by PCR and further genotyping of these samples are pending. IgM ELISA for *Japanese encephalitis* (JE) virus performed on samples received for AES did not yield any positive results.

Figure 12: Suspected MR samples received and tested by Dzongkhag

2.4. Sentinel Surveillance for Diarrheal Etiologic Agents

2. 5. Food safety surveillance

2. 6. Drinking Water Quality Surveillance

2.7.1 Bacteriology test report of Urban Drinking Water Quality Monitoring (UDWQM)

In the first quarter of 2022(January – March) 161 out of 906 drinking water samples was tested by the Urban health centers. Out of which more than half (63.0%) of the tested samples were found fit for consumption and the rest 37.3% were found to be contaminated by the fecal coliform hence, it is unfit for drinking. Out of 34 health center which monitors routine water quality, only 15 health centers from nine Dzongkhag have reported the test result (**Figure 13**).

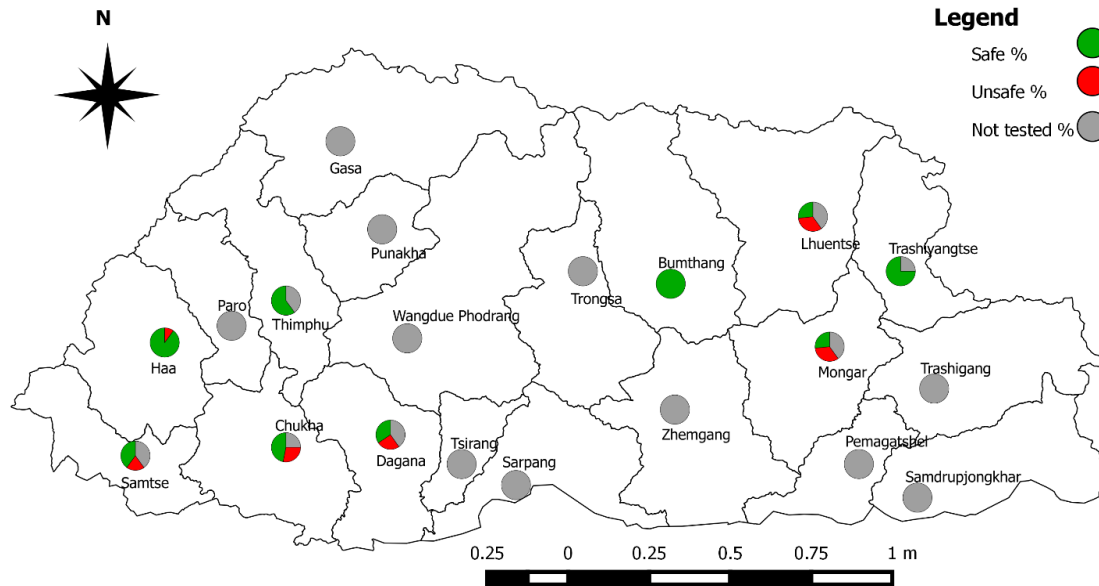


Figure 13: Bacteriology test report of 34 Hospitals/BHU-1 in the urban area

2.7.2 Chlorination Report

Three (Bumthang, Royal center for disease Control, Samtse) out of six health centers monitoring residual chlorine have reported for this quarter. In this quarter, only 17 samples were tested and more than half (76.5%) of the tested samples have not been adequately chlorinated (**Figure 14**)

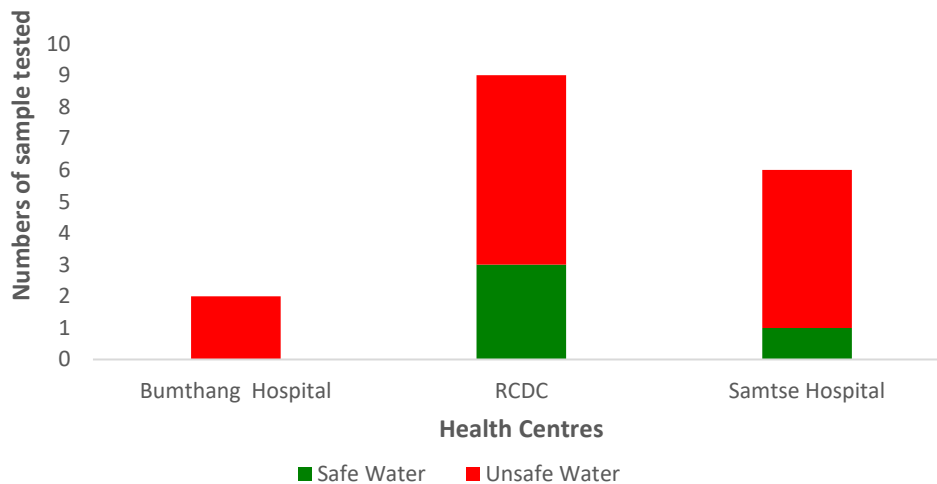


Figure 14: Residual Chlorine test report for 6 health centers in the urban area

2.8 Drug Quality Monitoring:

In the 1st quarter of 2022, National Drug Testing Laboratory tested a total of 26 samples comprising of 24 surveillance samples collected by DRA and complaint in samples each from Paro Hospital and Medical Supplies & Distribution Division. These samples were tested for uniformity of weight, friability, disintegration, and assay. After the analysis of the result, three samples were found non-compliant with the Pharmacopeial standards. The results have corresponded to Drug Regulatory Authority for necessary regulatory action.



Figure 15: No. of drugs samples compliance to Pharmacopeial standards

2. National External Quality Assessment Scheme for Malaria Microscopy

In the first quarter, a total of 145 malaria slides were received at National Malaria Reference Laboratory for blinded rechecking. From the total slides examined, one malaria-positive slide was detected (0.69 %) (**Table 4**). All the slides received were evaluated on the following parameters their performance score on sensitivity was 100%, specificity was 100%, malaria detection was 100%, species identification was 100%, stages identification was 50%, parasite density determination was 0%, quality of blood film was 77% and quality of stain was 88% (**Table 5**).

Table 3: Summary table for Malaria Blinded rechecking for the first quarter

1st Quarterly report on Malaria Blinded rechecking 2022				
Month	January	February	March	Total
Health center participated in blinded rechecking	8	5	2	15
Total slides received for blinded rechecking	64	33	5	102
Total positive detected	1	0	0	1
Total Nmpps detected	63	33	5	101
Slides of December Month-2021				43
			Total slide	145

Table 4: Performance score on blinded rechecking for the first quarter

Performance score on blinded rechecking				Quarterly Score
Month	January	February	March	
Sensitivity (True positive detection)	100	-	-	100
Specificity (True negative detection)	100	100	100	100
Malaria parasite detection	100	100	100	100
Mp Species Identification	100	-	-	100
Mp Stages Identification	50	-	-	50
Parasite density	0	-	-	0
Quality of blood smear	84	56	92	77
Quality of stain	77	88	100	88