ASSISTANCE
COORDINATION
UNIT

ANNUAL REPORT
2019

EWARN
EARLY WARNING
ALERT AND
RESPONSE NETWORK

EWARN
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ALERT AND
RESPONSE NETWORK
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OUR MISSION

Driving Down Mortaltiy
& Morbidity Rates In Syria

For Better Health

EWARN

EARLY WARNING
ALERT AND
RESPONSE NETWORK

EWARN DEFINITION

Surveillance is a systematic and continuous collection of epidemiological health data within a specific time frame, and therefore the interpretation and dissemination of such information in the field of public health. Surveillance is essential in the planning, implementation and evalua-tion of public health practices. The Early Warning Alert and Response Network is a simplified disease surveillance system created in the affected north of Syria after the col-lapse of the health system in mid-2013.


EWARN

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FIGURES

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MAP

ACRONYMS

ABD	Acute Bloody Diarrhea
ACU	Assistance Coordination Unit
AD	Acute Diarrhea
AEFI	Adverse Event Following Immunization
AFP	Acute Flaccid Paralysis
AJS	Acute Jaundice Syndrome
AWD	Acute Watery Diarrhea
BCG	Bacillus Calmette–Guérin
BMGF	Bill & Melinda Gates Foundation
CDC	Centers for Disease Control and Prevention
CI	Confidence Interval
CLO	Central Level Officer
CMAM	Community Management of Acute Malnutrition
CSF	Cerebrospinal fluid
cVDPV	Circulated Vaccine Derived Poliovirus
cVDPV2	Circulated Vaccine Derived Poliovirus Type 2
DLO	District Level Officer
DNO	District Nutrition Officer
EPI	Expanded Program on Immunizations
MR	Measles – Rubella
MMR	Measles - Rubella- Mumps
MSF	Médecins Sans Frontières
MUAC	Mid Upper Arm Circumference
NGO	Non-Governmental Organization
NP-AFP	Non- Polio Acute Flaccid Paralysis
NPEV	Non- Polio Enterovirus
NSS	Nutrition Surveillance System
OAD	Other Acute Diarrhea
OBRA	Outbreak Risk Assessment
OCHA	Office for the Coordination of Humanitarian Affairs
OCT	Outbreak Control Team
ODK	Open Data Kit
OPV	Oral Polio Vaccine
PCR	Polymerase Chain Reaction
PLWs	Pregnant & Lactating Women
Power BI	Power Business Intelligence
QGIS	Quantum Geographic Information System
QRC	Qatar Red Crescent
EMRO	Eastern Mediterranean Regional Office
ENA	Emergency Nutrition Assessment Software
EOC	Emergency Operations Center
ERC	Expert Review Committee
FLO	Field Level Officer
FNO	Field Nutrition Officer
GAM	Global Acute Malnutrition
GIZ	German Society for International Cooperation
HAV	Hepatitis A Virus
HBsAg	Surface Antigen of the Hepatitis B virus
HBV	Hepatitis B Vaccine
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HEV	Hepatitis E Virus
HFA	Height for Age
HIV	Human Immunodeficiency Virus
IDA	Independent Doctors Association
IDDKs	Interagency Diarrheal Disease Kits
IEC	Information Education Communication
IFA	Information for Action Software
RDTs	Rapid Diagnostic Tests
RI	Routine Immunization
RRT	Rapid Response Team
SAM	Sever Acute Malnutrition
SAMS	Syrian American Medical Society
SARI	Severe Acute Respiratory Illness

SEMA	Syrian Expatriate Medical Association
SD	Standard Deviation
SDF	Syrian Democratic Forces
SIAs	Supplementary Immunization Activities
SIG	Syrian Immunization Group
SL	Sabin Like
SMART	Standardized Monitoring and Assessment of Relief and Transitions
SPSS	Statistical Package for the Social Sciences
STF	Suspected Typhoid Fever
TB	Tuberculosis
TOT	Training of Trainer
UNICEF	United Nations International Children's Fund
UCE	Unusual Cluster of Event
UCD	Unusual Cluster of Death
IFA	Information for Action Software
IgM	Immunoglobulin M
ILI	Influenza Like Illness
IPV	Inactivated Polio Vaccine
IYCF	Infant and Young Child Feeding
IWA	International Water Association
Leish	Leishmaniasis
MAM	Moderate Acute Malnutrition
Meas	Measles
Men	Meningitis
mOPV	Monovalent Oral Polio Vaccine
UOSSM	Union of Medical Care and Relief Organizations
VCS	Vaccine Coverage Survey
VPDs	Vaccine Preventable Diseases
VDPV	Vaccine Derived Poliovirus
WASH	Water-Sanitation- Hygiene
WBDs	Water Borne Diseases
WFA	Weight for Age
WFH	Weight for Height
WHO	World Health Organization
WSP	Water Safety Plan

SECTION 01

INTRODUCTION

COVERED AREAS AND POPULATION

EWARN was launched on 10thJune 2013 as nonprofit national health information surveillance system, its main mission is collecting epidemiological data from sentinel sites, analysis, then sharing the results with health institutes and stakeholders to guide proper decisions and needed actions for supporting and further improving health services in Syria.

- The network started in **61** sub- districts in **7** governorates
- In September **2014**, the system expanded in Rural Damascus (east Ghouta) and Dar'a governorates
- In March **2015**, west part of Dar'a and Quneitra, besieged rural north of Homs and northern of Al-Hasakeh.
- In **2016** many areas witnessed a switch in the controlling forces, thus a new team was trained and assigned in the field (South Al-Hasakeh–Menbij), in addition, new areas were added to the network coverage: eastern Homs (Al Badiya) and western Rural Damascus (western Ghouta).
- During **2017** the field team has been re-assigned in many areas due to switching control in multiple governorates (Ar-Raqqa and Deir ez zor). Scaling up the coverage in rural Damascus Sabe Byar sub district (Ar Rukban Camp) at the end of 2017.
- In **2018**, the security landscape in Syria is likely to remain complex and dynamic. Displacement rates in 2018 remained high and broadly comparable to 2017, with some **1.6 million** population movements tracked between January and December 2018. This was largely due to the escalation of hostilities in East Ghouta, northern rural Homs, Dar'a and Quneitra. Thus, EWARN lost the geographical access to those areas, and at the end of 2018 EWARN covered 238 communities in **82** sub districts, **25** districts for **6** governorates, and the total population is **32% (6,397,614).**

1.2

MILLION

People displaced from their homes in 2019

- In **2019**, more than **1.2 million** people displaced from their homes in the total year, mainly from northwest of Hama and southern Idleb governorate, in addition to the north of Ar-Raqqa and Al-Hasakeh and moving further north away from the hostilities. A new team was assigned was done in Ar-Raqqa and Al-Hasakeh (Peace Fountain area), and re-distribution of EWARN displaced team from Idleb and Hama in the Euphrates shield and Afrin areas, resulting in losing the access in Hama and in many areas in southern of Idleb governorate.

Map 01: Coverage map for EWARN _ December 2019

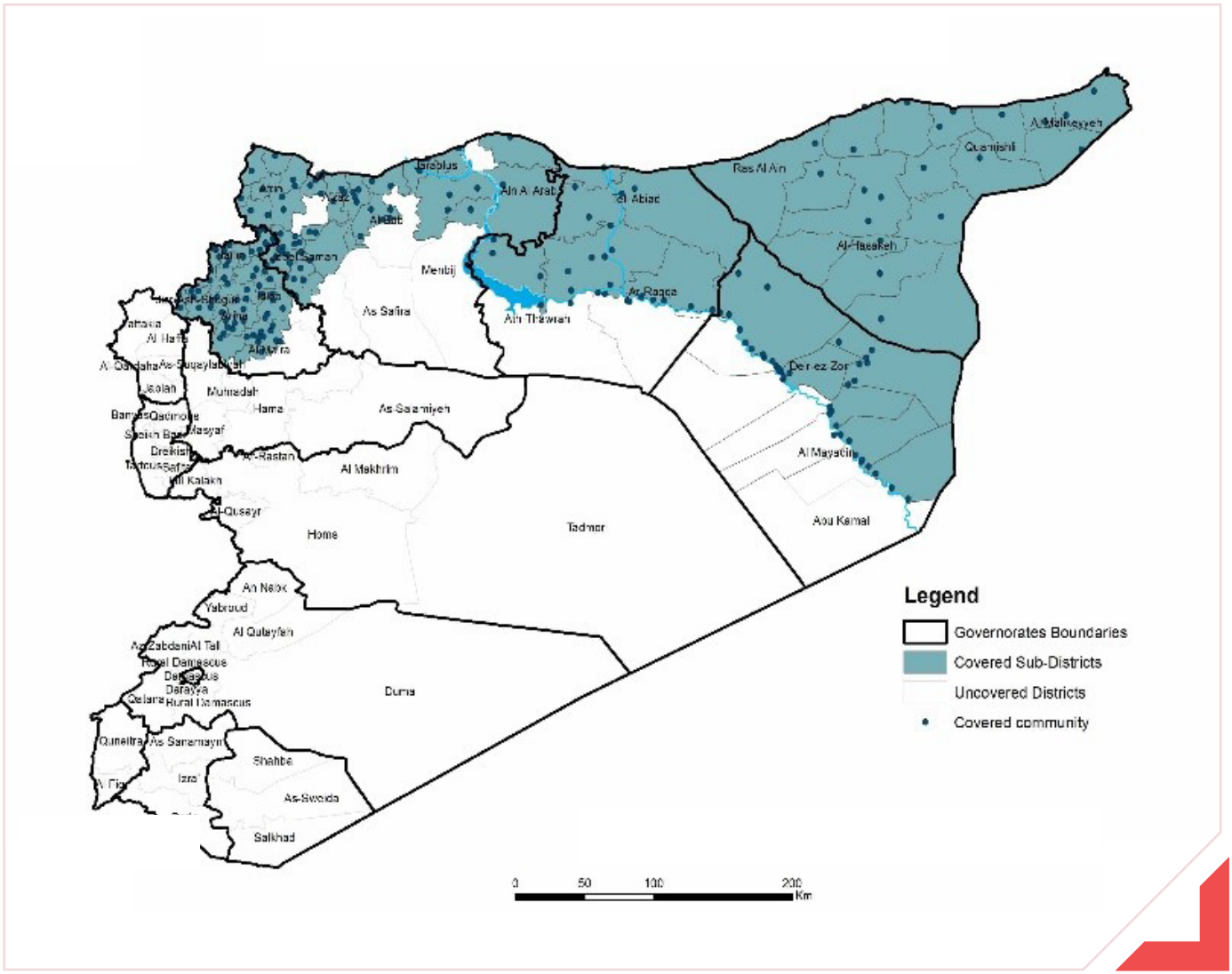


Table 01: The population percentage and Area percentage that covered by EWARN -2019

GOVERNORATE	Syria Population_ MNO	EWARN Population	Population%	Area %
Aleppo	3,981,205	1,991,312	50%	42%
Al-Hasakeh	973,779	973,779	100%	97%
Ar-Raqqa	680,694	644,441	95%	72%
Deir-ez-Zor	754,597	396,251	53%	48%
Hama	1,333,314	13,465	1%	1%
Idleb	2,640,782	2,614,857	99%	78%
All of Syria	**20,341,934**	**6,634,105**	**33%**	**36%**

* The population percentage is calculated based on the census-2016 provided by HNO – OCHA and SIG
* The area percentage is calculated based on the national areas of Syria sub-districts

REVIEW OF EWARN TEAM

Table 02: Review of EWARN team

YEAR	CLOs	Manager	Surveillance	Response	Data	Financial	DLOs	DNOs	Response team	WASH team in field	Lab team in field	FLOs	FNOs	Vaccinators	TOTAL
2013	6	1	1	3	-	1	16	-	-	-	-	-	-		**22**
2014	7	1	1	3	1	1	22	-	-	-	-		-		**29**
2015	9	1	2	3	2	1	24	-	-	-	--	**181**	-		**214**
October 2015	13	1	3	5	3	1	29	-	4	10	2	214	-		**272**
December 2016	16	1	3	7	4	1	30	-	6	20	7	212	-		**291**
December 2017	24	1	5	9	7	2	30	11	12	24	12	211	135	84	**543**
December 2018	28	1	7	11	7	2	26	12	11	24	10	192	180	124	**607**
December 2019	28	1	6	12	7	2	27	3	8	24	14	196	40	176	**516**

Section 01

REVIEW OF DISEASES IN SURVEILLANCE LIST

Table 03: Diseases / Syndromes in surveillance list review per year

YEAR	*The highlighted cells refer to added diseases to the surveillance list *The highlighted codes refer to modification in case definition or / and alert threshold													
2013	ABD	AWD	AJS	AFP	Mea	Men	SARI	FUO	UCE	UXD				
2014	ABD	AWD	AJS	AFP	Mea	Men	SARI	FUO	UCE	UXD	STF	Leish		
2015	ABD	AWD	AJS	AFP	Mea	Men	SARI	FUO	UCE	UXD	STF	Leish	AD	ILI
2016	ABD	AWD	AJS	AFP	Mea	Men	SARI	-	UCE	UCD	STF	Leish	OAD	ILI
2017	ABD	AWD	AJS	AFP	Mea	Men	SARI	-	UCE	UCD	STF	Leish	OAD	ILI
2018	ABD	AWD	AJS	AFP	Mea	Men	SARI	-	UCE	UCD	STF	Leish	OAD	ILI
2019	ABD	AWD	AJS	AFP	Mea	Men	SARI	-	UCE	UCD	STF	Leish	OAD	ILI


EWARN

SECTION 02

SURVEILLANCE UPDATES

ACUTE FLACCID PARALYSIS (AFP) SURVEILLANCE

EXECUTIVE SUMMERY

Another milestone on the road to eradicate polio took place in 2019. On World Polio day in 2019; in a historic announcement an independent commission of experts concluded that wild poliovirus type 3 (WPV3) has been eradicated worldwide. Following the eradication of smallpox and wild poliovirus type 2, this news represents a historic achievement for humanity.

As the eradication of wild poliovirus (WPV) comes within grasp, essential activities required to interrupt transmission and maintain a polio-free world become even more critical. This is especially true of surveillance, which detects the presence of the virus wherever it persists – in the last endemic countries and in countries and regions that, due to weakened health systems or gaps in immunization, have experienced outbreaks of vaccine-derived polioviruses (VDPVs), similar to what happened in Syria in 2017 and number of African countries and most recently in Pakistan. Through the time-tested gold standard of detecting and investigating cases of acute flaccid paralysis (AFP) to more recent developments testing environmental samples from sewage collection sites, surveillance is a multi-pronged tool used to surface information of paramount importance as the Global Polio Eradication Initiative (GPEI) works to close all remaining gaps and rid the world of polio.

The last mile toward eradication has been characterized by steep challenges. The primary challenge has been a lack of access in conflict-affected or security-compromised areas, in hard-to-reach geographies. **EWARN** is working constantly in such conditions, all sorts of mitigation measures are taken to overcome those difficulties. In 2018; **EWARN** had to phase out of number of regions from south and middle Syria, namely, Dar'a, Quneitra, Rural Damascus and Homs. But at the same time managed to cover the IDPs who were reallocated in northern governorates. Another development that happened was the ability to conduct direct supervision visits to the field. This activity was revitalized after a cut for couple of years.

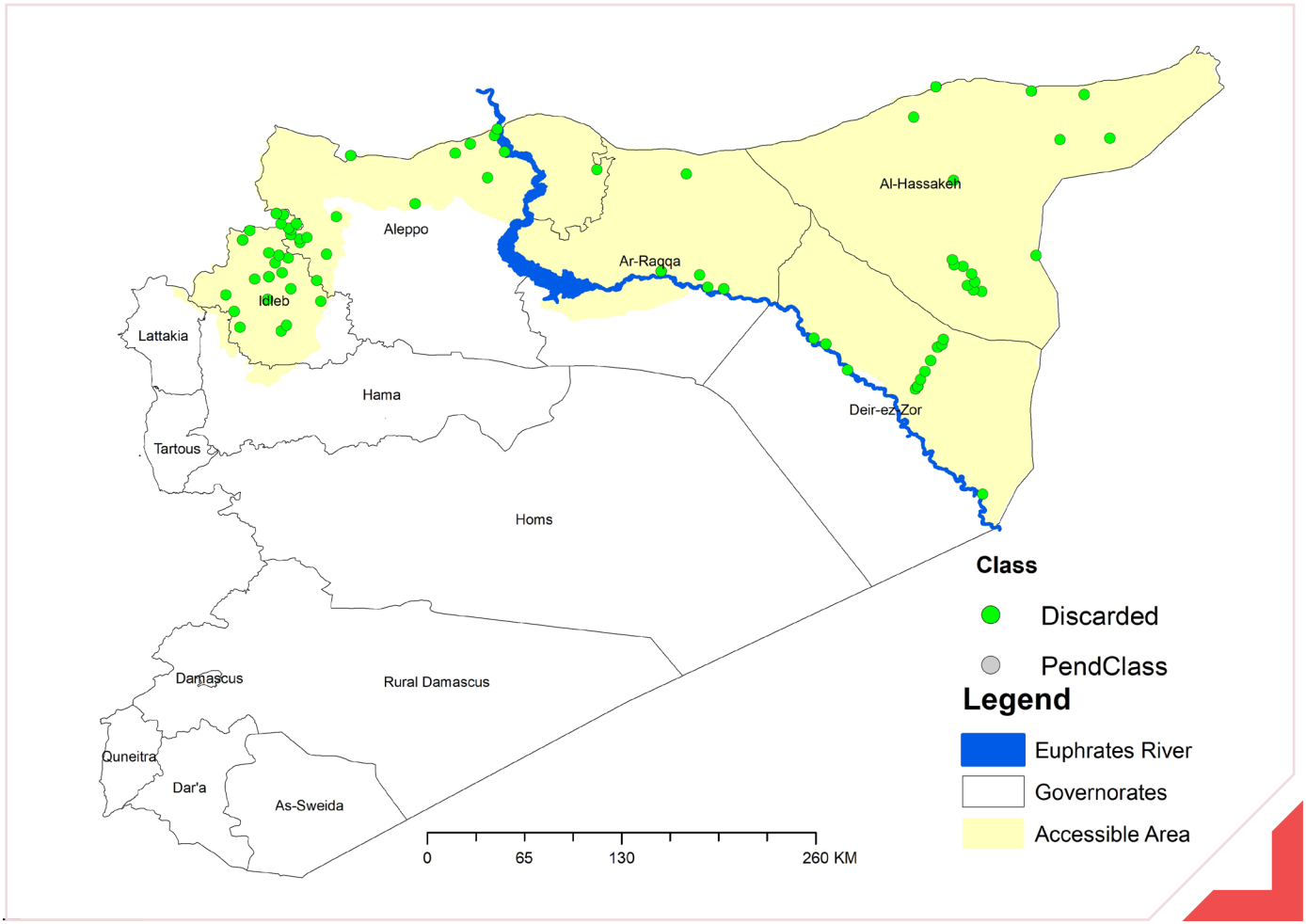
The efforts to dig deeper in the collected data continues and the recruitment of a data officer specialized in GIS helped in bringing the data visualization to a higher level.

EWARN maintained the measures that were implemented to enhance the surveillance before, during and after cVDPV2 outbreak. Contacts specimens were collected for all AFP cases when feasible, all AFP cases with inadequate specimens presented to ERC, data segregation, monitoring the IDPs displacements' routes, recruitment and maintain the surveillance staff and deploying them in the areas of need, evaluating almost all the field level officers (FLOs) to identify any gaps and build on the capacity that they already possess. In addition to the coordination with all the partners such as **WHO, UNICEF**, Polio Lab in Ankara and all the **NGOs**.

AFP SURVEILLANCE INDICATORS REVIEW

429 AFP cases were investigated in **2019** with a NP-AFP rate of **14.9** and an adequacy of **91%**. Compared to **399 AFP cases** investigated by **EWARN** in **2018** with 10.8 NP-AFP rate and an adequacy of **91%.**

Map 02: AFP cases Distribution and Classification - 2019

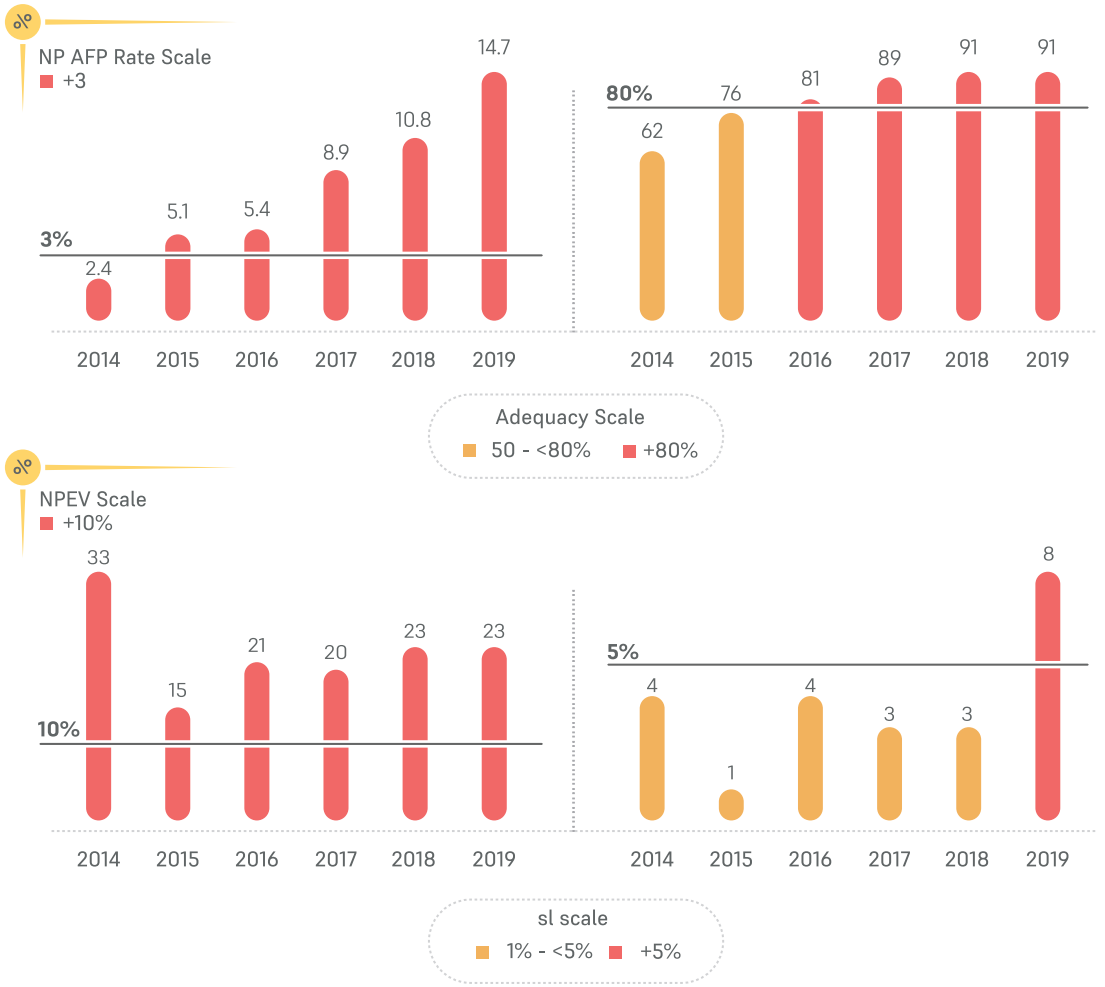


The overall surveillance indicators demonstrate the improvement over the years and EWARN managed to maintain the sensitivity and quality of the program to meet the global standards. Despite the challenges that face the program from security reasons to continuous population movements and changes in the controlling forces.

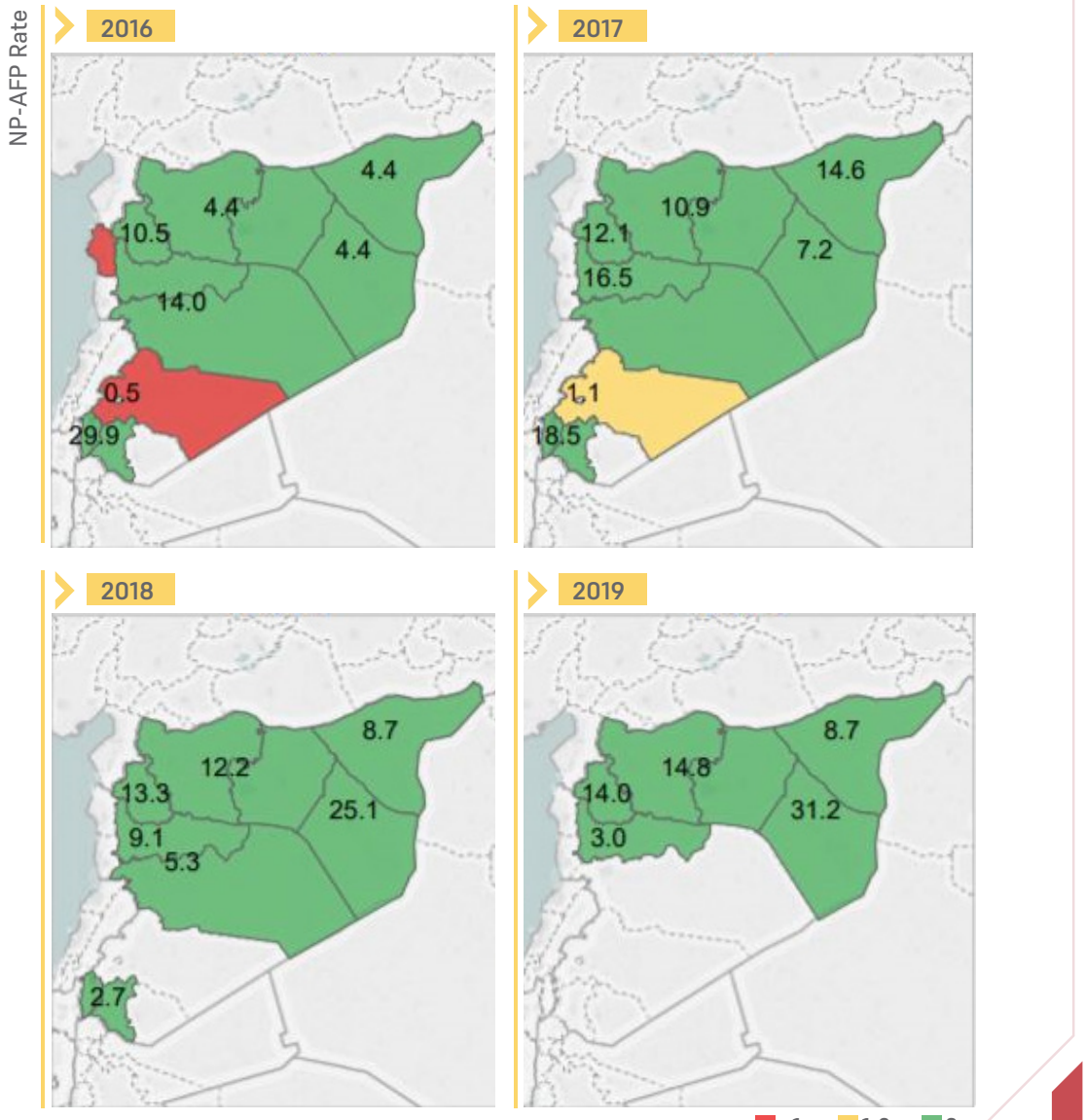
Table 04: AFP basic surveillance indicators comparison 2014 to 2019

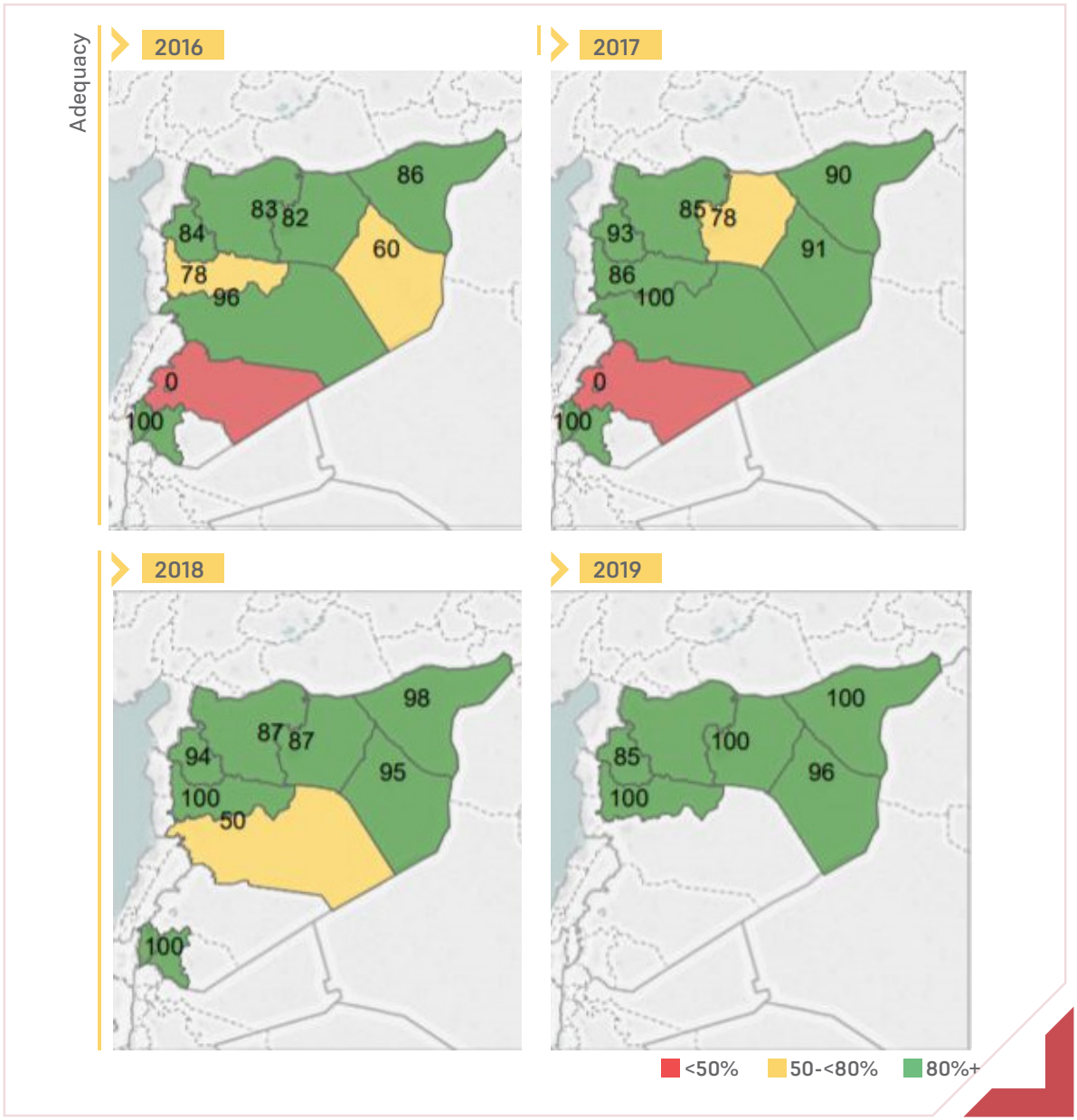
Indicator	2014	2015	2016	2017	2016	2017
Expected 3/100,000	127	155	191	133	110	86
# of AFP cases	106	267	344	469	399	429
Non-Polio AFP Rate	2.4	5.1	5.4	8.9	10.8	14.9
Adequacy%	62	76	81	89	91	91
Early Detection%	66	78	81	88	90	88
NPEV%	33	15	21	20	23	23.5
SL%	4	1	4	3	3	7.9

Figure 01: Basic Surveillance Indicators Comparison Charts 2014 to 2019



Map 03: Basic Surveillance Indicators Comparison Map 2016 to 2019





Despite losing access to number of governorates, namely besieged Homs, Dar'a, Quneitra and rural Damascus in 2018. And it was followed by loss of access to northern rural Hama in the first half of 2019, but access to population did not decrease considerably. It is reflected by the number of investigated cases and data segregation based on the displacement status of the cases among other indicators.

Table 05: Surveillance Indicators Comparison 2018-2019 Governorate Level

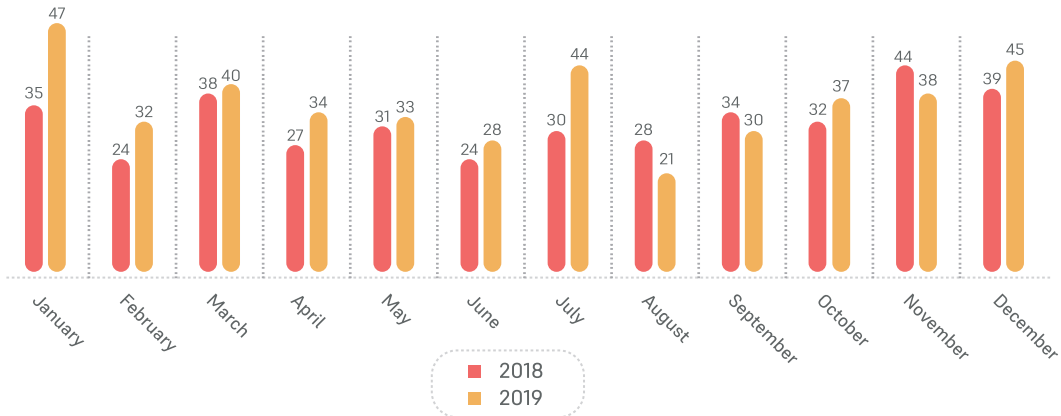
GOVERNORATE	Year	Al-Hasakeh	Aleppo	Ar-Raqqa	Dar'a	Deir-ez-Zor	Hama	Homs	Idleb	Quneitra	Grand Total
Expected 3/100,000	2,437,335	2619	792	792	376	373	337	90%	36	138.3	**1.5**
	3,610,990	4453	690	690	366	365	296	81%	68	82.0	**1.9**
# of AFP cases	200,675	56	39	39	21	21	16	76%	5	79.7	**2.5**
	869,808	6516	267	267	134	133	105	79%	28	120.7	**3.2**
Non-Polio AFP Rate	547,867	4071	119	119	97	97	63	65%	34	115.0	**6.2**
	1,147,380	128	142	142	124	124	103	83%	21	89.8	**1.8**
Adequacy%	584,389	26	2	2	0	0	0	-	0	0	**0**
	904,724	56	24	24	18	18	2	11%	14	2.2	**1.5**
Early Detection%	2,437,335	2619	792	792	376	373	337	90%	36	138.3	**1.5**
	3,610,990	4453	690	690	366	365	296	81%	68	82.0	**1.9**
Median OPV	200,675	56	39	39	21	21	16	76%	5	79.7	**2.5**
	869,808	6516	267	267	134	133	105	79%	28	120.7	**3.2**
Median AGE	547,867	4071	119	119	97	97	63	65%	34	115.0	**6.2**
	1,147,380	128	142	142	124	124	103	83%	21	89.8	**1.8**
Min. AGE	584,389	26	2	2	0	0	0	-	0	0	**0**
	904,724	56	24	24	18	18	2	11%	14	2.2	**1.5**
Max. AGE	869,808	6516	267	267	134	133	105	79%	28	120.7	**3.2**
	547,867	4071	119	119	97	97	63	65%	34	115.0	**6.2**
NPEV%	1,147,380	128	142	142	124	124	103	83%	21	89.8	**1.8**
	584,389	26	2	2	0	0	0	-	0	0	**0**
SL%	904,724	56	24	24	18	18	2	11%	14	2.2	**1.5**
	904,724	56	24	24	18	18	2	11%	14	2.2	**1.5**

2,871,620 is the number of targeted populations in 2019 for AFP surveillance, compared to 3,670,506 in 2018. But the latter's number includes the targeted population in the governorates where EWARN has phased out. When we exclude those areas, we find out that the targeted number drops to **2,919,786** with a targeted number of AFP cases that equals **88** AFP case.

Despite the drop in targeted population that is based on the only available official population estimates from HNO 2018, but the numbers of investigated cases in 2019 (**429 AFP cases)** exceeds that of 2018 (**399 AFP cases).**

A month-by-month comparison in the numbers of investigated AFP cases in EWARN covered areas after excluding the areas where EWARN phased out of, it confirms the assumption that EWARN lost geographical access, however; the access to population did not change much.

Figure 02: AFP Cases Comparison by Month 2018-2019



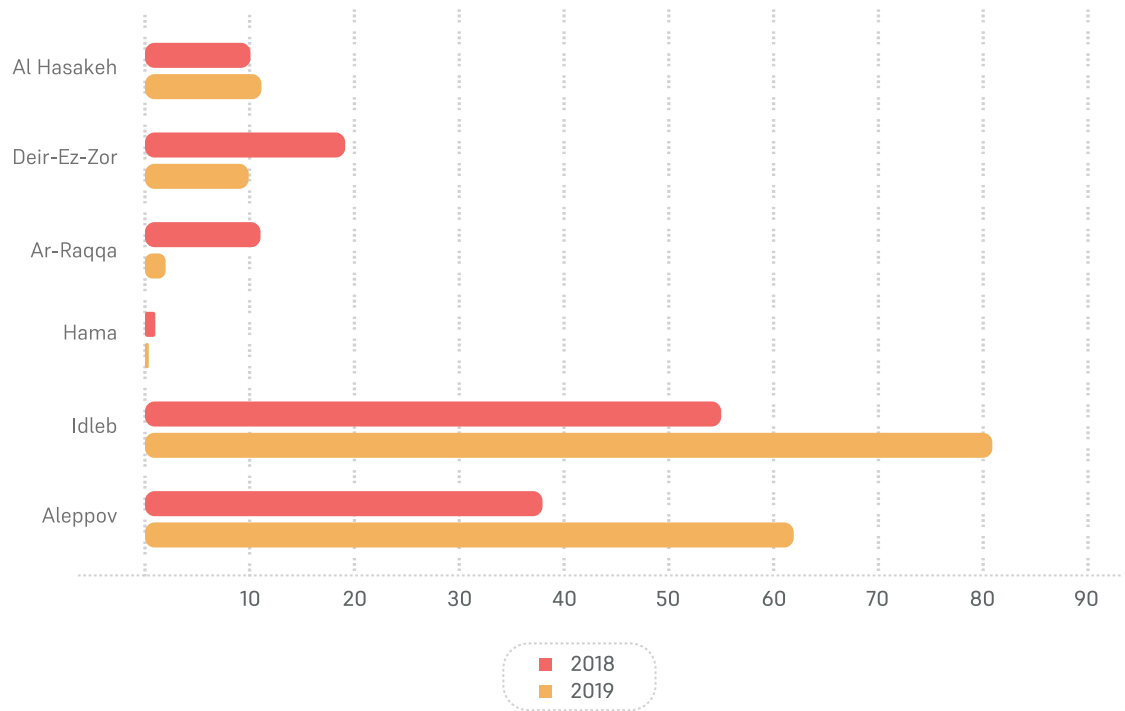
137 AFP cases in 2018 were IDPs or Nomad, while the number increased to be **166 in 2019**. Idleb and Aleppo had the majority of those IDPs and the most considerable increase in 2019. Which reflects the IDPs movement from besieged Homs, Dar'a, Quneitra and rural Damascus.

Table 06: IDP VS. Host 2018-2019 Governorate Level

GOVERNORATE	# of AFP cases IDPs 2019	# of AFP cases IDPs 2018
Aleppo	62	38
Idleb	81	55
Hama	0	1
Ar-Raqqa	2	11
Deir-ez-Zor	10	19
Al-Hasakeh	11	10
Grand Total	**166**	**134**

31 IDP cases from all the investigated AFP cases in Aleppo governorate are intra-state displaced, with **13** of them coming from eastern Aleppo city. **14 cases** from Homs governorate and the rest from other governorates such as Deir-ez-Zor, Damascus, rural Damascus and Hama.

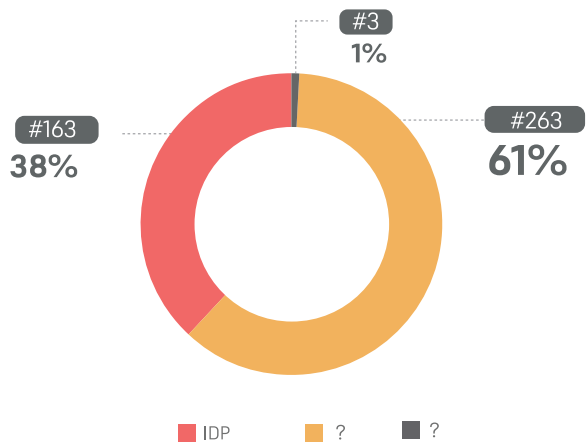
Figure 03: IDP Vs. Host Comparison 2018 -2019 Governorate Level



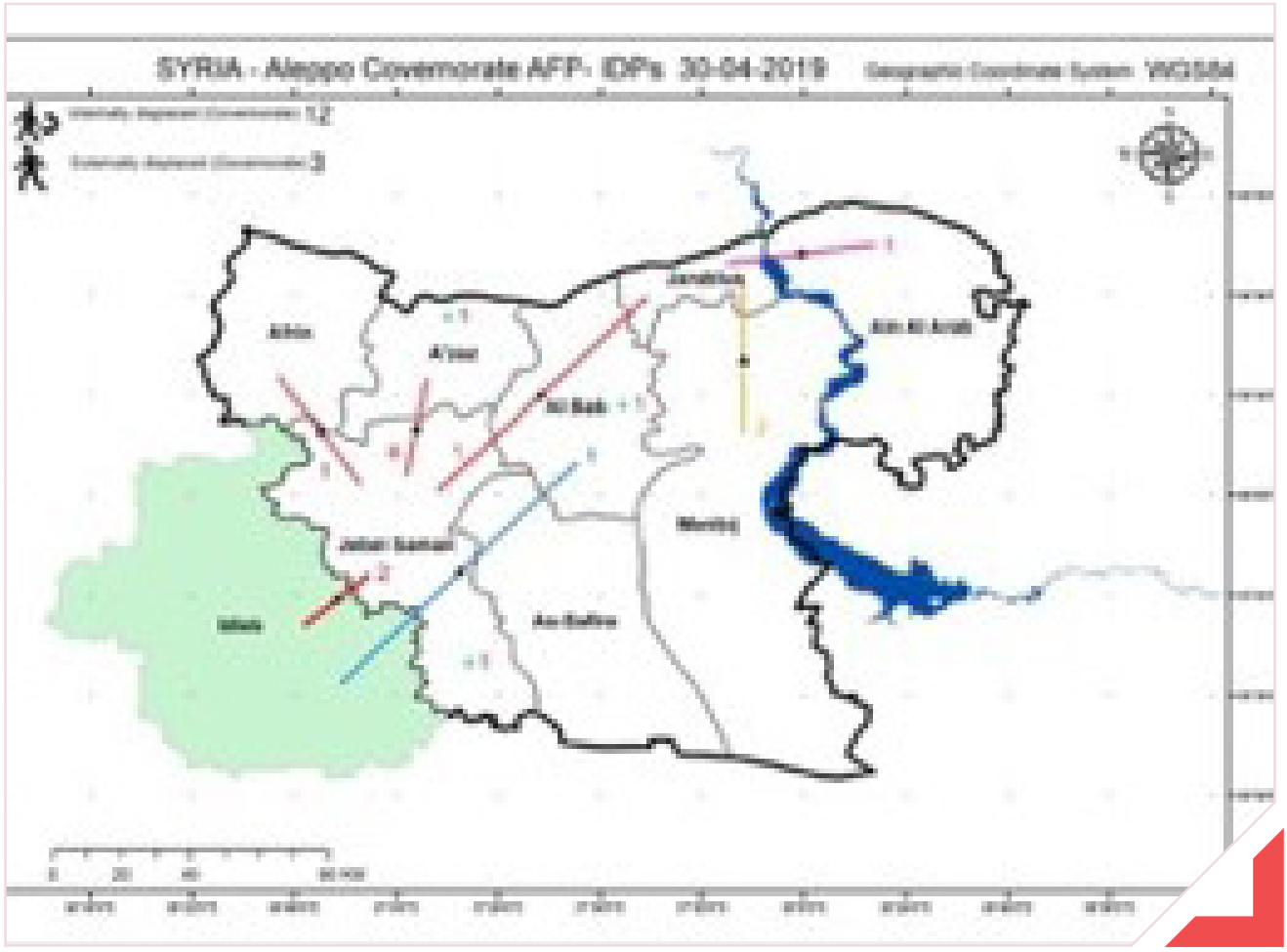
As for Idleb, 27 of the investigated cases among IDPs are intra-state displacement. Out of them 19 comes from Al Ma'ra, which fits the population displacement lines and movement away from intensified military operations areas. The previous observation is supported by the fact that **23 cases are IDPs** from parts of northern Hama governorate, an area that witnessed an escalation of the military operations as of February 2019.The rest of the cases come from Deir ez-Zor, Damascus, rural Damascus and Homs.
39% of the investigated AFP cases **in 2019 (166 cases)** were IDPs and Nomads, the overall picture is reflected more clearly on the governorate level.

One can easily notice the trend to detect a greater number of IDPs in the areas that could be considered as areas of destination for the displaced population.
One of the surveillance activities that witnessed an improvement in comparison to previous year was contacts specimens' collection. **211 cases (50%)** had at least 3 contacts, **115 cases (27%)** had 2 contacts.

Figure 04:AFP Cases Status Comparison IDPs, Nomads Vs. Host - 2019



Map 04: Example of IDP lines movement



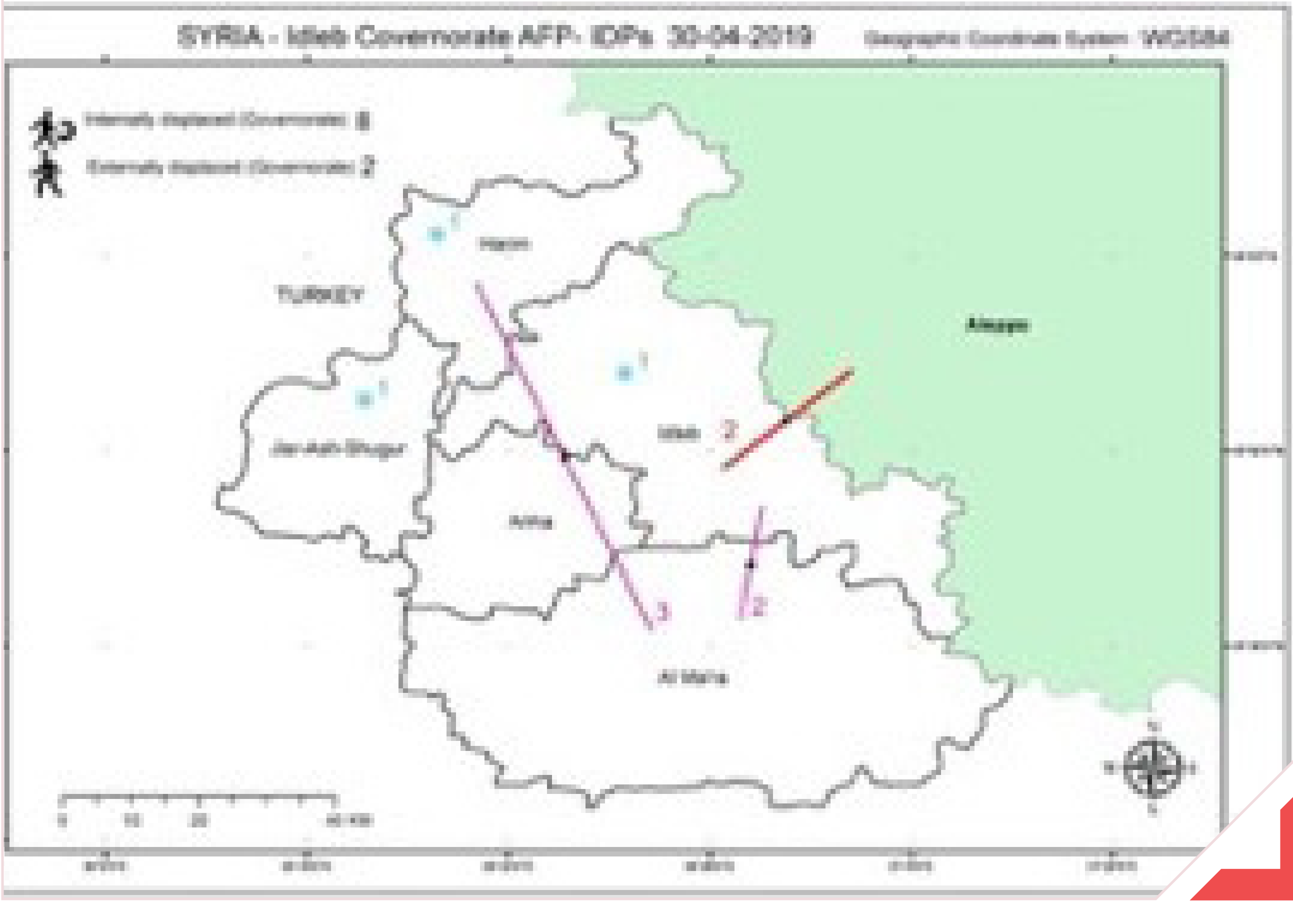
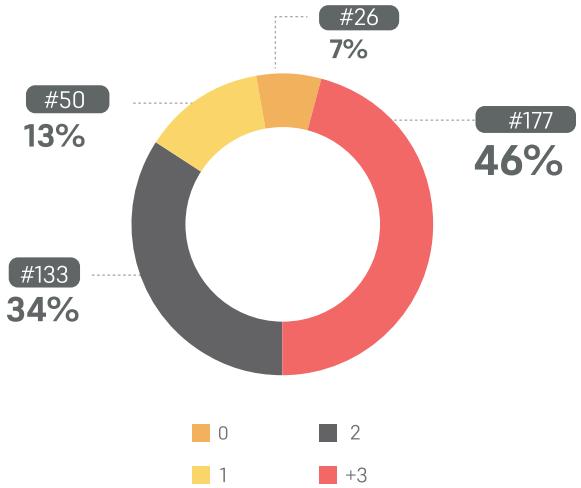

SYRIA - Idleb Governorate AFP- IDPs 30-04-2019
TURKEY
Harim
Idleb
Jisr-Ash-Shugur
Ariha
Al Ma'ra
Aleppo

Figure 05: Percentage of Contact Sampling Comparison



The attempt to identify the gaps in surveillance expands to different element, from looking at the origin of the investigated cases, the implementation of surveillance related activities and including the ranking of reporter and the designation of the reporter.
2019 witnessed maintain in the indicators related to the ranking of reporters with 358 cases (84%) reported by the first encounter, 46 cases (11%) reported by the second encounter and only 24 cases (6%) reported by the third encounter or more.
Of all the governorates, only Idleb did not reach the cutoff point of 80% and had 127 cases (78%) reported by the first encounter. the focus on Idleb intensified as of the second half of 2019 to improve the numbers, through advocacy and sensitization sessions with the health care providers especially those who did not timely report the AFP cases.

And aside from Hama that reported only 1 case in 2019 before losing access, Deir-ez-Zor had the highest numbers with 63 cases (97%) reported by the first encounter. The numbers in Deir-ez-Zor reflects the high sensitivity levels by the health care providers in a government that witnessed two polio outbreaks.

Table 07: Ranking of reports - 2019 Governorate Level

GOVERNORATE	TOTAL # CASES	# CASES REPORTED BY 1ST ENCOUNTER		# CASES REPORTED BY 2ND ENCOUNTER		# CASES REPORTED BY 3+ ENCOUNTER	
Al-Hasakeh	56	49	88%	5	9%	2	4%
Aleppo	122	98	81%	16	13%	7	6%
Ar-Raqqa	23	20	87%	1	4%	2	9%
Deir-ez-Zor	65	63	97%	2	3%	0	0%
Hama	1	1	100%	0	0%	0	0%
Idleb	162	127	78%	22	14%	13	8%
Grand Total	**429**	**358**	**84%**	**46**	**11%**	**24**	**6%**

As for the designation of reporters, the physicians are still topping the list as expected with 344 reported cases (80%), other health care providers such as nurses, pharmacists, physiotherapists, and community health workers reported 66 cases (15%). Immunization team reported 4 cases (1%) in Aleppo and Idleb with two cases in each. Community based surveillance focal points reported 3 cases (1%) from Al-Hasakeh, Deir-ez-Zor and Idleb with one case from each.

Figure 06: Designation of reporters - 2019 - Overall

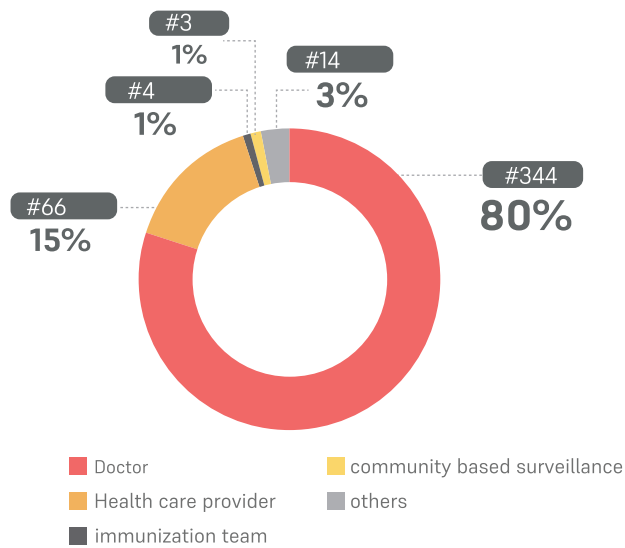
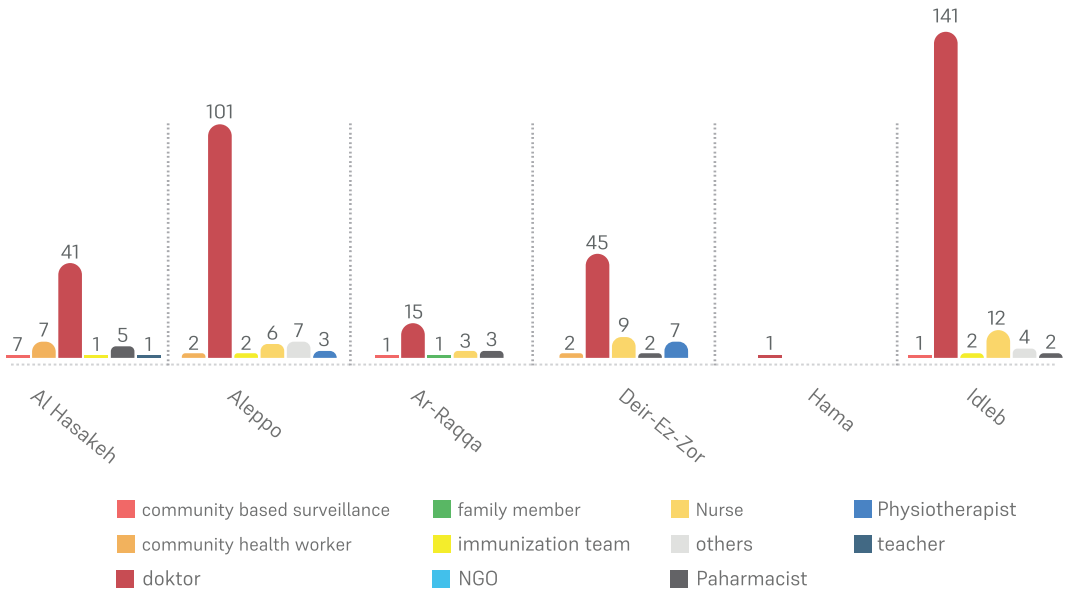


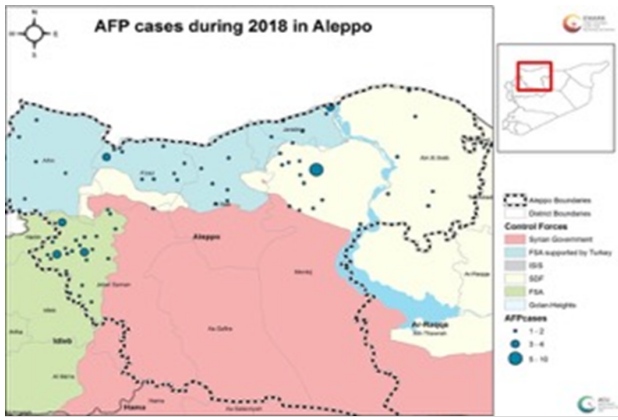
Figure 07: Designation of Reporter - 2019 - Governorate Level

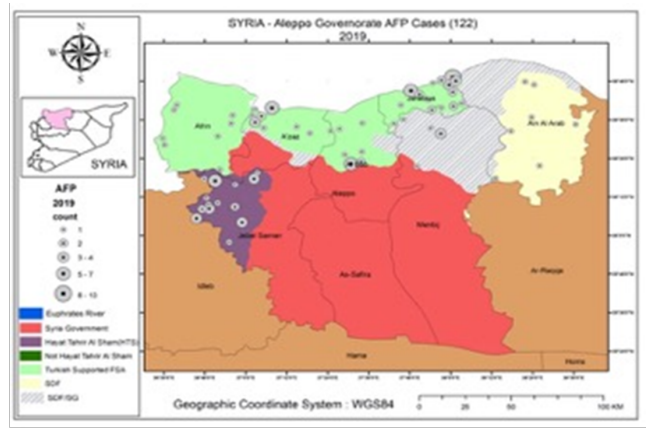


Distribution of AFP cases are mapped on community level to identify any possible gaps in reporting. Multiple approaches are utilized with cases distribution mapped against the controlling forces as a reflection of accessibility of the program.

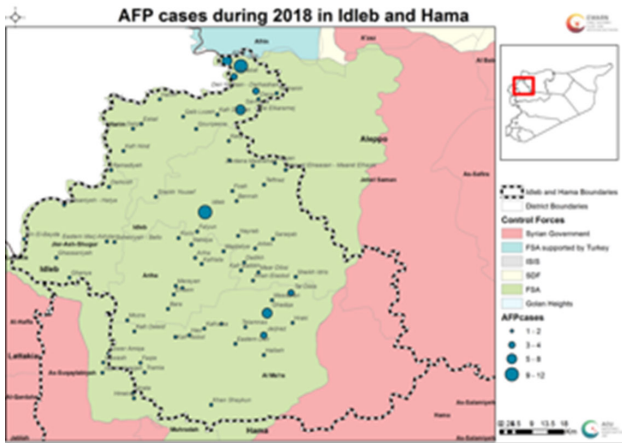
The distribution in Idleb shows the increase in the number of the reported cases in norther parts of the governorate and away from the offenses' lines.
Same applies to Aleppo governorate and the clear increase in the numbers of reported cases from Jarablus and Afrin districts after the military operations and more people started to settle there.

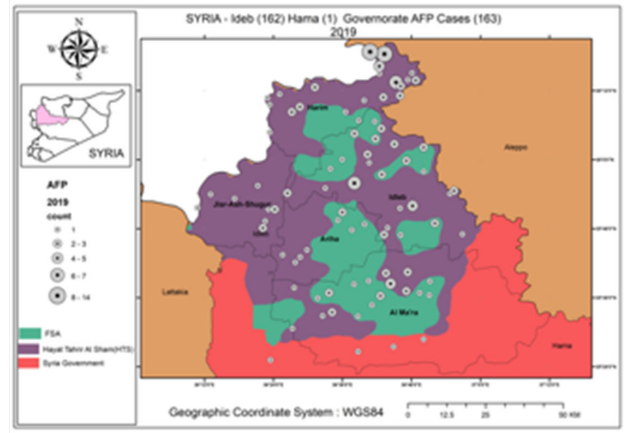
Map 05: AFP Cases Distribution Comparison Against the Controlling Forces – Aleppo - 2018 (Left)- 2019 (Right)





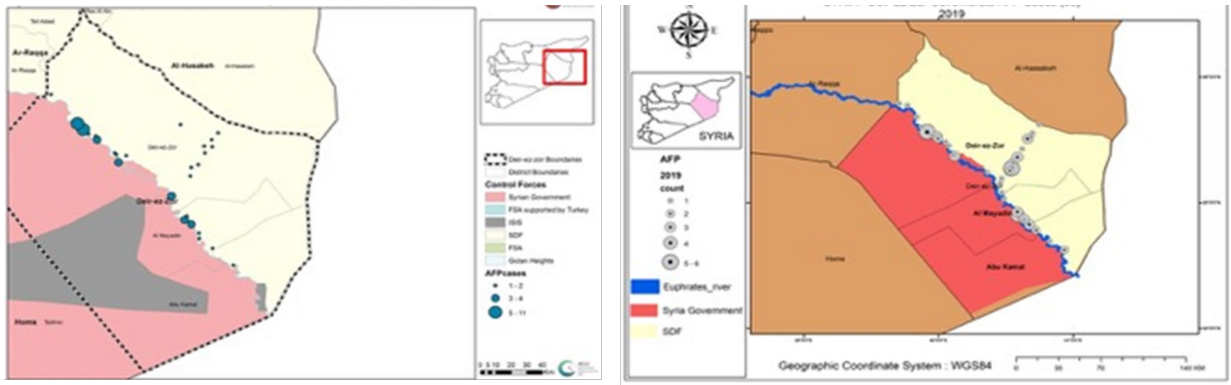
Map 06: AFP Cases Distribution Comparison Against the Controlling Forces 2018 (Left)- 2019 (Right)





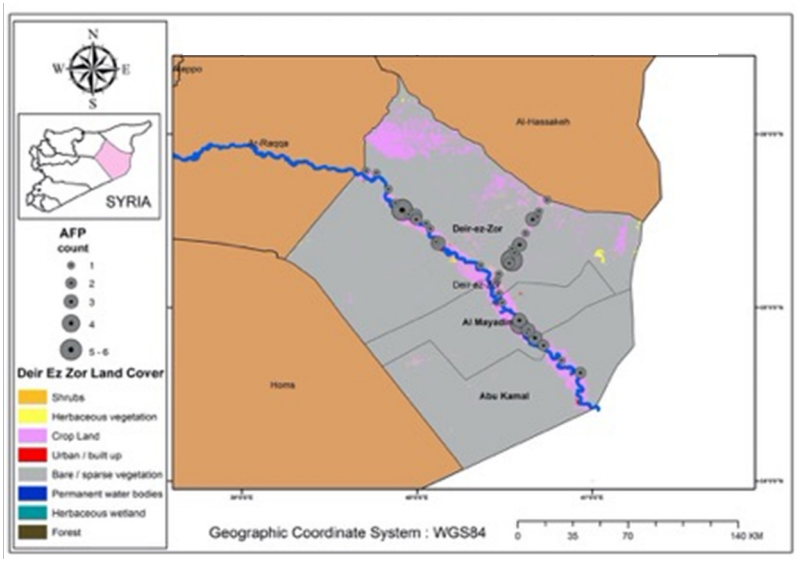
As for Deir-ez-Zor; the investigated cases were all on the northern flank of the Euphrates river with EWARN accessible areas and along with the concentration of the communities.

Map 07: Cases Distribution Comparison Against the Controlling Forces - Deir-ez-Zor - 2018 (Left)- 2019 (Right)



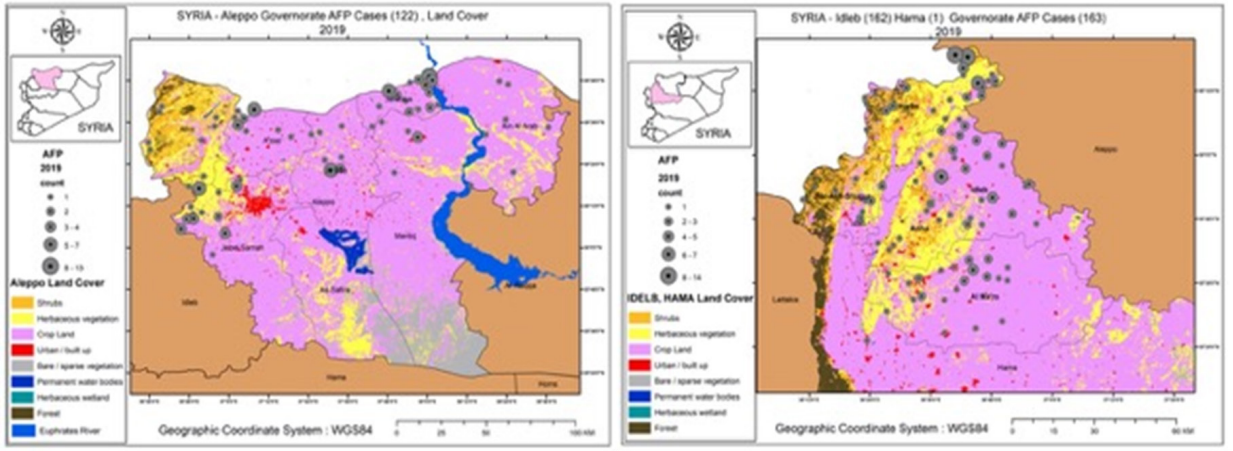
Another aspect of evaluating the distribution of AFP cases was through linkage with "Land Cover"; as it reflects the distribution against urban areas, shrubs, crop lands as example. This provided another insight as it reflects where to expect to detect the AFP cases.
This is demonstrated on governorate level as shown in the maps below in Deir-ez-Zor and the linkage with the communities' distribution.

Map 08: AFP Cases Classification against Land Cover - 2019



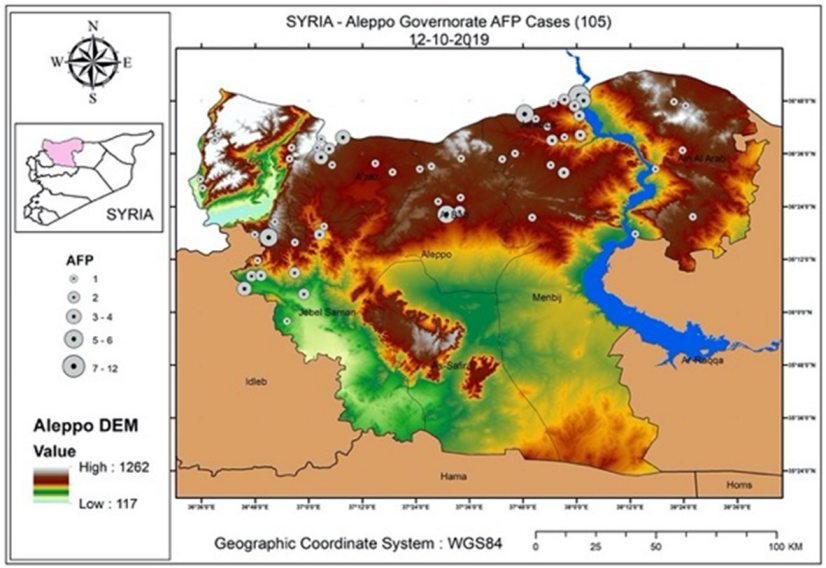
Same is applied also to Aleppo and Idleb, where the cases are almost distributed all over the governorate.

Map 09: AFP Cases Distribution Against Land Cover - 2019 - Aleppo (Left), Idleb (Right)



And to complete the picture of the AFP cases' distribution against Land Cover another dimension was explored by looking at the distribution of AFP cases against the Digital Elevation Model (DEM). It explains the reporting from mountain areas, places like the suburban of Afrin as well.

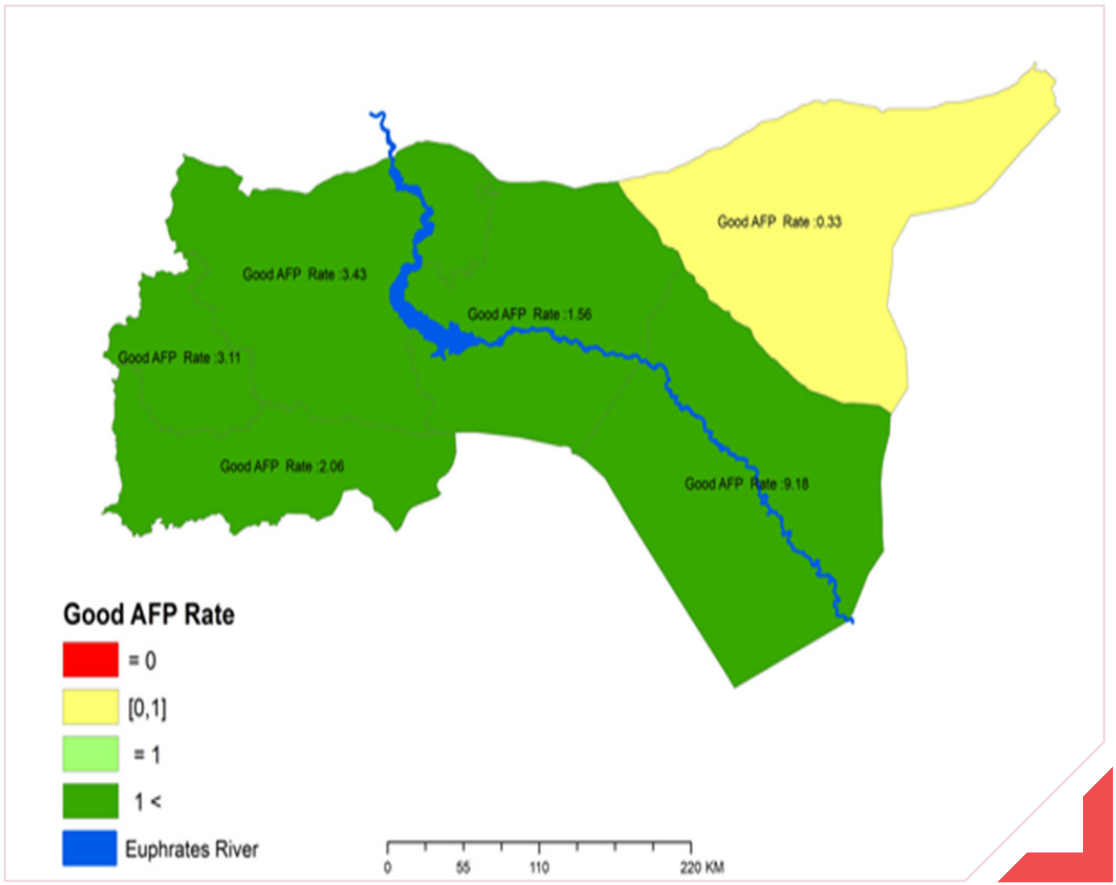
Map 10: AFP Cases Distribution Against DEM - Aleppo - 2019



One of the perspectives of evaluating and verifying the AFP surveillance activities in 2019 is the calculation of the non-polio AFP rate for a specific set of clinical diagnosis of the investigated AFP cases that always have a manifestation as AFP; such as GBS, TM, TIN, and Hypokalemic Hypotonia. This approach demonstrates the quality of the reported cases and if there is over reported of cases that may give a false impression that all work is within the standards.

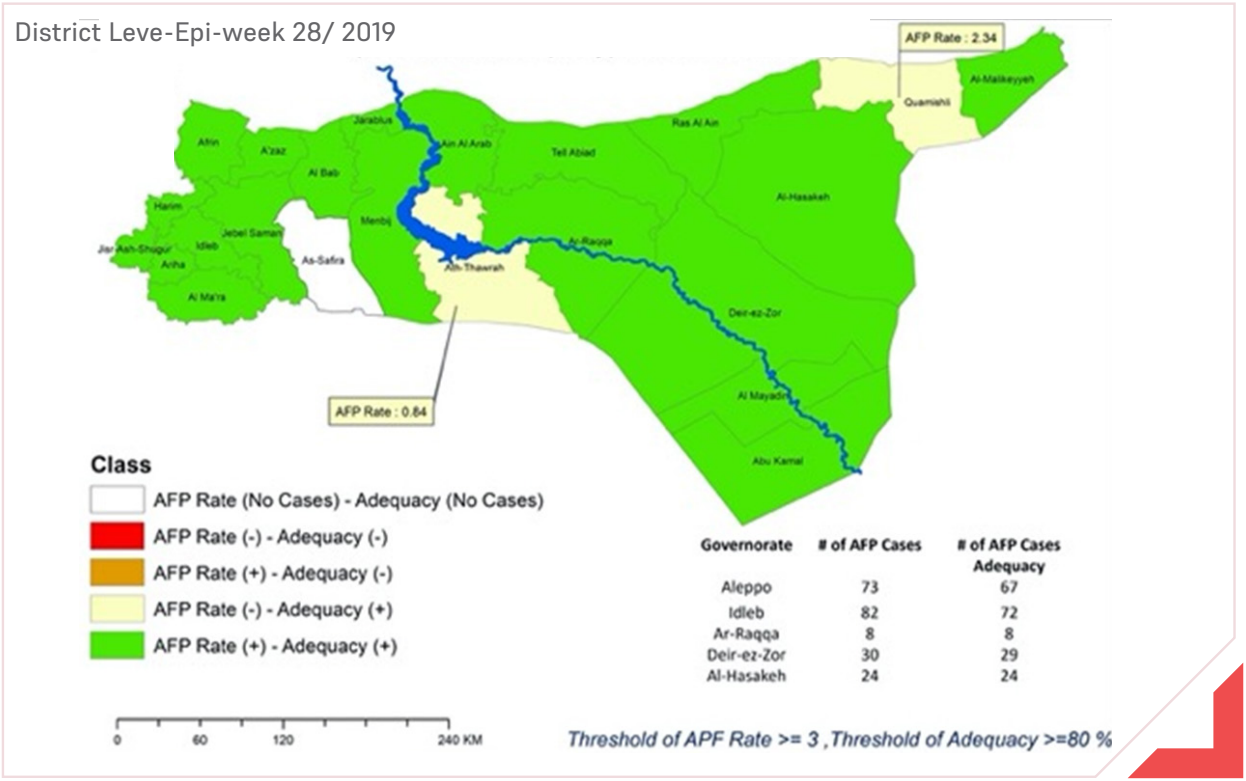
The program is also looking into developing a set of indicators that may help in evaluating the risk of a hidden low performance of the program. This is still a work in development and one of the studied combinations is about NP-AFP rate and the adequacy at the district level, as a low adequacy could be combined with low NP-AFP rate which necessitates evaluating the reporting network and the knowledge of the health care providers, whereas high adequacy with low NP-AFP rate could reflect the low reporting or being selective of the reported cases.

Map 11: NP-AFP rate For Selected Set of Clinical Diagnosis - Epi-week 35/ 2019



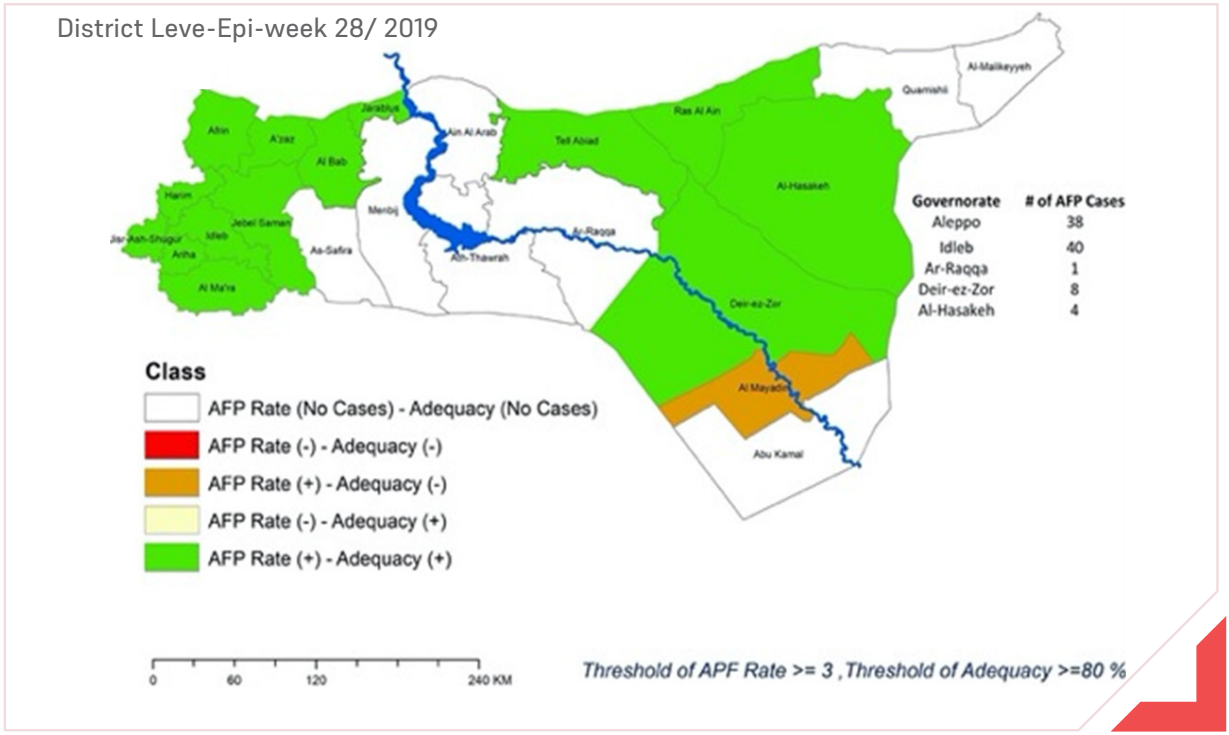
Those variables are calculated for all the reported cases and specifically for the cases reported from the IDPs community on district level.

Map 12: AFP Surveillance Indicators Combination Mapping - NP-AFP rate & Adequacy



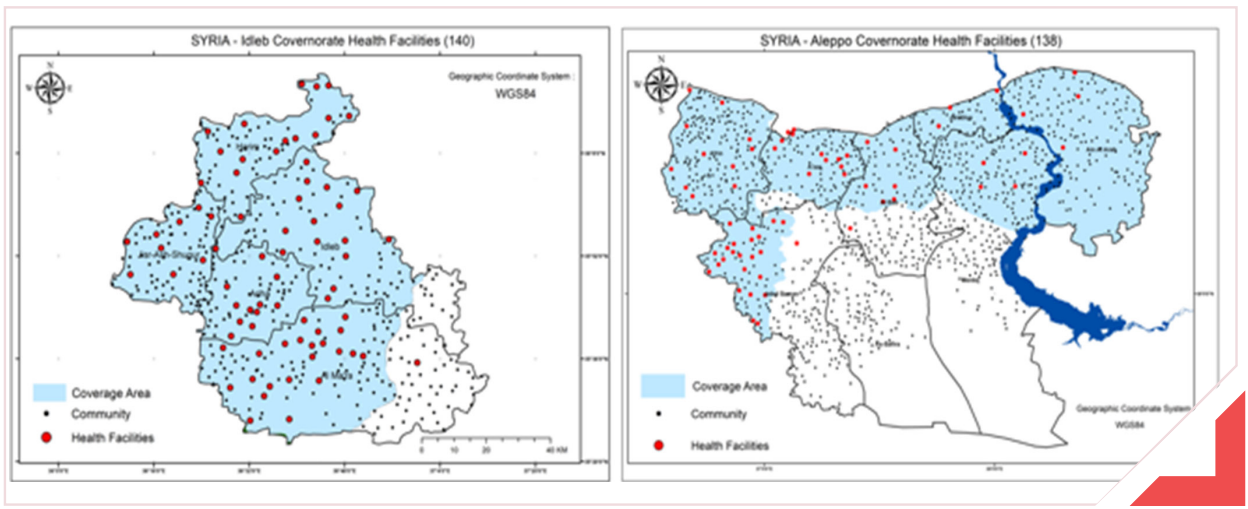
Governorate	# of AFP Cases	# of AFP Cases Adequacy
Aleppo	73	67
Idleb	82	72
Ar-Raqqa	8	8
Deir-ez-Zor	30	29
Al-Hasakeh	24	24

Map 13: AFP Surveillance Indicators Combination Mapping/ IDPs - NP-AFP rate & Adequacy

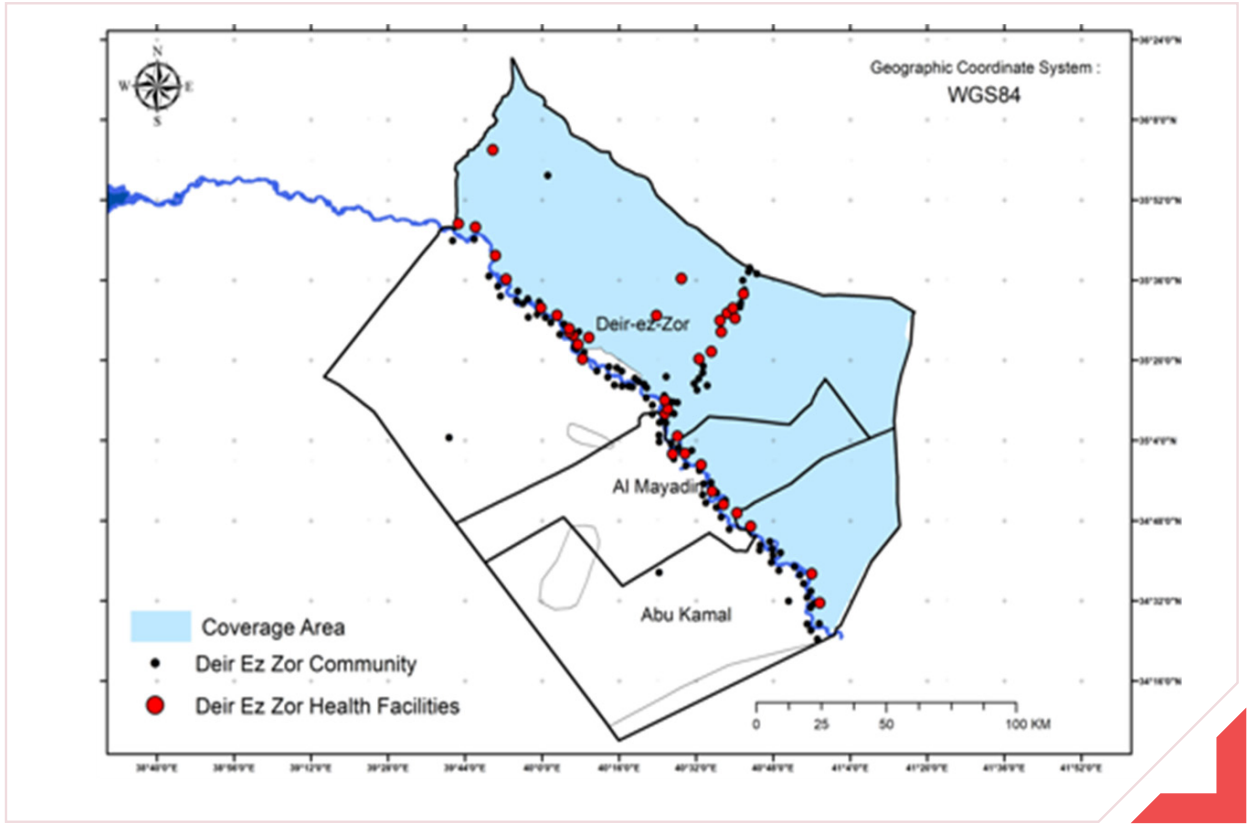


The distribution of the reporting centres is mapped against the communities' distribution in order to have a rough evaluation of the representativeness of reporting facilities.

Map 14: Health Facilities Distribution Vs. The communities - Idleb (Left), Aleppo (Right)



Map 15: AFP Surveillance Indicators Combination Mapping - NP-AFP rate & Adequacy -District Leve-Epi-week 28/ 2019



The presence of a designated GIS specialist at the central level was a great asset that enabled the surveillance officers to explore with different aspects and lifted the visualization to a higher level.
Another added value to the program was the designated logistics focal point at the central level that enabled and maintained the timely transportation time of the specimens for the zero point to the lab.
The transportation routes are regularly reviewed to correct any malfunctions and to look for alternative routes. The clear example for this was the prompt shift when the military operations started in northern Ar-Raqqa in Tell Abiad by the Syrian troops supported by Turkey and alternative route was established as a response to the discontinuation of the original one.

Another added value to the program was the designated logistics focal point at the central level that enabled and maintained the timely transportation time of the specimens for the zero point to the lab.

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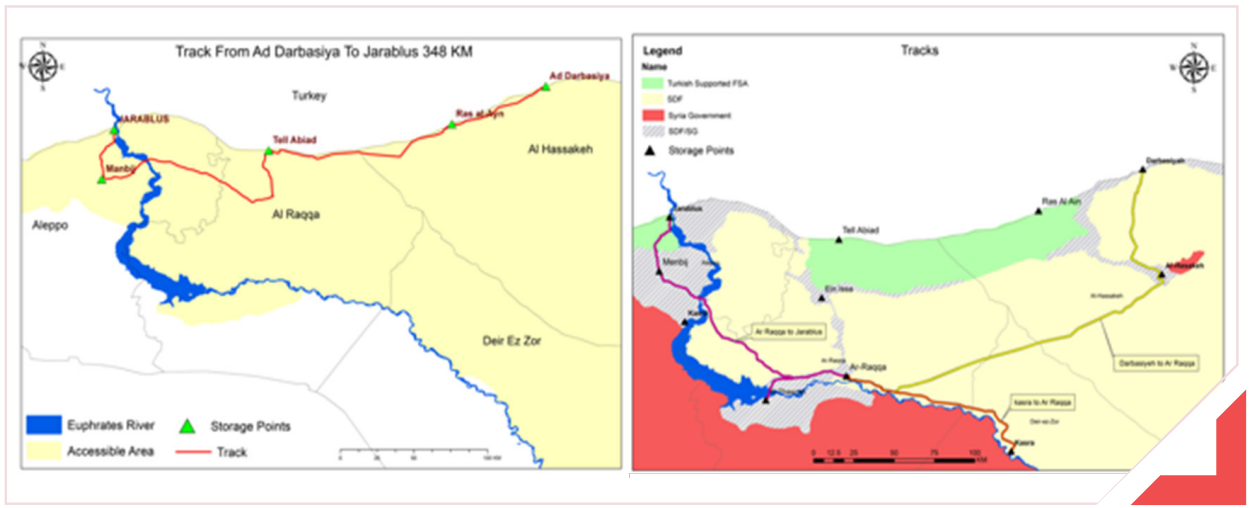
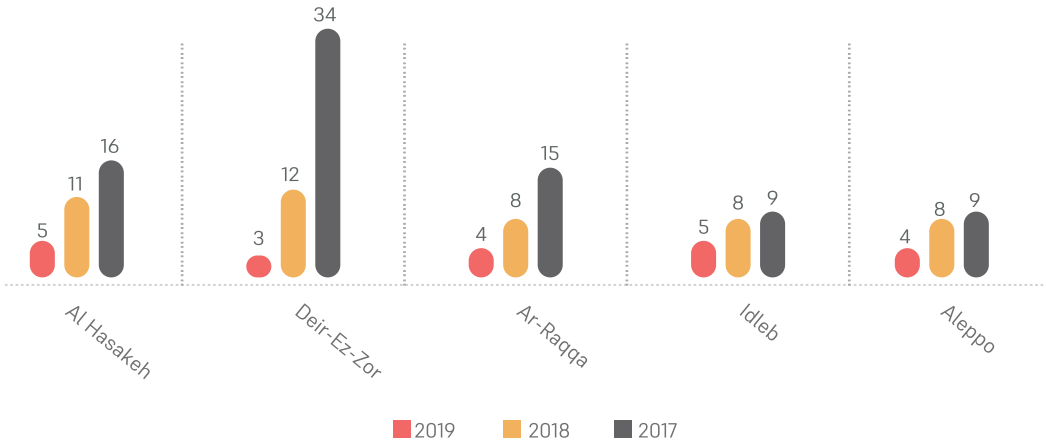
Map 16: Changing the Transportation Routes in Response to Field Situation Changes



The central and field logistics team improved the transportation days and the median days of transportation was 5 days in 2019, and it has dropped considerably from the needed time in 2017 and 2018.

One breakthrough that took place in 2019 was the ability of the central level to visit the field personally. A visit by the surveillance coordinator helped in conducting a quick evaluation of some of the reporting centres in Afrin district, and two DLOs from the eastern governorates came to Jarablus city, a training session on AFP surveillance and indicators review took place during that visit. It was the first time in the last 3 years to have in-person training to DLOs from the eastern governorates and the DLO who covers Afrin.
More visits will be conducted in 2020, if the condition permit.

Figure 08: Median Transportation Days - Governorate Level - 2019



The program maintained the simple support provided to the AFP cases when needed, from providing Immunoglobulin to the cases that requires, providing financial support to physiotherapy, transportation, and some diagnostic tests.

Table 08: percentages of provided services

Service	%
Transportation	31%
EMG	28%
MRI	21%
60 Days FUP evaluation	19%
Physiotherapy	1%

COORDINATION ASPECT IN AFP SURVEILLANCE

The program maintained the regular communication channels with WHO. Weekly meeting to review the AFP surveillance indicators and discuss the needed actions related the vaccination status of AFP cases.
The vaccination teams report all suspected AFP cases that they encounter during the SIAs to the surveillance team in order to commence the verification process.
Regular visits to the polio laboratory in Ankara continued, to maintain the good relationship with the lab, update the lab management of the latest updates from the field.
Visits from WHO EMRO to Gaziantep helped in maintaining the communication channels with the regional office.

Challenges

- The regular challenges remain the same; security constraints, the interruption of transportation routes due to the military operations, loss of access to some geographical areas and the resulting increase in the population density in other areas, which increases the load on the DLOs in the areas of destination.
- The regular complain by the referral laboratory about the overload of specimens coming from Syria and the need to minimize the number of specimens.

Future plans

- The surveillance team continues to develop tools that enhance the program, in addition to the regular activities in quarterly meetings, weekly review with the DLOs via Skype, and basic surveillance indicators review; the team plans to conduct training session to the FLOs by the central level in the accessible areas in northern Syria.
- Work will continue developing evaluation methodologies to verify the collected data and detect any gaps in timely manner, either through the combined indicators or through developing a risk scale modality based on the AFP surveillance data as the vaccination data is not available for all the accessible areas.
- The program is already mapping the AFP cases on community level, the aim in 2020 is to have the data for the investigated cases on the household level.
- Conducting AFP surveillance accessibility evaluation at the community level on quarterly basis.
- Revisiting the community-based surveillance initiative and conducting at least one sensitization session to the community surveillance focal points.
- Updating EWARN's AFP surveillance guidelines in the light of the latest global surveillance guidelines.

VACCINE PREVENTABLE DISEASES (VPDS) SURVEILLANCE

INTRODUCTION

Vaccine-preventable diseases (VPDs) is one of the corner stones of EWARN. The surveillance of the other vaccine-preventable diseases during 2019 in accordance with the plans and concepts outlined at the end of 2018, with a main purpose of minimizing the related mortality and morbidity.

Scaling up the Expanded Program on Immunization (EPI) centers is still achieved through the cooperation with (SIG) to implement vaccination activities,

EWARN team is working on daily basis to for early detection, identification, reporting, and rapid response to outbreaks.

Measles is on the top of VPDs surveillance list, in addition to rubella, pertussis, mumps, neonatal tetanus, meningococcal meningitis, and diphtheria are being monitored as well.

MEASLES SURVEILLANCE

Although the number of measles cases has decreased during 2019 compared to 2018, the measles outbreak is still ongoing, and the total number of suspected measles cases during 2019 has reached 716.

In fact, EWARN has shifted the measles surveillance to case-based instead of aggregated data collection since mid-2016. The case-based surveillance can supply the whole picture of measles situation to epidemiologists. In addition, the case-based surveillance can give more detailed information about measles cases including the following:

- Reporting site information.
- Personal information.
- Immunization status.
- Signs, symptoms, and complication of measles.
- Epidemiological finding.
- History within 7 to 23 days before skin rash onset.
- Rubella investigation.
- Laboratory investigation and results.
- Cases classification.
- Case Management and related response

The notifications of suspected measles cases were received from the sentinel sites (about 470 HFs), and from private clinics.

The District Level Officer (DLO) investigates the suspected cases through a frequently updated line list and an investigation form adapted by EWARN, following the global academic surveillance standards methodologies. The latest updates report was presented on weekly basis using multiple and advanced technical tools such as Microsoft Power BI, and shared with partners, including WHO, UNICEF, MSF, SIG and the health members of health cluster of Gaziantep.

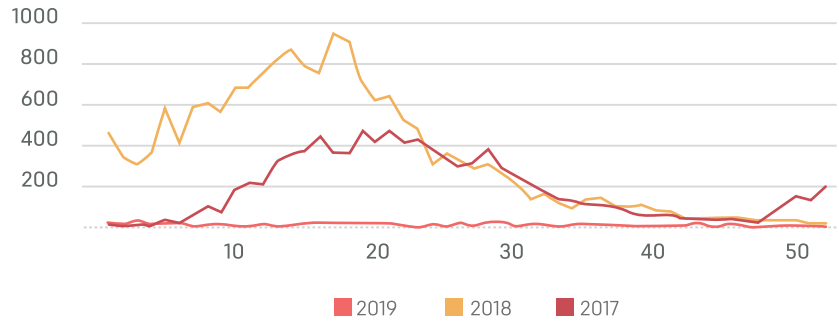
EWARN has registered 716 suspected measles cases from the six governorates in 2019. The highest number of suspected measles cases has been recorded from Idleb governorate (360 suspected cases). Harim district has reported the biggest number of suspected cases (179 suspected cases).

Table 09: Suspected cases of Measles per governorate & district_2019

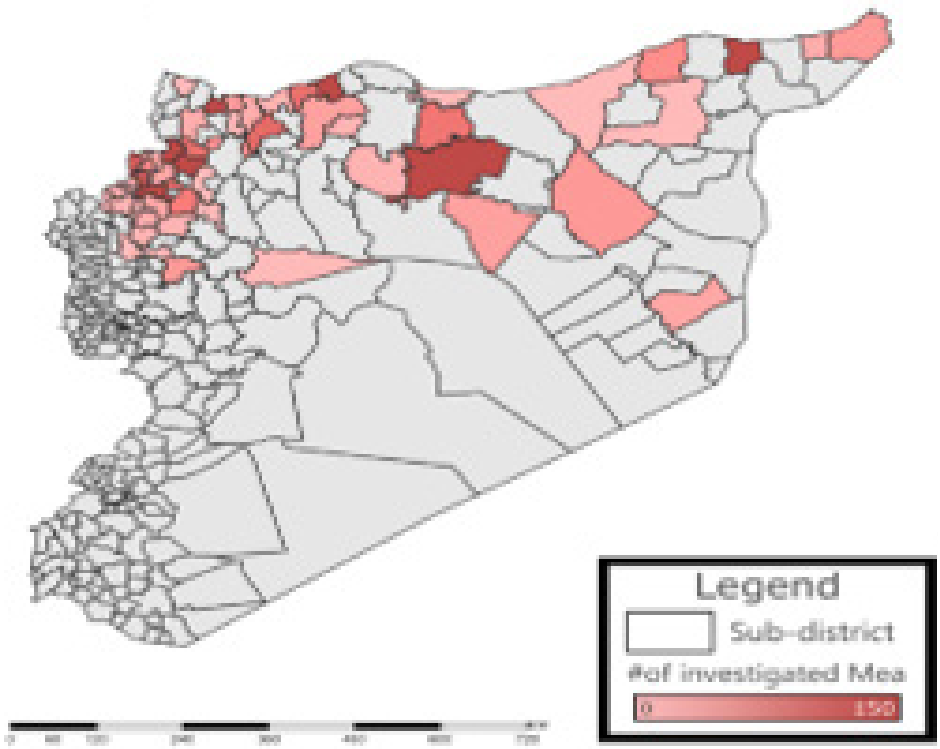
GOVERNORATE	District	#Cases
Aleppo	Afrin	8
Aleppo	Al-bab	18
Aleppo	A'zaz	85
Aleppo	Jarabblus	29
Aleppo	Jebel Saman	50
Aleppo	Menbij	6
Al-Hasakeh	Al-Hasakeh	1
Al-Hasakeh	Al-Malikeyyeh	11
Al-Hasakeh	Quamishli	11
Al-Hasakeh	Ras Al Ain	1
Ar-Raqqa	Ar-Raqqa	51
Ar-Raqqa	Ath-Thawrah	7
Ar-Raqqa	Tell Abiad	18
Deir-ez-Zor	Deir-ez-Zor	59
Hama	As-Suqaylabiyah	1
Idleb	Al Ma'ra	16
Idleb	Ariha	23
Idleb	Hairm	179
Idleb	Idleb	124
Idleb	Jisr-Ash-Shugur	18
Total		**716**

When comparing epi curves of measles suspected cases for the last 3 years, it will be clear that 2019 appeared to have the lowest cases.

Figure 09: Comparison of suspected Measles cases Epi curves 2017-2018-2019



Map 17: Investigated measles cases map_2019



In terms of age and sex groups, the age group under 5 years represents the largest proportion of investigated measles cases by 76%, and 53% are males.

Figure 10:Investigated measles cases Age groups_2019

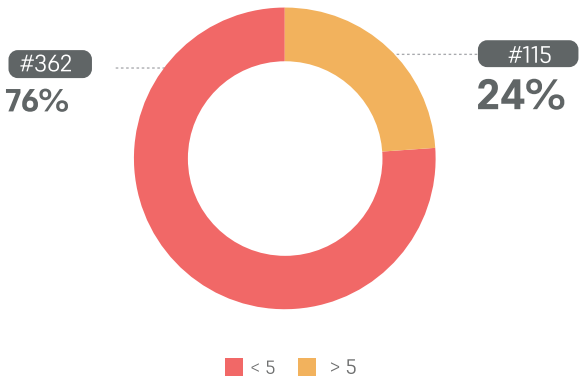
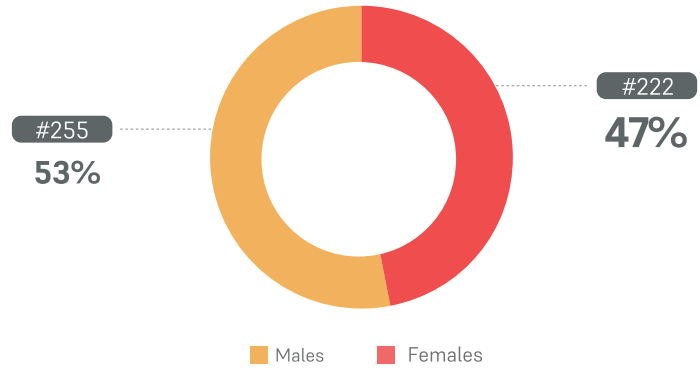
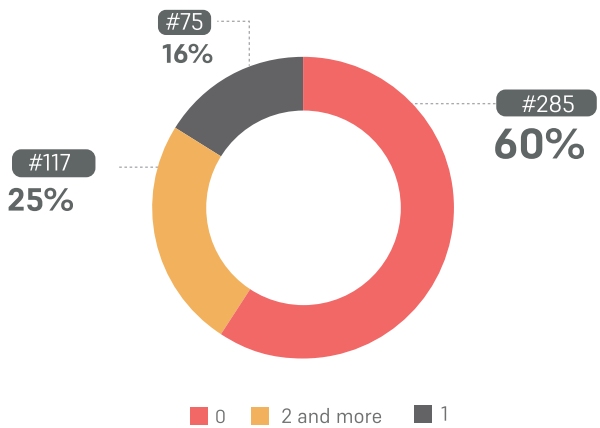


Figure 11:Investigated measles cases Age groups_2019



In terms of the vaccination status, 60% of the total number of investigated measles cases have zero dose of MR vaccine. While only 16% of cases have been administrated one MR dose vaccine compared with 25% of two doses of MR vaccine.

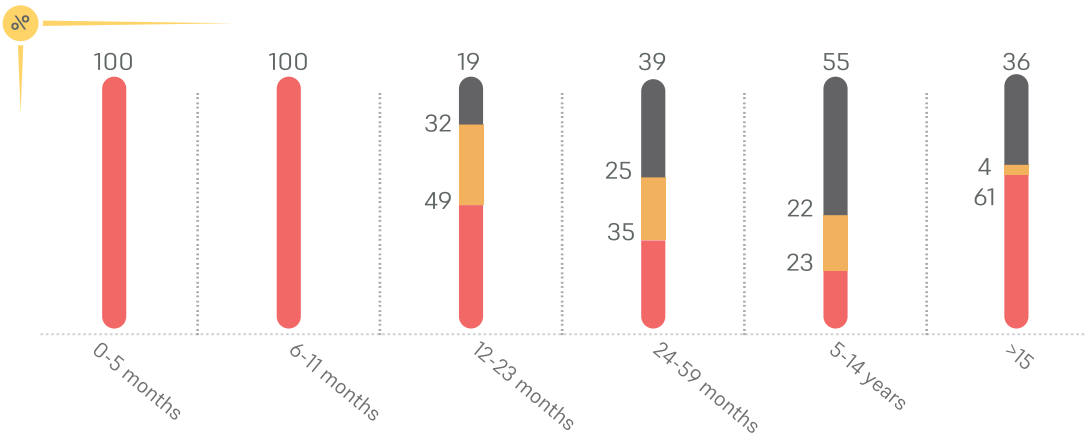
Figure 12: Investigated measles cases with the vaccination status_2019



The vaccination status per age group of investigated measles cases:

- Under 12 months, 100% were not vaccinated with MR.
- In age group 12 to 23 months, 49% were not vaccinated with the MR.
- In age group 24 to 59 months, 64% were not vaccinated with the MR.

Figure 13: Investigated measles cases with the vaccination status_2019

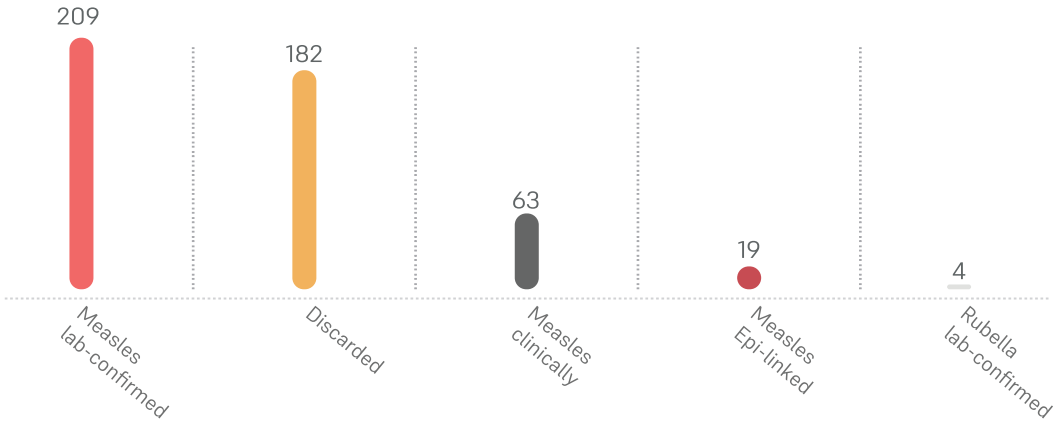


This demands more efforts to increase the coverage of vaccines in these critical age groups by additional measles vaccination campaigns and to strengthen the role of routine vaccination centers according to WHO and UNICEF standards.

The final classification of suspected measles that were investigated during 2019:

- 44% Laboratory confirmed (209 out of 477) of investigated measles cases by positively IgM by ELISA.
- 38% Discarded by lab (182 out of 477)
- 13% clinically confirmed
- 4% epi linked

Figure 14: Investigated measles cases Age groups_2019



Measles Surveillance main indicators of 2019

The overall incidence rate for suspected measles during 2019 is 112 per million of population. The largest incidence rate is in Idleb governorate (154 per million population).
EWARN has investigated 67% of suspected measles cases. The rate of laboratory-confirmed measles cases is 32,7 per million population, while in the elimination phase, without measles outbreak should be less than or equal to 1.
It is worth mentioning that the rate of discarded (none) measles and rubella cases is more than 2 (2.84), which meets the global standard for every 100,000 of the population.
Also, EWARN has achieved the global standards of notified measles cases within seven days of skin rash onset which reached 92% during 2019.

In the same topic, 77% of investigated measles have been investigated within 48 hours from notification onset date.
The field team collected the specimens from 90% of investigated measles cases within 4 to 28 days from skin rash onset.

Rubella in 2019

Four confirmed (nonpregnant) cases of rubella have been confirmed by EWARN lab. No cases of congenital rubella syndrome were recorded during 2019.

Table 10: Measles Surveillance Indicators in 2019 _ I

GOVERNORATE	Population	#of sus Measles cases (zero Report)	Investigated Cases	Investigated Cases%	Sampled Cases	Lab Tested Samples	No.Laboratory Measles confirmed (IgM) positive	No.Laboratory Measles confirmed (IgM) positive	Non Measles non Rubella Cases(IgM) Negative	Incidence rate for confirmed Measles per 1.000.000 pop	Non Measles and non Rubella rate per 100.000
	#	#	#	%	#	#	#	%	#	Target≤1	Target≥2
Aleppo	1,826,734	196	179	91%	149	149	86	58%	60	47.1	3.3
Idleb	2,336,831	360	202	56%	160	160	66	41%	93	28.2	4.0
Hama	176,467	1	2	200%	1	1	1	100%	0	5.7	0.0
Ar-Raqqa	634,171	76	45	59%	36	36	24	67%	12	37.8	1.9
Deir-ez-Zor	431,517	59	10	17%	10	10	5	50%	5	11.6	1.2
Al Hasakeh	991,894	24	39	163%	39	39	27	69%	12	27.2	1.2
Total	**6,397,614**	**716**	**477**	**67%**	**395**	**395**	**209**	**53%**	**182**	**32.7**	**2.84**

Table 11: Measles Surveillance Indicators in 2019 _ II

GOVERNORATE	Investigated Cases	Notified within 7 days form rash date -Target≥80%		Investigated Measles Cases within 48 H from notification date-Target≥80%		Sampled Cases	Sampled within 4-28 days from rash date		Samples sent to lab	Samples send to lab within 3 days (maximum 7 days)-target =>80%		Lab results sent	Lab result within 7 days-target≥80%	
	#	#	%	#	%	#	#	%						
Aleppo	179	164	92%	139	78%	149	131	88%	149	146	98%	149	137	92%
Idleb	202	186	92%	138	68%	160	147	92%	160	155	97%	160	157	98%
Hama	2	2	100%	2	100%	1	1	100%	1	1	100%	1	1	100%
Ar-Raqqa	45	42	93%	43	96%	36	34	94%	36	31	86%	36	35	97%
Deir-ez-Zor	10	7	70%	6	60%	10	8	80%	10	9	90%	10	10	100%
Al Hasakeh	39	37	95%	39	100%	39	36	92%	39	38	97%	39	39	100%
Total	**477**	**438**	**92%**	**367**	**77%**	**395**	**357**	**90%**	**395**	**380**	**96%**	**395**	**379**	**96%**

For more details about measles report, please click on this link : Measles Report of the north of Syria through 2019

URL NEED

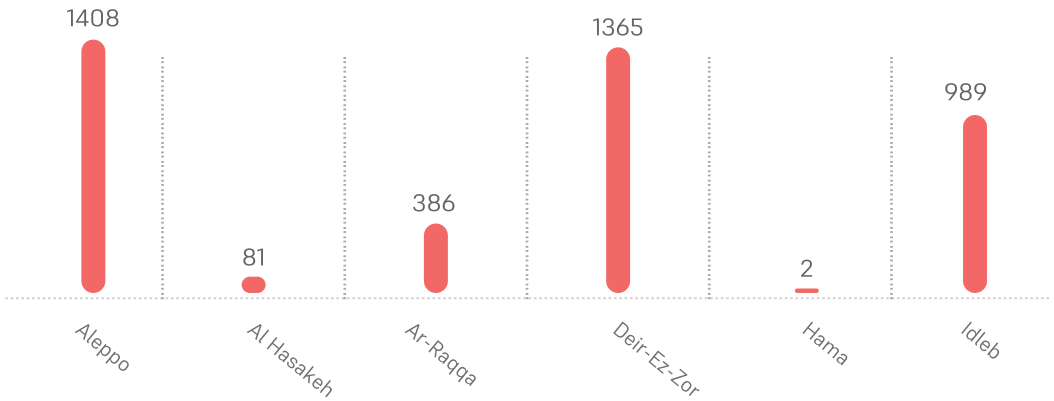
Section 02

OTHER VACCINE PREVENTABLE DISEASES SURVEILLANCE

Mumps

- **4,231** suspected cases of mumps have been reported during 2019. Aleppo governorate has been ranked as the first with **1,408** cases.
- **90%** of mumps cases have been registered in the under 5 years age group.
- **185** out of **254** laboratory tests for mumps IgM antibodies were positive (**73%**). During 2019 no reports about deaths as a complication of mumps.

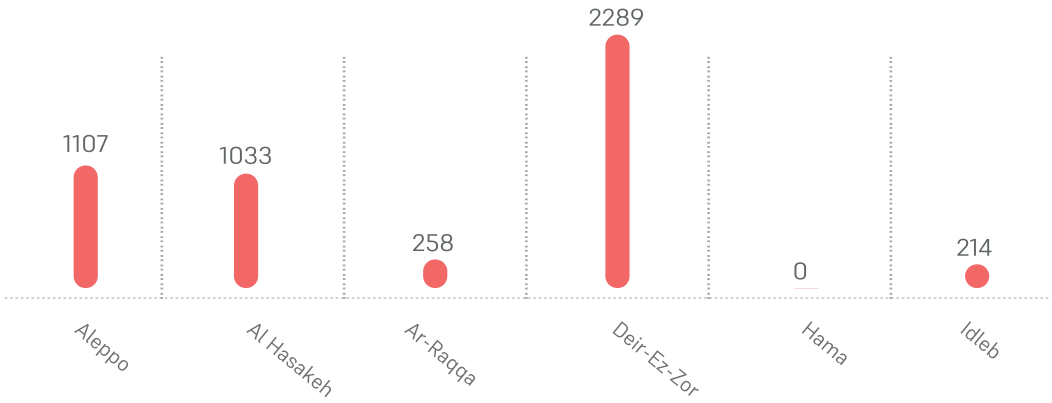
Figure 15:Mumps cases distribution per governorate_2019



Pertussis

- **4,901** cases of suspected pertussis have been reported during 2019. Deir ez-Zor has been ranked as the first with **2,289** cases, followed by Aleppo Governorate with **1,107** cases of pertussis.
- Most pertussis cases have been registered in the under 5 years age group.
- During 2019 no reports about deaths as a complication of pertussis.

Figure 16:Pertussis cases distribution per governorate_2019

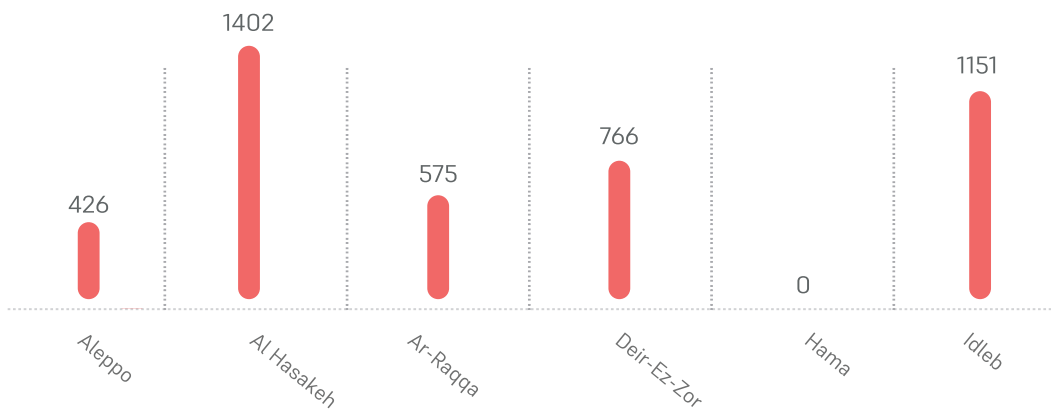


Meningitis

- The cases of meningitis that reported during 2019 have a variety of clinical manifestations (viral, bacterial and tuberculosis).
- The number of reported meningitis cases during 2019 was 4,320 most of them in Al- Hasakeh governorate (1,402 cases), followed by Idleb governorate (1,151 cases).
- In addition, EWARN has made a broad investigation of 119 suspected meningitis in Aleppo and Idleb governorates in between Epi week 9 – 30.

70 probable meningitis cases have been investigated by EWARN's team. Subsequently, 78% of probable cases matched with viral meningitis after CSF analysis, and 22% consisted with bacterial meningitis.
Nine CSF specimens were cultured in EWARN labs, the results came positive for 3 (Gram positive cocci), and negative for 6. It is worthy to say that there is no laboratory or clinically evidence of meningitis with Neisseria meningitis.
In the mentioned investigation, 64% of probable meningitis cases were in the age group under 5 years, and the sex distribution showed 66% as males and 34% as females.
No reports about deaths as a complication of those investigated meningitis cases.
The laboratory protocol (sampling, shipment, and storage), in addition to the case management protocol were disseminated to all acting partners in Syria, as well as cases follow up and updated reports from the hospitals and from neighboring areas.

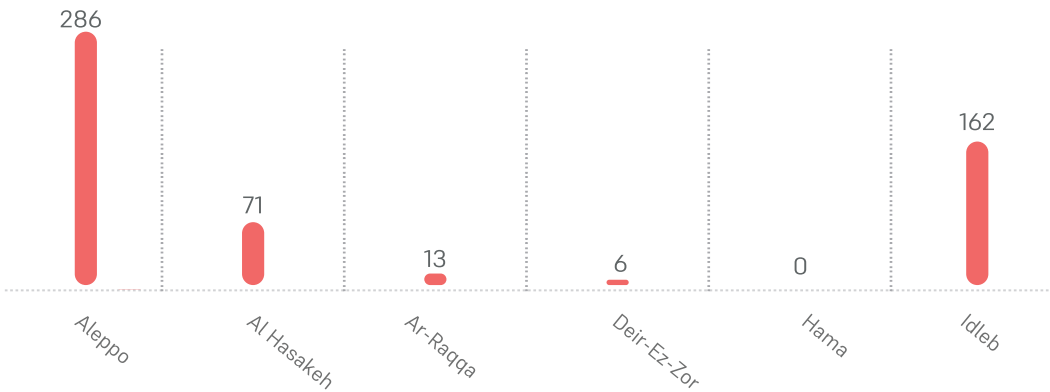
Figure 17:Meningitis cases distribution per governorate_2019



Tuberculosis

- The data of registered tuberculosis cases were aggregated from the zero-weekly report, there is only one operation center in A'zaz district to detect or manage TB cases in EWARN coverage areas.
- The number of patients that were registered as tuberculosis was 538 patients during 2019 (162 in Idleb governorate and 286 in Aleppo governorate). One registered death case related to TB for 22-month male child in A'zaz district.

Figure 18:TB cases distribution per governorate_2019



Neonatal Tetanus, Tetanus, and Diphtheria

- There are no reported cases of neonatal tetanus, tetanus, and diphtheria in 2019.

ADVERSE EVENT FOLLOWING IMMUNIZATION (AEFI) SURVEILLANCE

EWARN has made a great collaboration with world health organization (**WHO**), Syria immunization group (**SIG**) and with all activation health partners to increase the achievement of vaccination activities including routine expanded vaccination programs. Subsequently, morbidity and mortality of vaccine-preventable diseases will have decreased. In fact, surveillance of the adverse events following immunization (**AEFI**) is a collimated system of the epidemiological surveillance of vaccine-preventable diseases.

Monitoring AEFI during vaccination campaigns and for about 90 routine vaccination centers is the responsibility of EWARN team. This monitoring mechanism goes through the communication of both center supervisors and side effect doctors with the EWARN response team and **DLOs**, who in their turns send the daily zero-report to the central team.

The monthly report of AEFI is for mild and moderate adverse events of routine vaccine centers, while severe or clustered adverse events are immediately reported.

AEFI surveillance of routine vaccination centers (EPI)

Monthly reports are being received from all operating routine vaccine centers (90 centers) in Idleb, northern & western Aleppo.

EWARN has received 973 monthly zero report of AEFI and registered 804 AEFI cases during 2019.

The completeness of monthly reports is 93%, and timeliness 86%.

Classification of AEFI according to severity

There are 3 types of AEFI:

- Mild: It doesn't need treatment or doctor's intervention.
- Moderate: It needs some observation by the doctor.
- Sever: It needs hospital admission for management and treatment.

Table 12:Classification of AEFI according to severity_ 2019

Month	Total registered AEFI	Mild	Moderate	Sever
1st quarter	202	198	4	0
April	47	40	5	2
May	33	30	2	1
June	68	62	6	0
July	105	99	4	2
August	119	111	7	1
September	61	58	2	1
October	72	68	4	0
November	60	56	4	0
December	37	32	5	0
Grand Total	**804**	**754 (94%)**	**43 (5%)**	**7 (1%)**

Table 13: Classification of severe AEFI_ 2019

Number of severe cases	Why they are severe	Associated Diseases	Consequence
3	They needed hospital admission for management	Febrile seizure	Recovered
1		Dehydration / Gastroenteritis	Recovered
1		Bacterial Thigh abscess	Recovered
1		Septic shock	Dead
1		Metabolic acidosis plus hemorrhage disease	Dead

Figure 19: AEFI cases distribution by (Age)2019

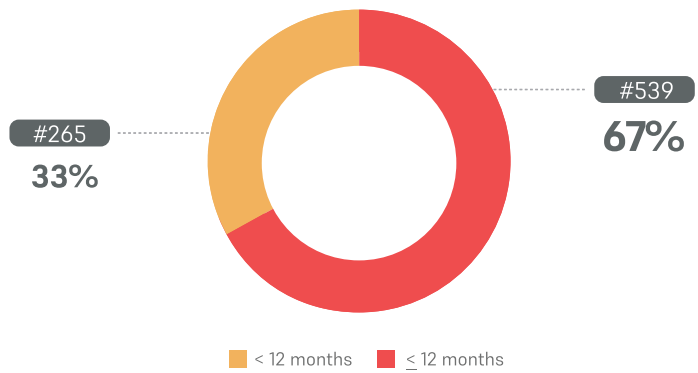
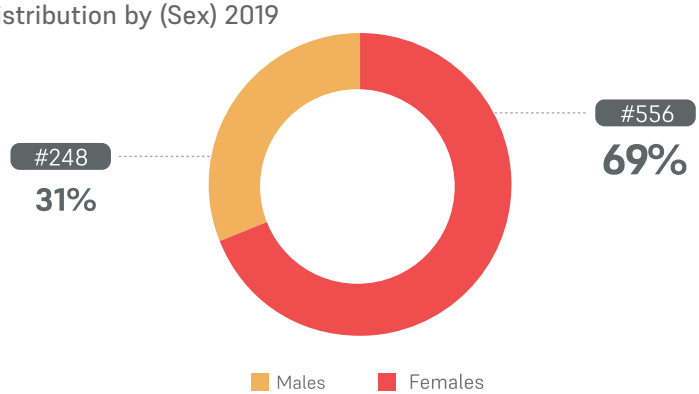


Figure 20: AEFI cases distribution by (Sex) 2019



The zero monthly reports of AEFI contains information about the status, date of reporting, epidemiological information of AEFI, detailed information about the vaccine, and probable etiology mechanism of side effect.

Figure 21: AEFI cases referral form

Figure 22: Zero monthly report of AEFI from EPI centers_2019

Challenges

- Lack of governance for the health sector.
- The reluctance of some doctors to send disease-preventable diseases reports.
- The absence of the stable health system in north of Syria and increasing the workload due to insufficient health employees.
- Difficult to send reports from the eastern governorates due to lack of communication tools.
- The difficulty of direct face-to-face training for some field team (eastern governorates), where Skype is used as an alternative way.
- Security constraints in some areas that lead to collect only basic data without collecting -sometimes- the needed specimens.

Future Plan

- Continue to improve case-based surveillance for measles and make the efforts to initiate the elimination phase of measles.
- Improve measles surveillance indicators and perseverance in maintaining international standards.
- Upgrade the VPDs surveillance in general.
- Continue to collaborate with SIG to achieve a clear response strategy for VPDs, and monitoring AEFI at the level of routine centers (EPI).
- Making more efforts to do trainings inside Syria, where the team of VPDs entered the north of Syria and conducted supervisory and training visits and provide technical and logistical support. Also, the team is still spare no effort to increase the efficiency of health personnel in the north of Syria.
- Increase the capacity of medical staff by conducting more training, introducing modern electronic techniques and enhancing electronic surveillance, especially Tableau, Epi Info, and Power BI.

WATER BORNE DISEASES (WBDS)

INTRODUCTION

The importance of the impact of water-related diseases on human health has been recognized as a major threat to sustainable health system reconstruction.
Waterborne diseases with high potential for developing into epidemics, such as cholera, were brought under the surveillance since the launch of EWARN in 2013, three water borne diseases were included in the list (AJS – ABD and AWD), then AD was added to the surveillance list in 2015. Those diseases are highly morbidity diseases and have epidemic potential. This group of diseases strongly reflects the quality of WASH services provided.

Therefore, EWARN are at the forefront of reducing the endemic disease burden related to water and sanitation, preparing for outbreaks and make contingency plans, including keeping abreast of new epidemiological insights, resource mapping including logistics, supplies, and human resources, especially for cholera.
The challenges are particularly great in north of Syria, where the primary health care is a priority.

Figure 23: AEFI cases distribution by (Sex-Age)2019

Figure 24: Cases No. for WBDs 2017, 2018, & 2019

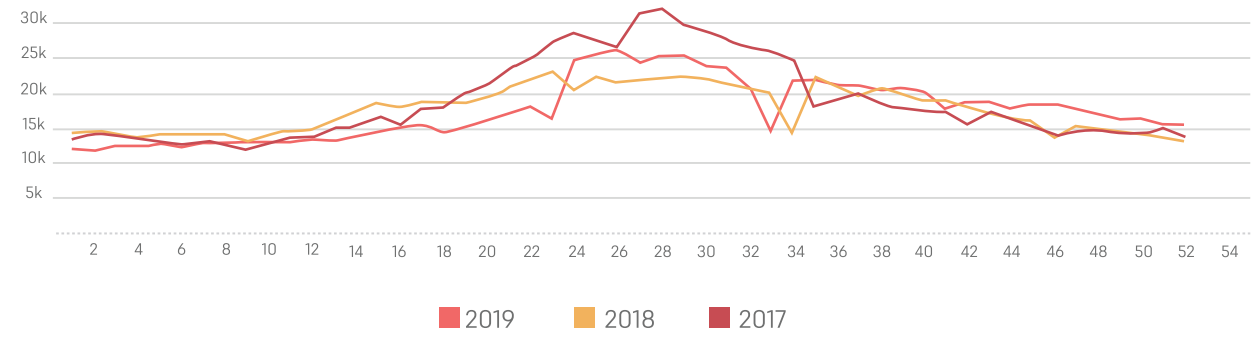
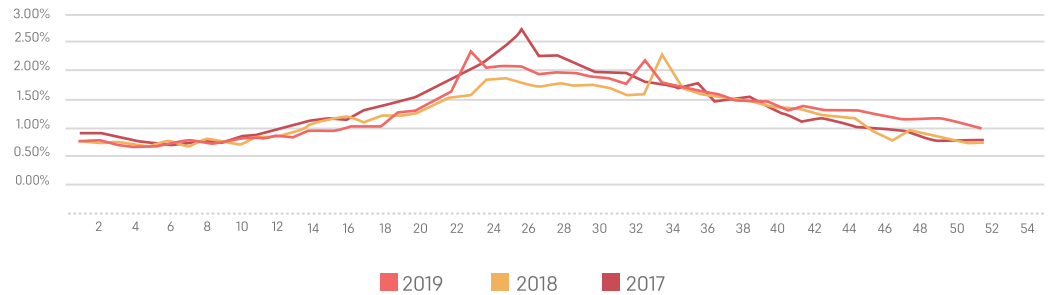


Figure 25: Proportional Morbidity for WBDs 2017, 2018, & 2019



ACTIVITIES OF 2019

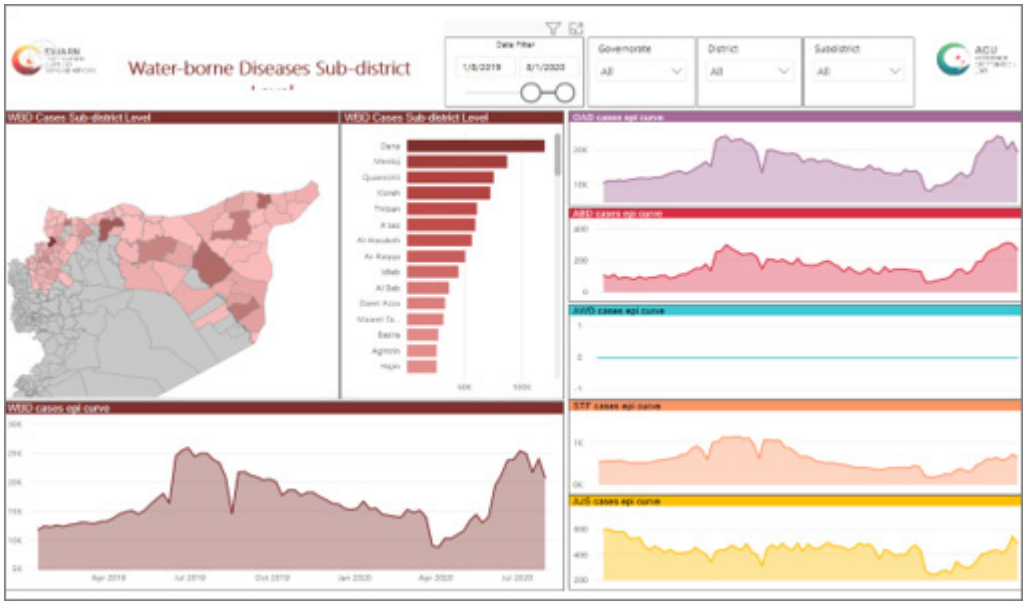
- Verified and investigated more than 39 WBDs alerts in 5 governorates (Aleppo, Idleb, Ar Raqqa, Deir-Ez-Zor, and Al Hasakeh), with the adequate sampling (stool or blood culture, serum), testing of water sources and disseminating IEC materials. The details of the response actions are mentioned in the logistic and response activities.
- Secure the needed logistic for suspected cholera cases investigation (RDTs)and sampling (Carry Blair media) and provide to DLOs.
- Receive and ship 12 complete IDDKs and keep them in the main warehouses to prepositioning them in case of need (10 in A'zaz warehouse, and 2 in Ar-Raqqa warehouse).
- Needs assessment: Identify gaps, needs and capacities (coordination and technical) using appropriate tools for gap/ need analysis.
- Generate the Cholera risk map in northern of Syria, and water borne diseases dashboard , share it with both Health and WASH clusters, in addition to cholera technical group.

  A Scale Score (0-6) (based on acute diarrhoea incidence, population density and WASH conditions) has been used to rank risk and to identify priority areas for intervention.

- Figure 26:Cholera Risk scale district level _2019

District	Total (WASH SS+Pop Dendity+AD Scale)
Afrin	5
Ain Al Arab	4
Al Bab	5
A'zaz	5
Jarablus	4
Jebel Saman	2
Menbij	5
Al-Hasakeh	4
Al-Malikeyyeh	4
Quamishli	5
Ras Al Ain	4
Ar-Raqqa	5
Ath-Thawrah	4
Tell Abiad	4
Abu Kamal	4
Al Mayadin	4
Deir-ez-Zor	5
As-Salamiyeh	2
As-Suqaylabiyah	4
Hama	2
Muhradah	2
Al Ma'ra	4
Ariha	4
Harim	6
Idleb	5
Jisr-Ash-Shugur	4

Figure 27: : WBDs dashboard_2019



Participating actively in Cholera Technical Group meetings, to present the updates for AD trends, revising and updating the cholera preparedness plan for 2019.

Table 14: Expected numbers of cases and estimated cholera kits needed_ IDP camps.

IDPs camps estimated population	Attack Rates	Scenario for 5% (242,876 population)
Attack Rate = number of expected patients	5%	12,143
Severe cases = 10% of expected patients	5%	1,214
Peak caseload in 1 week (week 3 or 4) = 30 % of expected severe cases	5%	364
Peak case load / day = peak case load per week / 7	5%	104

Table 15: Expected numbers of cases and estimated cholera kits needed_ off camps and host community

Off Camp + Host Population (estimated population in the hot spots areas)	Attack Rates	Scenario for 0.6% (3,472,481 population)
Attack Rate = number of expected patients	0.6%	Scenario for 0.6% (3,472,481 population)
Severe cases = 30% of expected patients	0.6%	1,214
Peak caseload in 1 week (week 3 or 4) = 30 % of expected severe cases	0.6%	364
Peak case load / day = peak case load per week / 7	0.6%	104

- Fortunately, no suspected cases of cholera were notified or detected during 2019.
- Provide technical support to cluster partners to build response capacity during outbreaks.
- Currently, WBDs surveillance has a strong and high-level coordination with: Lab team, WASH team and health workers in order to monitor the trends and evaluate the implemented activities.

Table 16:WBDS cases No. per governorate _ 2019

Governorate	ABD	AWD	OAD	AJS	STF
Aleppo	999	0	217.686	3.222	5.027
Idleb	636	0	266.454	5.176	8.313
Hama	2	0	3.426	25	15
Deir ez zor	2.134	0	118.075	6.681	18.936
Ar Raqqa	471	0	74.162	2.906	1.640
Al Hasakeh	4.093	0	158.355	6.180	3.612
Grand Total	**8.335**	**0**	**838.158**	**24.190**	**37.543**

Challenges

- Uncertainty in prioritizing the risks due to lack of availability of data from the other sectors, poor knowledge of activities within the water supply chain.
- Lack of human resources, including technical expertise, to plan and implement needed upgrades.
- WBD are endemic in Syria. Control procedures need a strong and multiple resources to coordinate between all partners and sectors, which is very challenging and high cost implications.

Future Plan

- Building the capacity of the surveillance team about the analytical studies (cohort and case- control).
- Developing a prioritized upgrade/improvement plan for each significant uncontrolled risk related to WBDs.
- Include the community component in WBDs surveillance to increase the sensitivity of disease detection.
- A communication plan to alert and inform users and stockholders in case of WBDs epidemics.

NUTRITION SURVEILLANCE

INTRODUCTION

The importance of establishing a well-built nutrition surveillance system came from the need for comprehensive system of data collection and analysis, the importance of clear defining of the malnutrition prevalence and detecting any undiscovered pockets.

According to the accessibility, availability of integration with both health (diarrheal diseases) and WASH, in addition to the experience of ACU in surveillance, ACU team start working on the needed preparations through defining the areas of gaps, thus planning to implement the NSS there.

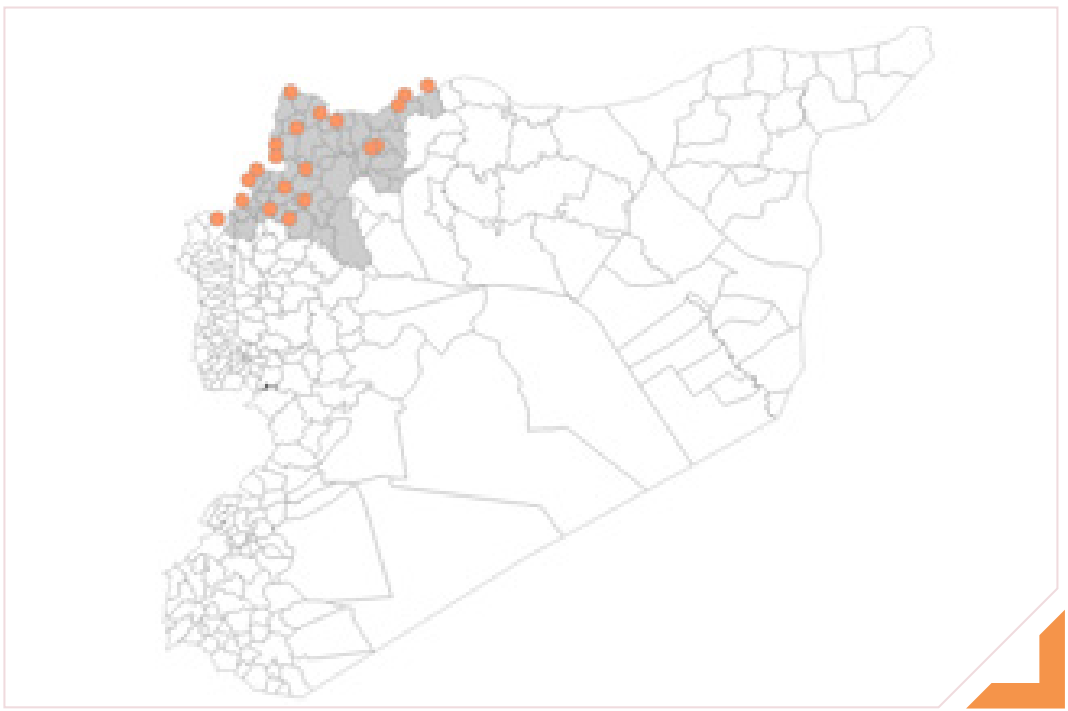
The main goal of this system is to monitor the trends and to identify key areas for immediate response

The nutrition surveillance system objectives are:

- Assess acute malnutrition both Moderate and severe malnutrition in children between 0-59 months old and PLWs.
- Reducing the under-five mortality rate due to acute malnutrition.

  Follow up the detected cases after 2 weeks of the referral, to evaluate the feasibility, accessibility, and adequacy of the provided case management.

Map 18: NSS coverage _ December 2019



NUTRITION SURVEILLANCE FOR CHILDREN UNDER 5 YEARS

- By the third quarter of 2018, NSS lost accesses up to 4 Governments because of military actions and changes in control and thus change in access and 451.110 children were screened by the end of 2018.
- By 2019 , the NSS expanded to reach 132 HF covering 4 Governorate Aleppo, Idleb, Ar-Raqqa, Hama, untill May where the programe suspended duto funding issue for five months then reusmed working in only 20 HFs for 2 months (Nov & Dec 2019).
- All those reasons caused a significant reduction in the number of children screened during 2019 by almost 55% comparing to the 2018. In 2019, 199.202 Children were screened during 2019: 3.990 MAM, and 1.452 SAM including 5 edema cases (GAM rate 2.73%).

Figure 28: Screened children under 5 years _2019

199.202	3.990	1.452	2.73%	5
Screened	MAM	SAM	GAM Rate	Oedema cases

The GAM rate had a peak at nearly 8% when the nutrition surveillance system started in July 2017 and start declining , the comparison of GAM rate during the life of the system can give some idea of the monthly GAM trends through the years , while there is a data gap occurred due to 5 month suspense (June to Oct 2019).

The sex distribution for the screened children was almost the same (51% male, 49% female).

The age distribution for the screened children was: 57% < 2 years, and 43% ≥2 years (this is justified as the younger children have more frequent visits to HFs).

Figure 29: Sex & Age distribution for screened children_2019

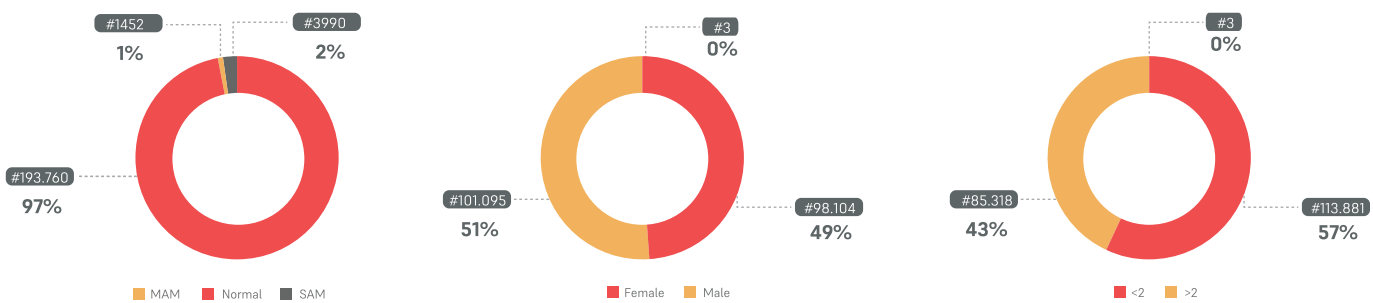
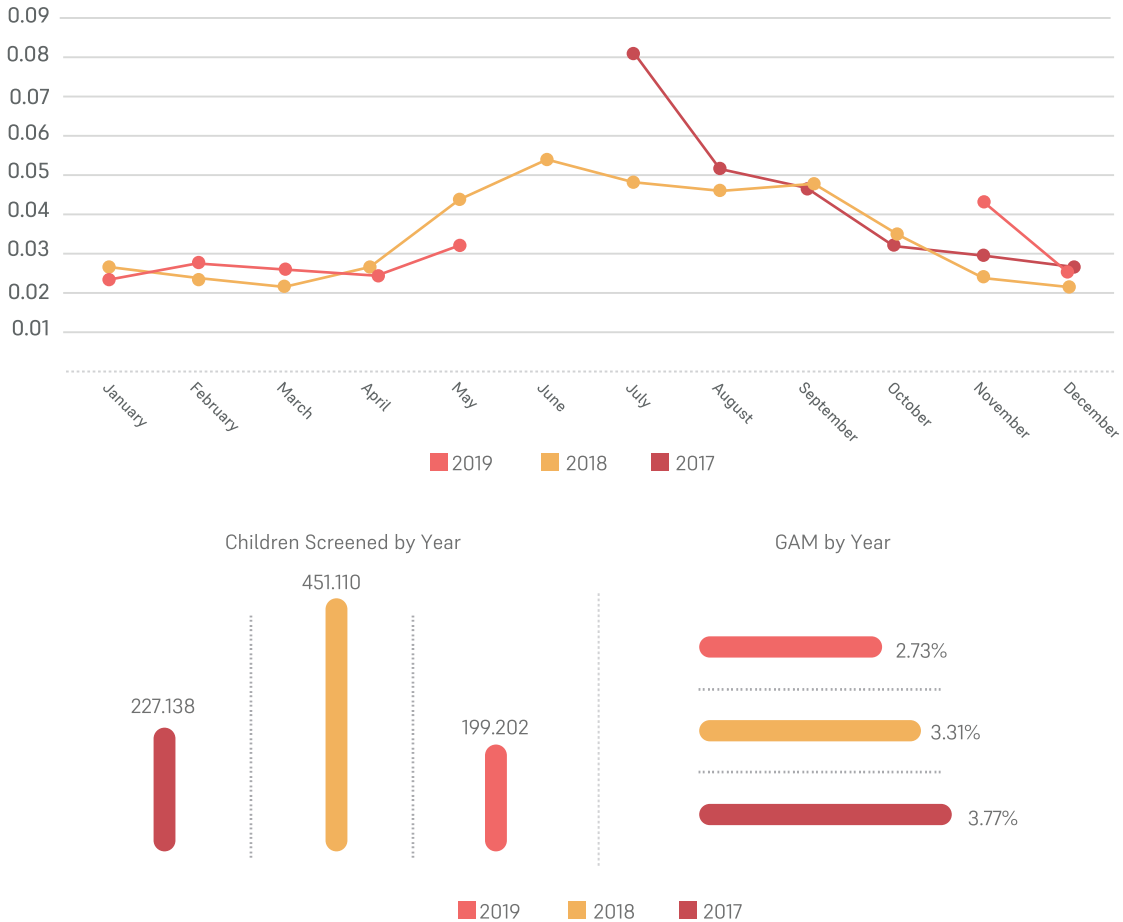


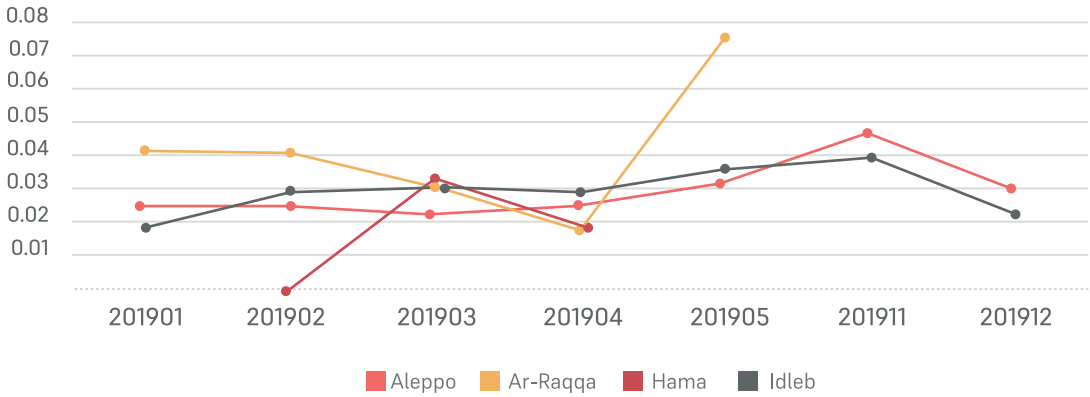
Figure 30: Comparison the results of 2017,2018, and 2019



The suspensing of screening activities had a huge effects on the programme resultes, not only for the screened number , but also for the fact that there was a big numbers of IDPs in the area due to the military actions and they could not be checked for their nutritional status , especially most of them are children under 5 years and PLWs .

GAM rate by governerate was: Aleppo 2.78%, Ar-Raqa 3.83%, Hama 1.61%, Idleb 2.74%. **5,442** malnourished cases were detected (25.2% from the total GAM cases) were not referred to the treatment centers, because of the absence of the management services.

Figure 31:Trend of GAM rate per governorate_2019



NUTRITION SURVEILLANCE FOR PLWS

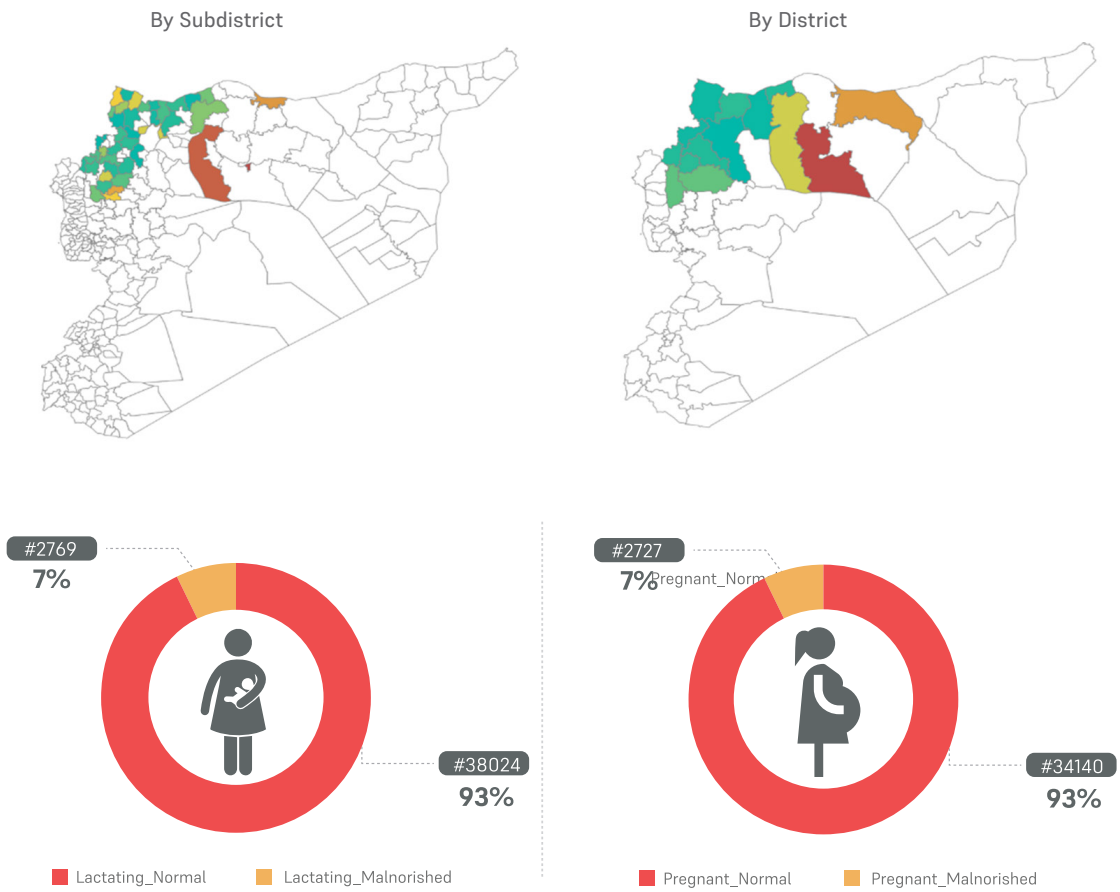
As the pregnant and lactating women are susceptible for malnutrition, thus the nutrition surveillance system includes these 2 categories in the targeted population.

More than 77,660 pregnant and lactating women were screened, 5,496 (about 7%) out of them were detected as malnourished.

Table 17: Expected numbers of cases and estimated cholera kits needed_ off camps and host community

PLWs	Normal	Malnourished
Pregnant	34,140	2,727
Lactating	38,024	2,769

Figure 32: PLWs screening results_2019



2.769 Lactating Malnorished

77.660 PLW Screened

7.08% PLW Malnutrition rate

2.727 Pregnant Malnorished

123 Health Facilty

Challenges

- Military actions
- Population continues moving looking for safe places.
- Unsustainable fund, which caused instability in work conditions.
- Employees high turnover rate, which led to train new staff.
- The absence of treatment centers in areas of Ar Raqqa and Tell Abiad, Menbij, and Ath- Thawrah.
- Inability to carry the supervisory field visits by the central team in some areas.

Future Plan

- Advocate and do an extensive effort to secure stable funding for the program.
- Planning for periodic field visits by the central team
- Work on development of partnerships with organizations working in health and nutrition sector.

SECTION 03

RESPONSE UPDATES IN 2019

Section 03

RESPONSE AND RELATED LOGISTIC ACTIVITIES

In EWARN, the alerts are regularly monitored, whether received on daily basis or on weekly basis, from both health and non-health resources, then properly responding by on time verification of the alerts to contain any potential outbreaks as early as possible.

The outbreak control team (OCT) is being functioned just after the verification of the outbreak. This team includes representatives from NGOs that are active with a capacity to engage the field procedures during an outbreak investigation and response. EWARN focal point is the leader of the team, and he/ she is accountable for field investigation and initiation the control.

The investigation and response processes require many resources (transportation, sampling materials, communication tools... etc), as well as a ready and well-trained team to carry out missions, response plans, standard case management protocols, define the cases that need isolation, in addition to prepositioned warehouses with essential treatment kits.

The goals of the response activities implemented by EWARN is to:

- Prevent the spread of outbreaks by continues monitoring
- Perform an effective intervention as soon as possible
- Initiate the outbreak control procedures

The missions of the response department can be divided into two main missions:

- Prepare for any potential outbreak: preparedness plans, ready field response team, and logistics supply management.
- Implement rapid and effective response.

MONITORING WEEKLY ALERTS (TYPE B ALERTS)

Every week, the weekly alert (B-type alerts) is being received as a tableau file for analysis and discussion.

During 2019, 446 alerts (excluding leishmaniasis alerts) were submitted. The high priority alerts were triggered, and other alerts were monitored during the following weeks to be classified later. Alerts are usually visualized as tableau file's map, the accessible areas are coloured in red and green, and the non-accessible areas are coloured in grey.

The file consists of seven sheets:

The home page offers the possible access areas divided into subdistrict, the red areas reflect existing alerts, the areas without alert remain in green.

Other sheets give more details about the alerts (cases number in both community and health facility levels, monitoring the epi-curve during the following weeks and compare it with the previous year).

Figure 33: Type B alerts in Sub district level Epi week 52_2019

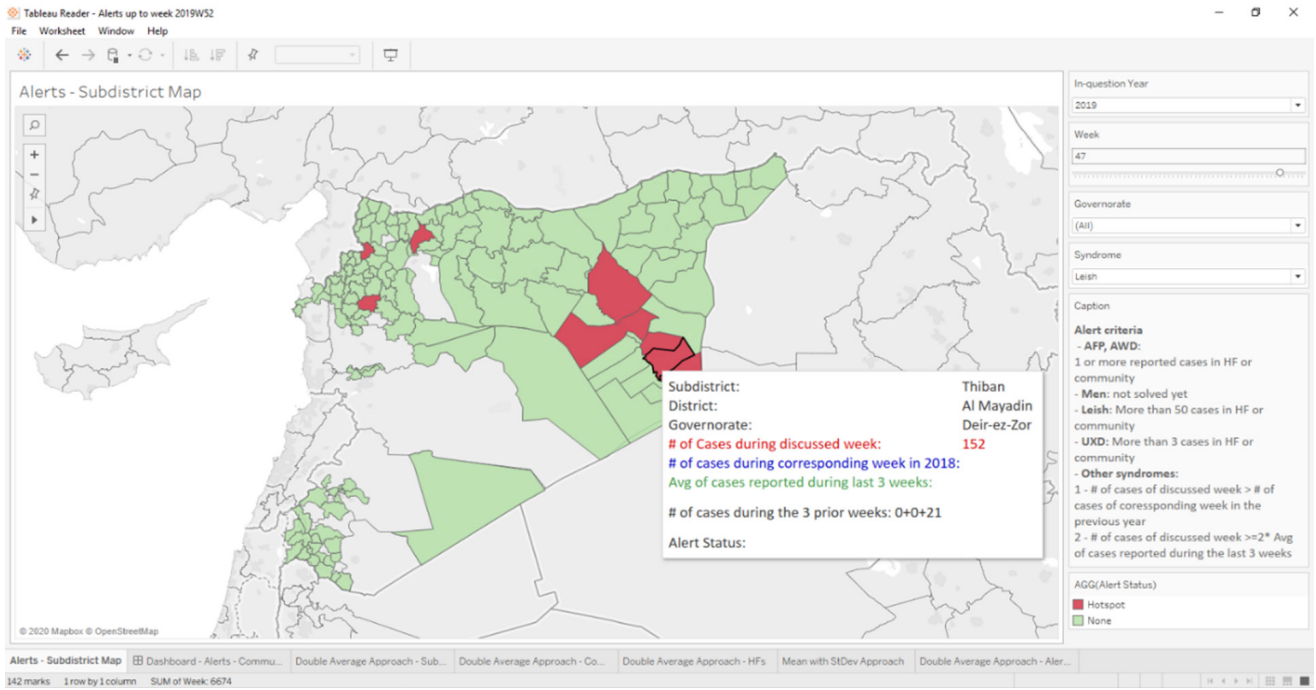
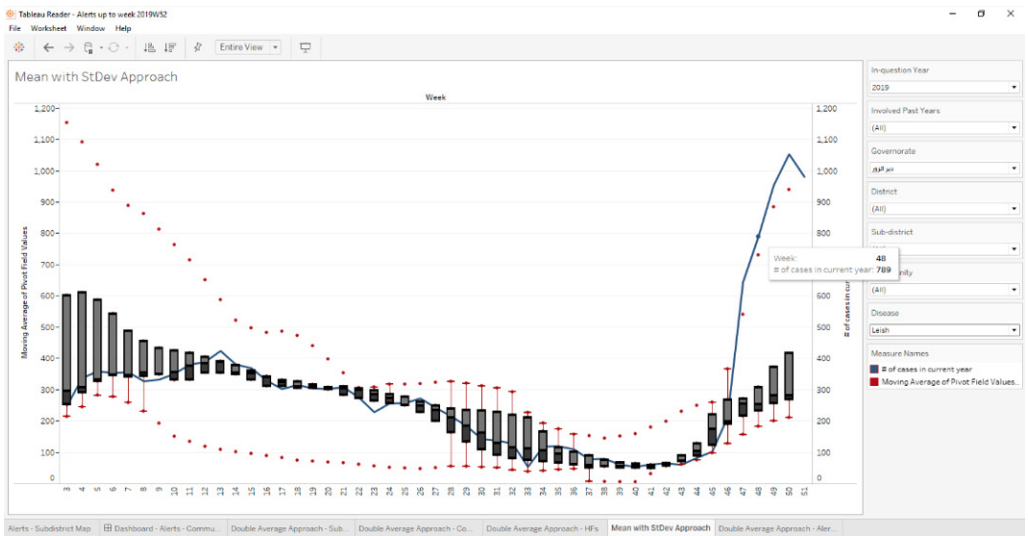


Figure 34: Mean and SD approach



The final classification of weekly alerts is done either centrally by monitoring epi-curve during the following weeks or after field verification.

Figure 35: Double average approach_HF level

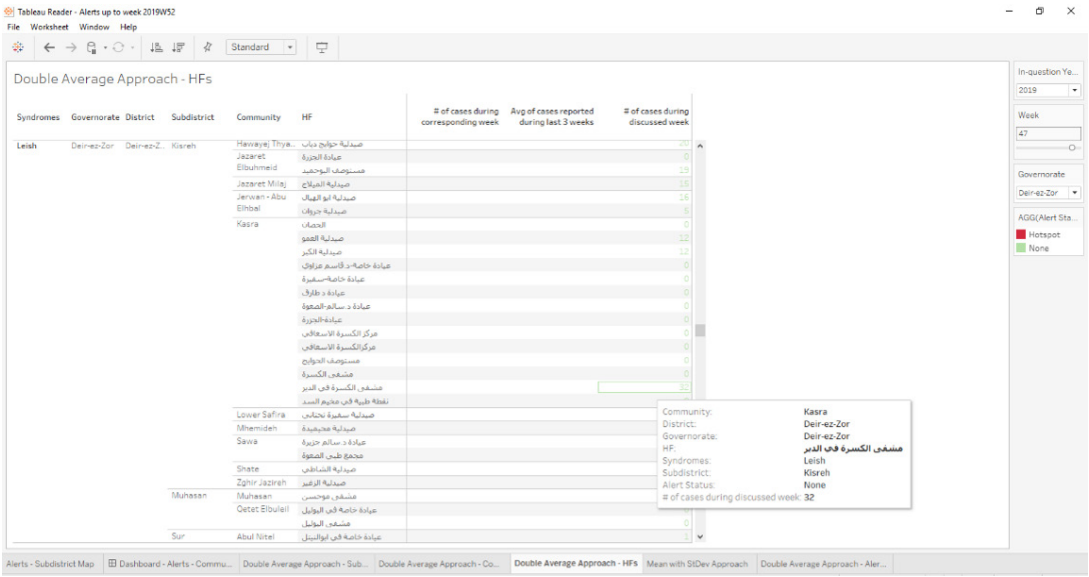
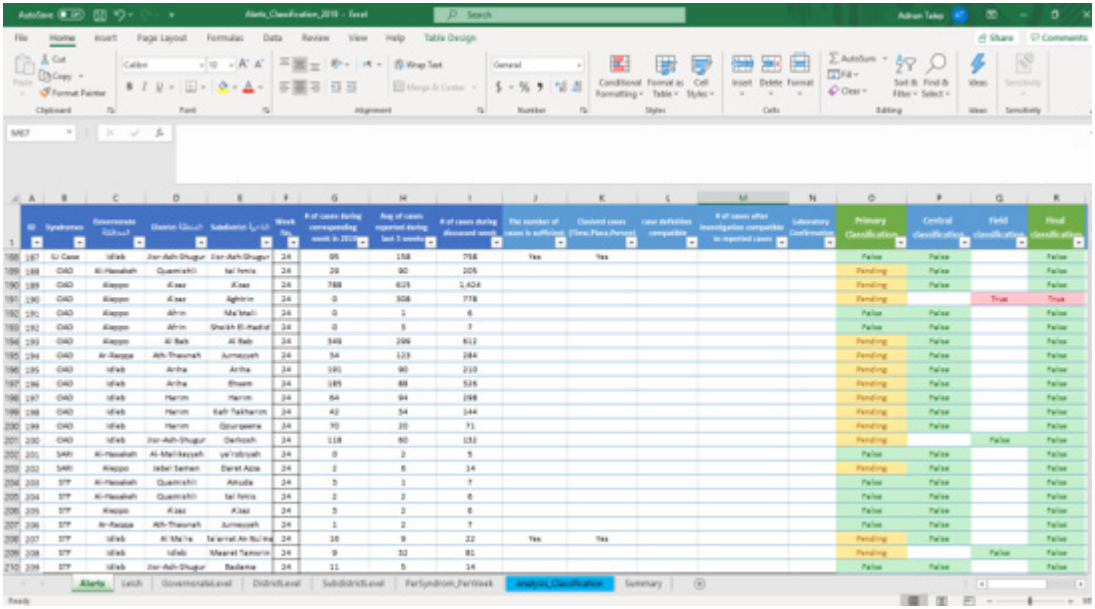


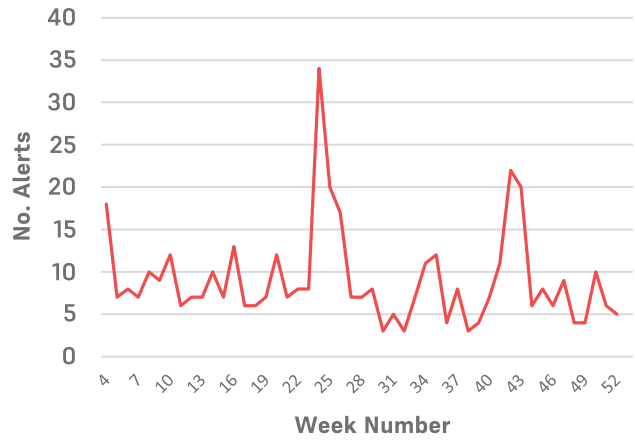
Figure 36: Alerts classification list



Distribution of weekly alerts according to the Epidemiological week

The next chart shows the number of alerts notified by the health facilities in 52 epi-weeks. The peak of the alerts was reported in Epi weeks 24, 25, and 26. Another peak was reported in Epi-weeks 42 and 43.

Figure 37: B-type alerts distribution by time

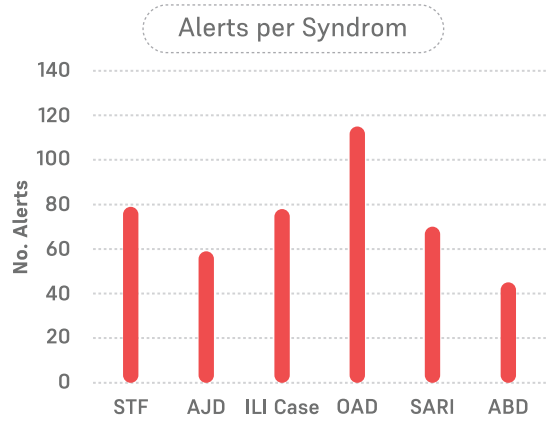


Distribution of weekly alerts according to the disease / syndrome

The alerts of waterborne diseases were the most notified alerts, with total number of **298**. While the alerts of acute respiratory diseases (ILI, SARI) were **148**.

Most of the syndromes notified were an OAD (115 alerts), then AJS (79 alerts) and ILI (78 alerts). ABD syndrome was the lowest (45 alerts).

Figure 38: B-type alerts distribution by syndrome/ disease



Distribution of weekly alerts according to the governorate and district

Most of the alerts were notified from Aleppo governorate (**209**), then Idleb governorate (**101**).

For distribution by district: Afrin district _ Aleppo governorate was the highest (91 alerts), then A'zaz district _ Aleppo governorate (41 alerts), and Quamishli district Al-Hasakeh governorate (40 alerts).

Figure 39: B-type alerts distribution by Governorate

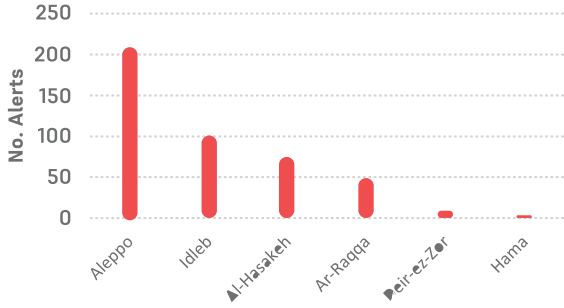
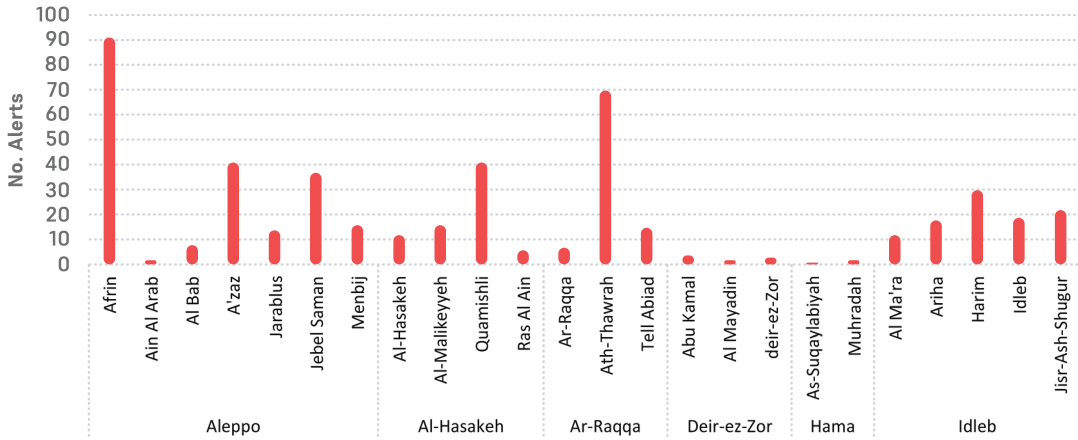


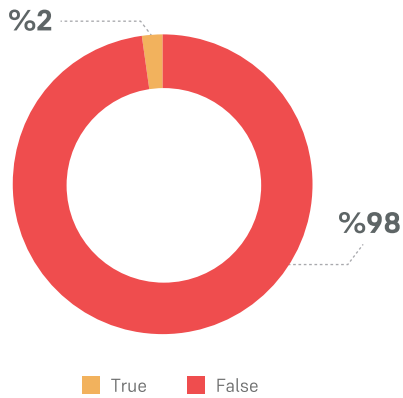
Figure 40: B-type alerts distribution by district



Weekly Alerts_Final classification

The final classification of 446 alerts that were received during 2019 on a weekly basis was: false alerts in 437 (98%), and true alerts in 9 (2%).

Figure 41: Final classification of the weekly



ALERTS VERIFICATION

During 2019, 74 alerts were verified in the field, the alerts were notified from different sources (health facilities, private clinicians, data entries, local councils, media, rumors … etc).

The method of verification must be easy and rapid (phone call, WhatsApp, field visiting…), and the source of the information must be relevant to the alert.

Figure 42: Alerts & outbreaks list

No.	Year	Epi-Week	Suspected Disease	Alert Type	Governorate	District	Sub-district	Community	Notification Source
1	2019	1	Mumps	Type B	Aleppo	A'zaz	Aghtrin	Oweilin	Health Facility
2	2019	3	LEISH	Type B	Ar-Raqqa	Ar-Raqqa	Ar-Raqqa		Private Clinic
3	2019	4	SARI	Type B	Aleppo	A'zaz	A'zaz	Salama	FLO

Alert Notification Date	Date Verified	Date Investigated	Alert Verified	Alert Verification Mean	Key Informant	Reported Cases
4-Jan-2019	5-Jan-2019	6-Jan-2019	Yes	Phone Call	Doctor	14
19-Jan-2019	20-Jan-2019		Yes	Phone Call	Others	35
21-Jan-2019	22-Jan-2019	22-Jan-2019	Yes	Personal Visit	Data Entry	131

Cases that fits the case definition	Clusterd cases (Time,Place,Person)	Alert Classification	Cases Sampling?	Sample Type	Cases' Lab Confirmation	Environmental Sampling
29	Yes	TRUE	Yes	Serum	Yes	No
35	No	FALSE	No			No
4	No	FALSE	No			No

Environmental Sampling	Environmental Sample's Type	Environmental Sample's Result	Reported Deaths	Outcome	Investigated By	Response-Indicator	Log data status
No			0	Outbreak	DLO	24 - 71	Completed
No			0	Alert	DLO	< 24	Completed
No			0	Alert	DLO	24 - 71	Completed

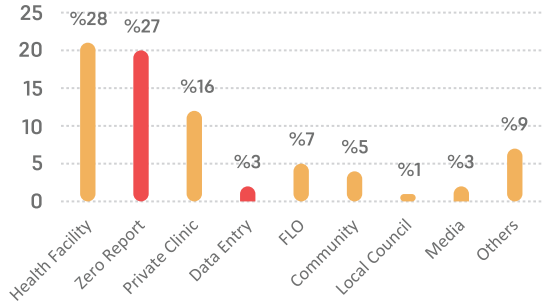
After verification, the alert is being classified as a true or false, thus the rapid response to be taken in case of a true alert. Finally, the investigator (DLO, RRO) sends the alert verification form to the central response officer.

Sources of notification

The alerts notified from the field were 54 alerts (73%), whilst the alerts showed in the weekly alert's tableau (zero report) were 20 alerts (27%).

Most of the notified alerts were submitted by health facilities (28%).

Figure 43: Sources pf notification

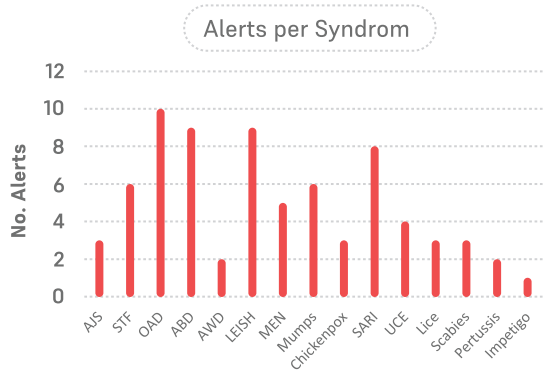


Distribution of verified alerts according to the syndrome type

Most of the verified alerts were OAD (10 alerts), then Leish & ABD (9 alerts for each).

The waterborne disease alerts were 39 (53%), whilst vaccine preventable disease alerts were 17 (23%).

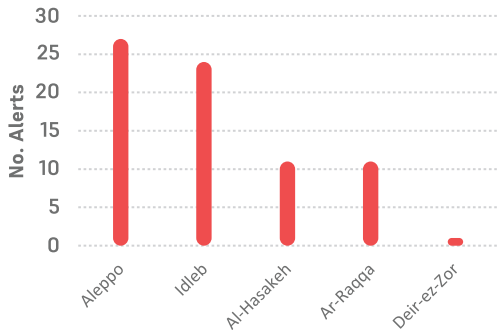
Figure 44: All alerts distribution by syndrome/ disease



Distribution of verified alerts according to the governorate

Most of the verified alerts were in Aleppo governorate with 27alerts, Idleb governorate 24 alerts, Al-Hasakeh & Ar-Raqqa governorate 11 alerts for each of them. In Deir ez zor only 1 alert was verified during 2019.

Figure 45: All alerts distribution by governorate



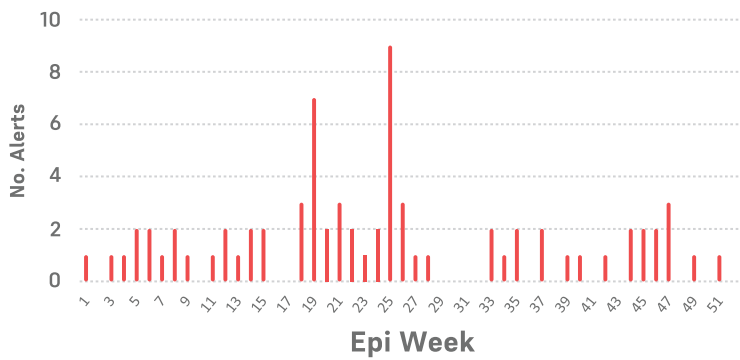
Distribution of verified alerts according to the epi-week

The next chart shows the number of verified alerts during 52 epi- weeks.

A peak is seen between epi weeks 25 and 29, another smaller peak is between epi weeks 48 and 51.

The verified alerts were during all epi weeks with a concentration in the period between week18 and 26.

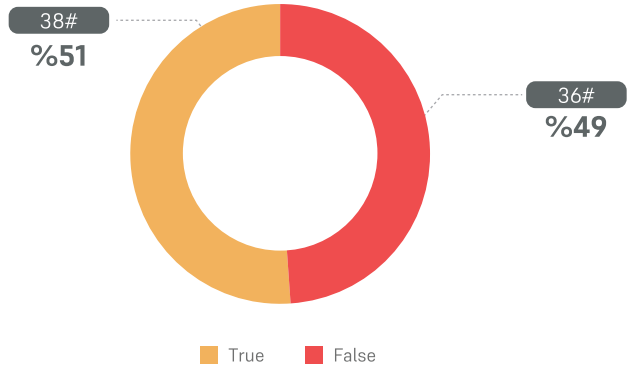
Figure 46: All alerts distribution by governorate by time



Verified alerts_Final classification

Among all verified alerts (74), the true alerts were 38 alerts (51%), whilst the false alerts were 36 alerts (49%).

Figure 47: Verified alerts classification

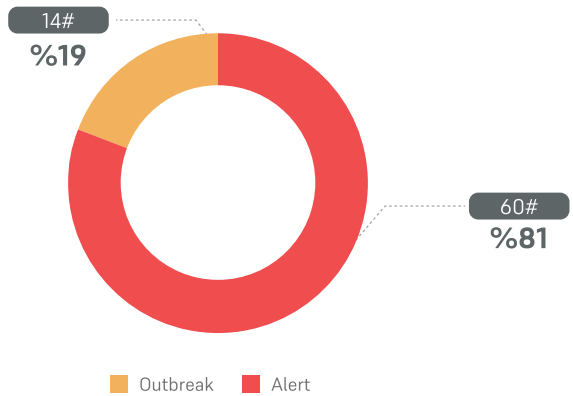


Verified alerts_Outcome

After verification of all the notification alerts, there were 14 outbreaks (19%).

The detailing of these outbreaks is in the subsequent paragraph.

Figure 48: Verified alerts outcome



OUTBREAKS MANAGEMENT

In 2019, more than **14 missions** were implemented, in addition to issuing detailed reports for them.

Field investigation procedures (Lab and environmental sampling) were carried out to confirm the outbreak and determine the source of infection, also other control procedures were taken (health awareness campaigns, medications for case management, WASH procedures including hygiene promotions distribution...etc).

The following table is a brief about the missions:

Table 18: The details of response missions_2019

Epi-Week	Disease / Syndrome	Governo-rate	District	Community	Lab specimen	Environ-mental Sample's	in Coordina-tion with	Actions taken
1	Mumps	Aleppo	A'zaz	Oweilin	Serum	-	Local Council - SIG	health awareness campaigns
5	Lice	Idleb	Idleb	Kafar amim	-	-	-	health awareness campaigns/ supply medications
7	Scabies	Ar-Raqqa	Ath-Thaw-rah	Al-Thawrah	-	-	Al Yamama Association/ Organizations Office	health awareness campaigns/ supply medications
8	Mumps	Aleppo	A'zaz	Dweibeq	Serum	-	Local Council - SIG	health awareness campaigns
8	LEISH	Aleppo	Jebel Saman	Kafr Naha	Derma-tological Smear	-	Local Council- WHO-MENTOR initiative	health awareness campaigns
12	Scabies	Ar-Raqqa	Ar-Raqqa	Karama	-	-	-	health awareness campaigns/ supply medications
13	Mumps	Idleb	Harim	Burj Elnumra	Serum	-	SIG- IDA	health awareness campaigns/ supply medications
14	Mumps	Ar-Raqqa	Tell Abiad	Ein Issa	Serum	-	Camp Management	health awareness campaigns
18	Chicken-pox	Idleb	Harim	Deir Hassan	-	-	-	health awareness campaigns
22	Typhoid Fever	Aleppo	Al Bab	Al Bab	Serum	Water	-	health awareness campaigns/ WASH
25	Acute Diarrhea	Aleppo	Jarablus	Zoghra	-	Water	Camp Management	health awareness campaigns
39	Impetigo	Idleb	Idleb	Idleb	-	-	Camp Management	health awareness campaigns/ supply medications/ Distribute the cleaning package
44	Impetigo	Idleb	Harim	Qah	-	-	-	health awareness campaigns/ supply medications
47	LEISH	Deir-ez-Zor	Al Mayadin	-	-	-	MENTOR initiative/ Together for Deir-ez-Zor organization/ health office	health awareness campaigns/ medications

Figure 49: IEC materials distribution in A'zaz camp

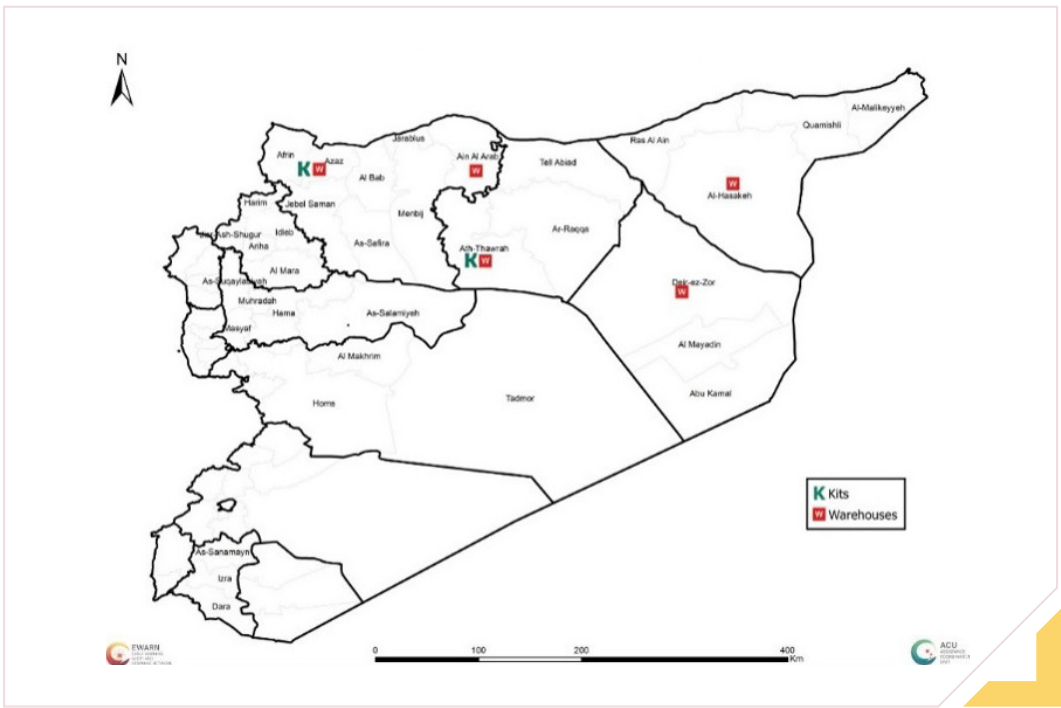
OUTBREAK PREPAREDNESS AND LOGISTICS

As outbreak investigation and response need many resources (transportations, specimen collection and shipment materials), the rapid response team was well equipped to set up the response plans, utilize standard protocols of case management, identify isolation sites for cases, as well as preposition the warehouses that contain the essential treatment kits. These procedures have been done through organizing the needed logistics, and well-trained outbreak control team (OCT).

- Warehouses were prepared (including cholera kits) to respond to any potential outbreaks. The number of warehouses during 2019 was 5 warehouses located in 4 governorates. Those warehouses contained the followings: medicines, consumables, personal protection equipment, medical devices, and awareness leaflets.
- Support field team with logistical supplies, each DLO is equipped with: laptop, internet device, mobile phone, reversed cold chain equipment (refrigerator, cold box, ice backs and generators), and other logistics (printer, projectors ...etc).
- Recruit logistics officers to facilitate the shipment of specimens and other needed materials. This includes vehicles and logistics services in Idleb.

The following map shows the distribution of warehouses and cholera kits in Syria during:

Map 19: Warehouses location_2019



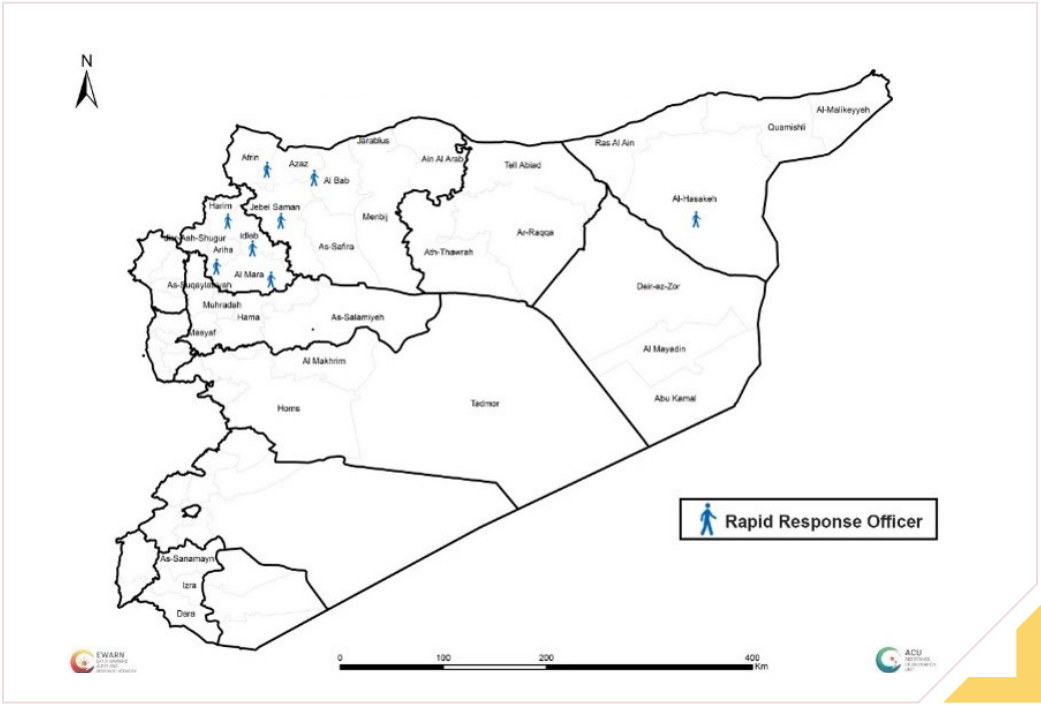
Section 03

RAPID RESPONSE TEAM (RRT)

The rapid response team is defined as members of EWARN who are ready to respond to any sudden event of epidemiological nature, they are trained on case definition and alert threshold, outbreaks and control procedures, each one of them is an essential member of the OCT in a pre-defined geographical area.
In general, their tasks and responsibilities are being identifies and updated during the outbreak repose. The followings are the roles and responsibilities of RRT:

- Provide logistical support to OCT: communication devices – getting the permissions from local authorities - investigation requirements.
- Provide essential supplies for a potential outbreak such as medicines, transportation media, personal protection equipment, investigation forms, educational & communication materials.
- Coordinate the activities of the OCT: participating in defining work plan and its trimline - field visit - daily meetings.
- Train the involved partners on appropriate protocols for treatment and prevention.
- Provide a daily report about their achievements to the team leader.

Map 20: Rapid Response members



EWARN LABORATORIES NETWORK

INTRODUCTION

The Epidemiological laboratory is a corner stone in any surveillance system. In EWARN, the main responsibilities are:

- Establish early diagnosis for diseases with high mortality and morbidity rates, thus to notify the central team in EWARN and health partners as early as possible.
- Improve the quality of surveillance by timely confirmation of any outbreak at any place to avoid the spreading of the outbreak.
- To have a national laboratory system with high diagnostic capacity.

The functions of Surveillance laboratories

- Strengthening the rapid response to outbreaks through timely testing of specimens and identification of the causative pathogens.
- Ensuring the capacity to process a large volume of specimens in an emergency.
- Training and continuing building capacity for laboratory personnel on laboratory techniques, use of equipment, appropriate and safe specimens' collection, storage and transportation of specimens.

EWARN LABS CAPACITY AND PERSONNEL

There are 4 surveillance laboratories with trained staff and standard equipment inside Syria, are located in different areas to facilitate accessibility, they are located in: Idleb city, Ar-Raqqa city, and two labs in rural Aleppo (Al-Atareb in western rural Aleppo, Jarablus lab in northern rural).

Those four labs are operated by a medical doctor who are specialized in laboratory diagnosis, and assisted by lab technicians, in addition to 4 employees for samples transportation from field to labs.

All of them were trained and provided with the equipment and supplies. Regular supervisory visits (whenever possible) are usually done by the central team to those labs on regular basis to review their performance and Update them of any new technologies.

Frequent inventory of lab supplies, equipment, and maintenance are regularly performed.

Figure 50: Al Atareb Laboratory

Table 19: The details of response missions_2019

Item Name	Quantity
Eliza Reader	1
Eliza Washer	1
Spectrophotometer	1
Hematology Analyzer Device	1
Blood culture device and culture bottles(only Jarablus Lab)	1
Real-time PCR (only in Idleb Lab)	1
Refrigirator 2-8 °C	1
Deep freezer -20 °C	1
Hot Air Sterilizer	1
Autoclave	1
Class- II Biosafety Cabinet	1
CO2 Incubator	1
BACTERIAL INCUBATOR +37°C	1
Ahaking Water Path with Thermostat	1
Water Distilation Device 2-4 L/hr	1
Binocular Microscope	1
Tube Centrifude	1
Hematocrit Centifuge	1
Electronic Balance (0.01-100 gr)	1
Vortex Mixer	1
PH Meter	1
Bunsen burner and accessories	1
Micropipettes(Different sizes)	Enough quantities
Culture media for stool culture	Enough quantities
Sensitivity discs kits, Petri dish	Enough quantities
Ziehl–Neelsen,Giemsa,and Gram stains	Enough quantities
Measuring cylinder, and glasses	Enough quantities
Laboratory consumables: (Tubs, syringes, Disinfectants and disinfectants...etc)	Enough quantities


EWARN

EWARN laboratories have the capacity to do lab confirmation for:

- Acute jaundice syndrome.
- Measles, Mumps, and Rubella.
- Salmonella typhoid fever.
- Acute watery and bloody diarrheal diseases.

Some labs are providing the support to:

- Check the Safety of blood transfusion.
- Screening of health care workers and hemodialysis patients.
- Clinical diagnosis of some diseases as per requested from clinicians.

Figure 51: Idleb Laboratory

In addition to in this year 2019, and in cooperation with organizations:

- Performing Sero-survey for HBV, HCV and HIV for 67 health workers & 341 patients in the Hemodialysis Centers in Idleb Governorate and Jarablus district with during two rounds at the beginning and end of this year. This survey was done in cooperation with the WHO.
- Safety testing for the harvested blood in Al-Atareb blood bank.
- Cooperating with private laboratories, hospitals and clinics for viral testing or confirming the findings of the tests performed in inaccurate methods.
- Setting up an Influenza laboratory by real-Time PCR technique in Idleb city.

The tests listed are available daily on a priority basis, with minimum delay, after receipt in the Laboratory, if less urgent tests are also ordered, a backlog may develop and each specimen will be processed in order of receipt, thereby delaying the reports for true emergencies, quality is ensured and testing is started according to a set time frame so that the results are shared, In a timely manner for the weekly bulletin, tests are completed within about 48 hours of receiving the sample for testing, certain tests such as stool culture take 3- to 5 days to complete.

The currently available tests in Each Laboratory are divided into 7 groups as following:

Table 20: The details of response missions_2019

Item Name	Quantity
Vaccine-preventable diseases Tests: Measles IgM, Rubella IgM, Mumps IgM, HBsAg	24-48 hours
Water-borne diseases Tests: HAV IgM, HEV IgM	24-48 hours
Stool culture for: Typhoid fever, Shigellosis, Vibrio Cholera	4 to 5 days
Hepatitis viruses (for Blood Banks) HIV, HCV, HBV, and Serological markers (HBs Ag, Anti HBs, Anti HBc)	24-48 hours
PCR To be functioned in February 2020	48-72 hours
Chemical and blood tests: Liver functions, Renal functions, Complete Blood Count	12-24 hours
Other tests: Ziehl–Neelsen stain for demonstration of acid-fast bacteria (suspected TB), Giemsa stain for Malaria and Leishmaniosis	12-24 hours

EWARN LABS 2019 ACHIEVEMENTS

The number of different tests which performed in 2019 were 7,211 analysis.

Table 21: The details of response missions_2019

Disease	Test	# tests	# +ve Results	% -ve Results
Measles	Measles IgM	424	226	53
Rubella	Rubella IgM	227	7	3
Mumps	IgM Mumps	253	184	73
Acute Jaundice Syndrome	HAV IgM	215	80	37
	HEV IgM	185	1	1
Hepatitis B	HBs Ag	2,337	197	8
Hepatitis C	HCV Abs	2,309	647	28
AIDS	HIV (1&2) Abs	1,219	5	0,4
Typhoid Fever	Salmonella IgM	30	15	50
	Stool culture for Salmonella	1	0	0
Meningitis	CSF culture for Meningococcal meningitis	11	0	0
Grand Total		**7,211**	**1,362**	**19%**

GRAND TOTAL

7,211
TESTS

1,362
+VE RESULTS

19%
-VE RESULTS

The 4 laboratories are functioning from 9:00 to15-00, Saturday to Thursday. The Specimens that previously collected are delivered to the labs by logistics employees when transportation service is available, the samples are hand-delivered to the Laboratory, with verbal notification of the specimen's arrival to ensure appropriate processing.

All laboratories have both Excel and paper registers for each disease.

All the specimens came with investigation forms and lab requests, and they are well documented with the results in both hard and soft copies in the lab's registration system, then sent via E-mail during a specific period of time (24-48 hours) to the laboratories coordinator at central team.

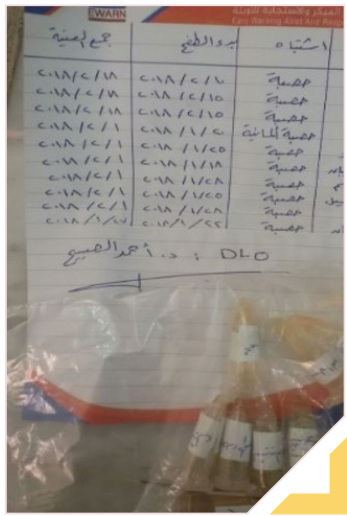
"Read-back" with confirmation of all results reports (including both state and critical values) is being reviewed to verify values and assure accuracy by laboratories coordinator, in order to achieve surveillance goals. Finally, results are sent to the DLOs directly from the central level by E-Mail, or WhatsApp.

The patient usually receives his laboratory results from his physician who previously request the test for him.

Table 22: The details of response missions_2019

Syndromes	Pattern analysis	No. of Samples	No. of positive samples	Place of positive sample
Measles	Measles IgM	10	4	2 Afrin, 2 Jarablus
Rubella	Rubella IgM	6	All suspected samples for Rubella IgM were negative	
AJS	HAV IgM	5	184	73
Mumps	HEV IgM	3	2	2 Idleb
	HEV IgM	185	All Hepatitis E suspected were Negative for HEV IgM	

Figure 52: Idleb Laboratory



Challenges

- Lack of funding and logistical support for laboratory issues in general, and for upgrade the available equipment in specific.
- Poor infrastructure, power suppling problems and lack of basic equipment and consumables.
- Shortage in qualified trainers and training activities for the lab field team, and shortage in qualified technicians for equipment maintenance.
- Unavailability of Universal control.
- Borders problems (needed documentation and security) that leads to delay or inability to ship all needed materials.

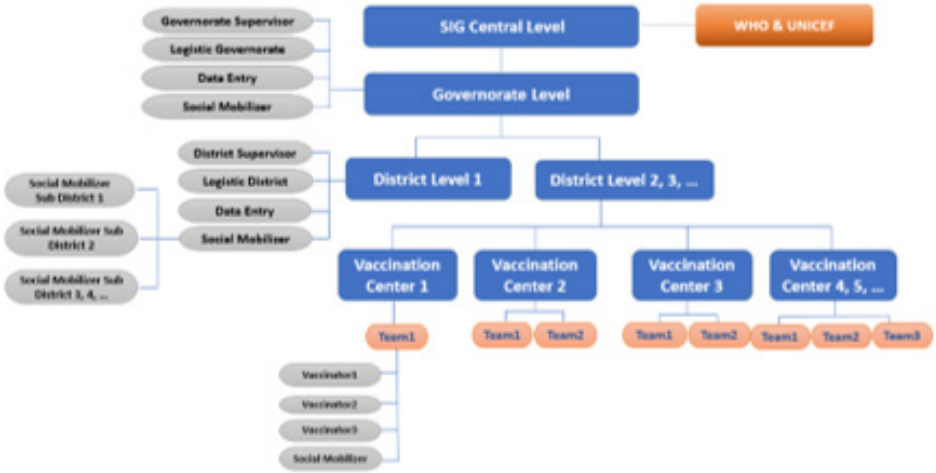
Future Plan

- Activate Real Time- PCR and the blood culture.
- Seeking for financial support for continuous training in immunology and macro-biology field to add it in EWARN scope of tests.
- Increase the capacity of EWARN lab staff inside Syria.
- Refresh the training about laboratories safety procedures.
- Continue providing regular maintenance for the current lab's equipment and ensure back-up equipment is available to keep the lab Response and related Logistic activities are functioning.

VACCINATION ACTIVITIES

Immunization program in EWARN is considered as essential part of technical committee of SIG (Syrian Immunization Group) co-chaired by WHO and UNICEF, the responsible foe implementing all vaccination activities (supplementary immunization activities (SIAs) and routine immunization (RI)) in all accessible areas of Syria.

Figure 53: Structure of SIG



MAIN TASKS

- Planning for all vaccination activities in coordination with SIG / WHO.
- Receive the required vaccines & logistics in coordination with UNICEF; and deliver them to central warehouses in each governorate.
- Participation in designing and printing IEC materials for social mobilization activities in coordination with UNICEF.
- Conducting TOT, primary and refresh trainings for supervisors and service providers according to WHO criteria.
- Monitor the implementation of activities and follow up outputs.
- Prepare and publish final reports.

Participate with SIG since the beginning of 2019 in planning, supervision and coordination on the following activities:

- Three rounds of polio campaign (OPV) in all accessible areas.
- Completing the revitalization of the Expanded Program Immunization (EPI) in Aleppo, Idleb and Hama governorates.

ROUTINE IMMUNIZATION (RI) CENTERS

The total number of EPI centers in northern Syria was 33 after rehabilitation of new 8 centres during 2019 (20 in Idleb ,9 in Aleppo, 4 in Hama). Those centres are supported by EWARN according to micro-plan which is detailed in the following table:

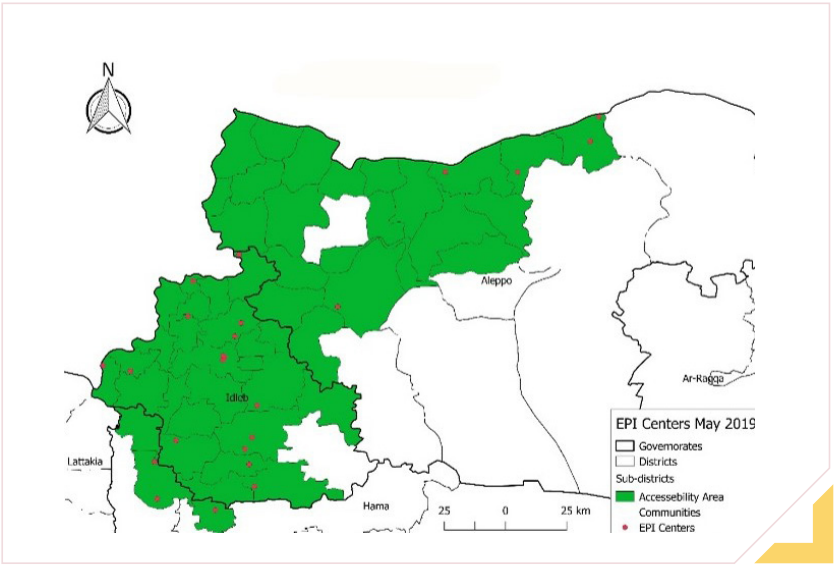
(It should be noted that many teams and centers were relocated into new more safe sites as a result of the security situation and changing of control forces in the field).

Table 23: RI Centres supported by EWARN during 2019

Governorate	District	Center_Name_EN	Implementing Partner	U1 Monthly Target 2019	U1 Yearly Target
Aleppo	Jarablus	Ain Albaida	ACU	98	1,176
Aleppo	Al Bab	Albab 2	ACU	150	1,800
Aleppo	Al Bab	Ar-Ra'ee	ACU	64	768
Aleppo	Afrin	Beit Adin	ACU	40	480
Aleppo	Afrin	Bulbul	ACU	40	480
Aleppo	Afrin	Jalma	ACU	100	1,200
Aleppo	Jarablus	Jarablus	ACU	259	3,108
Aleppo	Jebel Saman	Khan tuman	ACU	110	1,320
Aleppo	Jarablus	Tal Elhajar	ACU	50	600
Hama	As-Suqaylabiyah	AlGhab (Hawash) / Zardana	ACU	90	1,080
Hama	As-Suqaylabiyah	Almestriha / Aqrabat1	ACU	56	672
Hama	Muhradah	Kafarzeta/ Alsalam	ACU	61	732
Hama	As-Suqaylabiyah	Qalet Almadique / Aqrabat2	ACU	122	1,464
Idleb	Idleb	Abi Zar PHC	ACU	145	1,740
Idleb	Jisr-Ash-Shugur	Al Janodia	ACU	75	900
Idleb	Al Ma'ra	Alteh/Aldana2	ACU	62	744
Idleb	Idleb	Althaoura PHC	ACU	317	3,804
Idleb	Harim	Armanaz	ACU	81	972
Idleb	Harim	Atmeh2	ACU	262	3,144
Idleb	Al Ma'ra	Deir Sharqy	ACU	92	1,104
Idleb	Al Ma'ra	Ejaz /Alghadphe	ACU	65	780
Idleb	Harim	Ezmarin	ACU	82	984
Idleb	Harim	Harim	ACU	142	1,704
Idleb	Al Ma'ra	Heish / Atmeh 2	ACU	88	1,056
Idleb	Idleb	Hie Al jamealha	ACU	117	1,404
Idleb	Idleb	Kafar yahmool	ACU	132	1,584
Idleb	Al Ma'ra	Kafr Oweid / Abi Zar PHC	ACU	95	1,140
Idleb	Idleb	Khan Alsebel	ACU	92	1,104
Idleb	Jisr-Ash-Shugur	Kherbet Al Jouz	ACU	160	1,920
Idleb	Al Ma'ra	Maaret Hurma	ACU	95	1,140
Idleb	Idleb	Maaret Mesrin	ACU	115	1,380
Idleb	Al Ma'ra	Tal Mennes	ACU	95	1,140
Idleb	Al Ma'ra	Tamana'a/Hazzano	ACU	39	468
Total				**3,591**	**43,092**

EWARN team usually coordinates the work in all the centres, supervise the implementation, follow up the results, and publishes the monthly technical report.

Map 21: EPI centers distribution map (May-December)



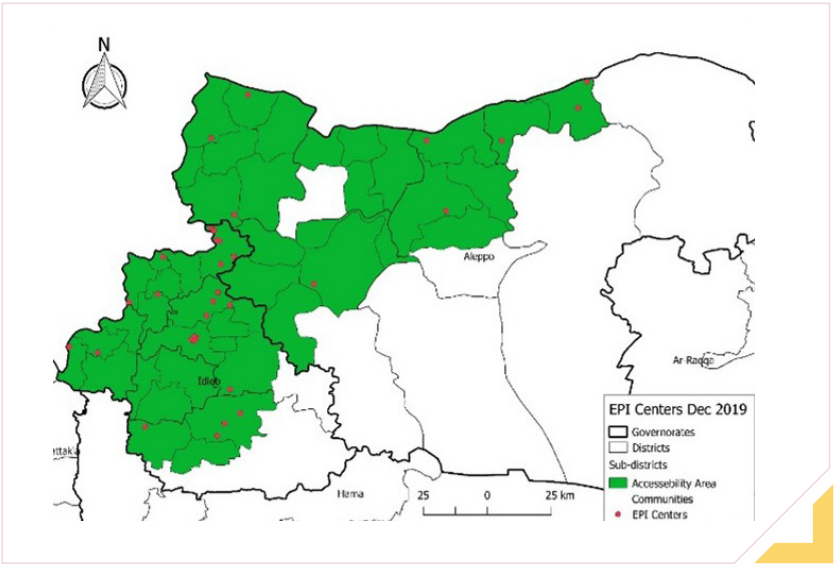


Table 24: EPI Total Coverage Report - 2019

Vaccine	< [1Y] Total	< [2Y] Total	Coverage	>[2Y] Total	Total Vaccinated
BCG	40,526	40,526	94%	-	40,526
Hep(B)	12,695	12,695	29%	-	12,695
Protected children	29,760	29,760	89%	-	29,760
Unprotected ch.	3,655	3,655		-	3,655
OPV1	37,433	39,944	87%	1,037	40,981
OPV2	34,028	39,104	79%	1,639	40,743
OPV3	29,429	40,455	68%	2,513	42,968
OPV4	-	29,672	0%	8,196	37,868
IPV1	39,419	41,681	91%	32	41,713
IPV2	35,812	37,131	83%	51	37,182
Penta1	39,485	42,153	91%	1,098	43,251
Penta2	35,937	41,320	83%	1,729	43,049
Penta3	30,971	42,601	72%	2,659	45,260
Penta4	-	31,394	73%	8,584	39,978
MR1/MMR1	-	40,267	93%	3,065	43,332
MR2/MMR2	-	32,739	76%	8,292	41,031
Vit(A)1*	0	14	0%	0	14
Vit(A)2*	0	0	0%	0	0

* During 2019, Vit A was provided only with the vaccination campaigns

Table 25: Tetanus Vaccine Total Coverage Report - 2019

	1 Dose	2 Dose	3 Dose	4 Dose	5 Dose	Total
Pregnant	39	42	668	2,589	12,728	16,066
Unpregnant	97	99	1,309	2,792	6,835	11,132

Figure 54: Supervision visit of Althaoura center _Idleb

Figure 55: RI in Al-Jameaha center _Idleb

Table 26: Annual plans VS achievement _ 2019

Year	Planed (EW-ARN)	Implemented (EWARN)	Total (SIG)	% of Total
2017	10	14	56	25%
2018	20	24	91	26%
2019	30	33	101	33%

Table 27: Annual plans VS achievement _ 2019

Governorate	Centers	Teams	Annual Target U1Y	# Monthly Fixed Sessions	# Monthly Out-reach Sessions
Aleppo	9	10	10,452	960	1,812
Idleb	24	27	34,512	1,632	2,784
Total	33	37	44,964	2,582	4,596

SIAS (SUPPLEMANTRY IMMUNIZATION ACTIVITIES)

EWARN team have participated in 3 vaccination campaigns (Polio) during 2019, all the details of those campaigns are detailed in the table below:

Table 28: Supplementary Immunization Activities- 2019

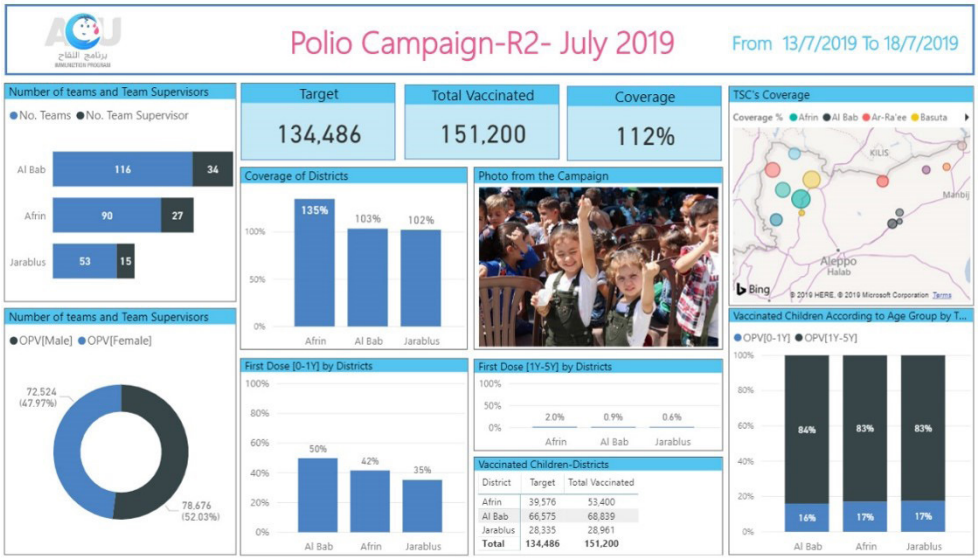
Activity	District	Date / Month	Target	Vaccinated	Coverage
Polio Campaign round 1	Al Bab	Jan	64,314	64,225	100%
Polio Campaign round 2		July	66,575	68,839	103%
Polio Campaign round 3		December	66,575	69,130	104%
Polio Campaign round 1	Jarablus	Jan	28,335	28,317	100%
Polio Campaign round 2		July	28,335	28,961	102%
Polio Campaign round 3		December	28,335	28,886	102%
Polio Campaign round 1	Afrin	Jan	39,386	43,384	110%
Polio Campaign round 2		July	39,576	53,400	135%
Polio Campaign round 3		December	53,400	55,761	104%
Grant Total			**148,310**	**153,777**	**104%**

Attend daily meetings with SIG, WHO and QRC to discuss campaign results and team performance.

Figure 56: Polio vaccination campaign_Al Bab

Figure 57: School immunization by A-Salam center team

Figure 58: Polio vaccination campaign Round 2_ Interactive Dashboard



SIAS (SUPPLEMANTRY IMMUNIZATION ACTIVITIES)

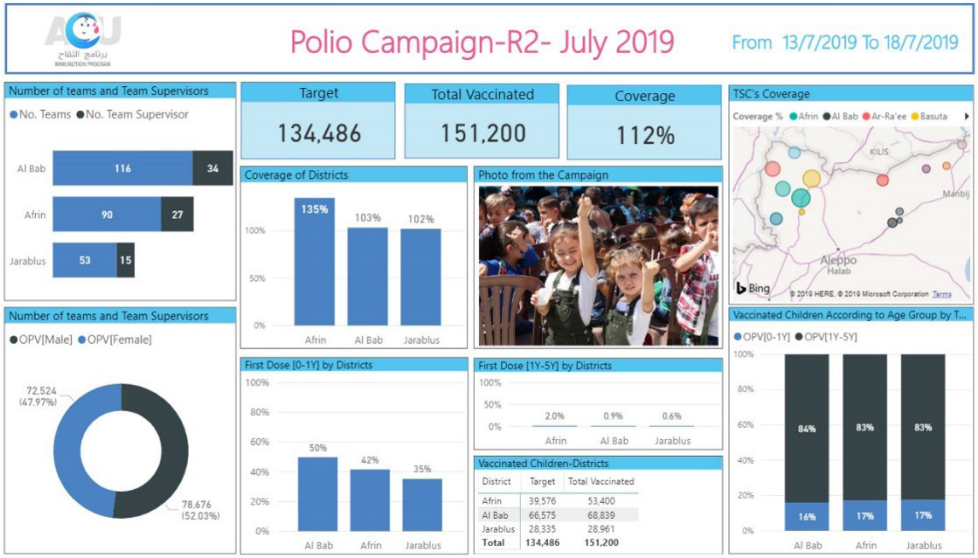
EWARN team has effectively contributed to vaccination activities (SIAs, RI) through staff trainings:

- Refresh training on EPI for all service providers (136 trainees / 4 training groups).
- Basic (detailed) training on EPI for the new service providers (12 trainees / 1 training group) in November.

Table 29: Refresh Training Groups_2019

Group	Site	Males	Females	No. of Trainees
1	Afrin	16	18	34
2	AFRIN	24	8	32
3	AFRIN	23	13	36
4	Jarablus	14	9	23
Grand Total		**77**	**48**	**125**

Figure 58: Polio vaccination campaign Round 2_ Interactive Dashboard



TRAINING & BUILDING CAPACITY

EWARN team has effectively contributed to vaccination activities (SIAs, RI) through staff trainings:

- Refresh training on EPI for all service providers (136 trainees / 4 training groups).
- Basic (detailed) training on EPI for the new service providers (12 trainees / 1 training group) in November.

Figure 59: Refresh Training RI Supervisors _ Nov 2019

Figure 60: Refresh Training of RI teams_ Oct 2019

Table 30: Refresh Training Groups_2019

Group	Site	Males	Females	No. of Trainees
1	Afrin	16	18	34
2	Afrin	24	8	32
3	Afrin	23	13	36
4	Jarablus	14	9	23
Grand Total		**77**	**48**	**125**

SUPERVISION ON EPI CENTERS DURING 2019

- Monthly visits conducted by Central supervisors for some of EPI centers (14 visits).
- Continuous filed fellow up and monthly Visits conducted by 2 liaison officers to all centers.
- Online technical & administrative daily following-up to all centers (WhatsApp, Skype and Telegram groups).

COMMUNICATION FOR DEVELOPMENT (C4D)

Before the start of each campaign, several activities of social mobilization are carried out in order to inform the people about the campaign and to raise up the community awareness on importance of vaccination for children.

Many activities were planned to promote vaccination campaigns via advocacy meetings, lectures, school activities and distribution IEC materials with key messages.

All social mobilization activities are continuous and periodic, in cooperation with the Syria immunization group (SIG).

Monitoring all dropouts' children by WhatsApp, Facebook, and home visits and encouraging to continue all doses of vaccines.

Figure 61: Refresh Training RI Supervisors _ Nov 2019

Figure 62: Refresh Training of RI teams_ Oct 2019

Challenges

Security situation and switch of access maps:

- Some centres came out of service due to direct airstrikes targeting (some staff were injured).
- Cancelling or postponing of some sessions.
- Some centres were partially or completely stopped.
- Changes in targets, plans and centres' name due to population displacement and re-locating some EPI centres.
- Difficulty in following Dropouts due to loss of contacts and change of their addresses continuously.
- Difficulty in social mobilizing activities due to continuous people movements.

Logistic difficulties:

- Crossing the borders by supervisors.
- The need for more logistical services, especially when many centers are relocated, or when a new center is prepared to be functional.
- Difficulties in securing diesel and team transportation vehicles.
- The absence of unified ID for the population in the field.

Future Plan

- Involvement of DLOs, FLOs and EWARN staff in vaccination activities, especially raising awareness of vaccine importance and dealing with refusal cases.
- Building a unified database for all EPI centres.
- Hiring a data entry for each EPI centre.
- Hiring a Logistician at the district level.
- Continuous training and information updating for all centres according to the WHO recommendations.
- Doing the needed efforts to include other vaccines such as Chickenpox, Pneumococcus, Meningococcal, and Hepatitis A.
- Increase coordination with all health care workers, medical staff and other health programs (nutrition surveillance) to raise awareness about the vaccine importance.
- Increasing coordination with the education sector to raise coverage of school vaccination activities.
- Intensifying supervisor visits due to its impact in enhancing the provided service.

Section 03

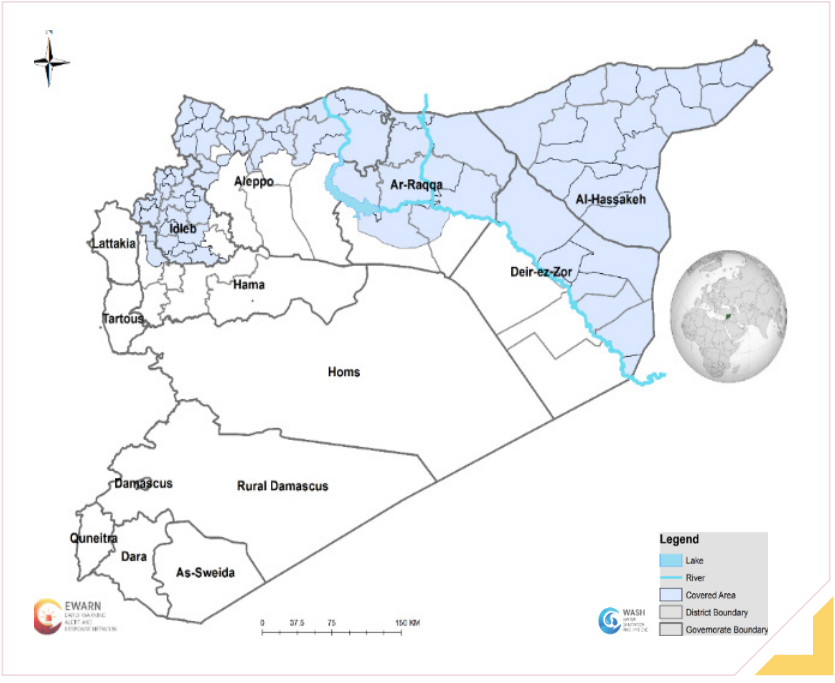
WASH (WATER, SANITATION AND HYGIENE)

INTRODUCTION

WASH team was established in June 2013. The program focused on the training of staff working inside Syria within the sector of drinking water quality. Training courses were conducted on how to do chemical and biological analyzes of water using portable analysis devices inside Syria.

The team has 27 staff members (3 at the central level and 24 at the field level) covering 6 governorates (Aleppo, Idleb, Hama, Raqqa, Dier Ezzor and Alhasaka) in line with the expansion of the early warning and response network (EWARN) and has a clear and strategic work plan coordinated with other network programs.

Map 22: WASH coverage map Dec_2019



WATER QUALITY MONITORING

This activity will ensure the implementation of the water safety plan (WSP) adopted by the World Health Organization (WHO) and the International Water Association (IWA) and it be at three levels:

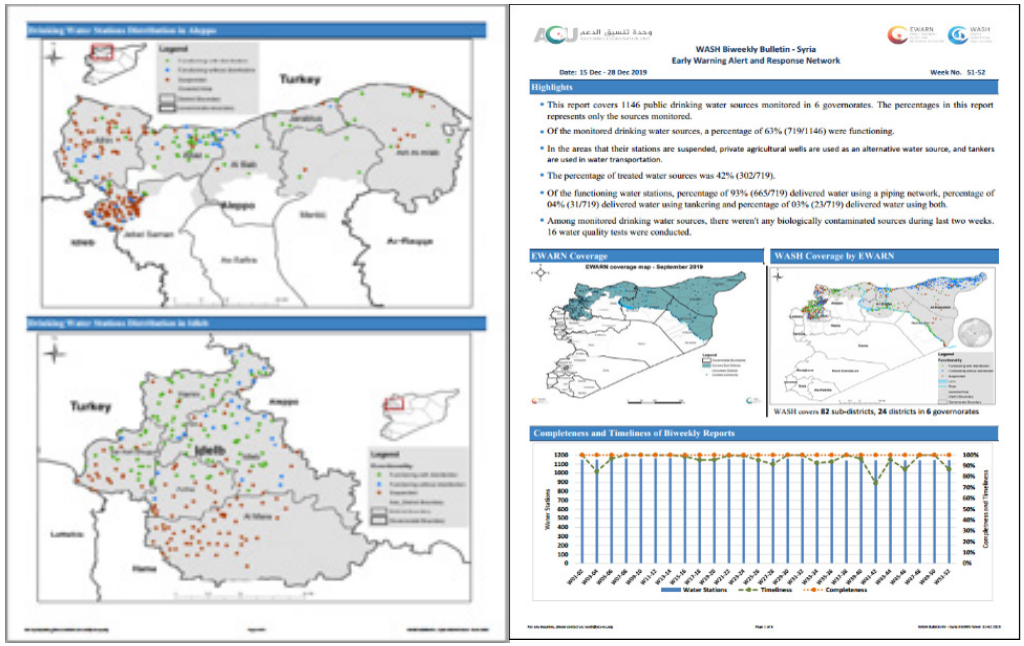
Monitoring of drinking water sources

WASH staff monitor the functionality of the water stations that feed the communities with potable water. If the stations stop, WASH officer warns about the alternative sources used (tanks, agricultural wells ...), Then these sources are tested through mobile laboratory (Total coliforms – e-coli) to investigate of sewage pollution

Number of stations monitored during the year 2019 per month 1144 water stations in 6 Governorates, and WASH program issue semi-monthly bulletin on a regular basis.

WASH staff are doing laboratory analyzes of the new water resources that local organizations and local councils are using in supplying of drinking water, water quality reports for each water source are done.

Figure 63: Semi_Monthly WASH Bulletin



Monitoring the sterilization of drinking water

The free residuals chlorine (FRC) test is carried out to evaluate the effectiveness of the sterilization process at the three levels (water source, transporter, container) means (station - household and network) to reduce the spread of waterborne diseases

During the year 2018, the water plants in Aleppo, Idleb, Raqqa and Hama governorates were supplied with calcium hypochlorite.

During 2019, the Governorates of Aleppo, Idleb, Ar-Raqqa, and Hama were supplied with calcium hypochlorite, whereas Afrin water station was supplied with Alum to improve water quality.

The houses and camps in the governorates of Aleppo, Idleb, Ar-Raqqa, and Deir ez zor were supplied with tablets.

Figure 64: Portable Lab

Monitoring of water transporter to homes

Determination of the method of delivery of water (regular network - tanks), the transport using tankers is more susceptible to bacterial contamination than transport using regular networks.

Through the testing of samples of drinking water in the network and houses, the situation was rather good in comparable with the previous years, because of the stabilization in the north of Syria.

Mixing of drinking water with sewage was reported in Maraand -Jisr Al-Shughour District- Idleb governorate. The problem was solved by rehabilitation of sewage network there.

PARTICIPATION IN WBDS RESPONSE MISSIONS

WASH staff participated in many missions for investigation of water contamination, and they were a part of the response as well.

Table 30: The details of WASH missions in health sectors_2019

Mission	Governorate	District	Location
OAD Investigation	Idleb	Harim	Al-Dana camp
OAD Investigation	Al-Hasakeh	Qamashli	Tal Hamis
OAD Investigation	Aleppo	Al Bab	Al Ewaa camp
OAD Investigation	Aleppo	Jarabuls	Zoghara camp
OAD Investigation	Idleb	Jisr Al-Shughour	Al Maland village
OAD Investigation	Idleb	Harim	Qah camp
STF Investigation	Aleppo	Al Bab	Al Bab city
Leishmaniasis Investigation	Aleppo	Jabal Samaan	Kafer Naha village

TRAINING AND CAPACITY-BUILDING

WASH Program is conducting training and raising the capacity of the public health workers. During 2019, many training courses were implemented.

Table 31: The details of WASH training activities for NGOs_2019

Training	Targeted participants	No. of trainees	Place	Date
Water system design	CLOs + NGOs	18	Istanbul	14 – 18 Jan
Water quality & WBDs	NGOs	5	Ar-Raqqa	17 – 18 March
Water quality	WASH officers	12	Afrin	25 – 26 April
Water quality & WBDs	NGOs	14	Idleb	22 – 23 Jun
WASH Assessment	WASH officers	12	Ath-Thwarah	26 – 27 July
Water quality & WBDs	Local councils	32	Afrin	17 Sep
QGIS	Local councils	28	Kafr Takharim	16 – 20 SEP
WASH Assessment	WASH officers	12	Afrin	9 – 10 Nov
Water quality & WBDs	NGOs	10	Harim	23 Dec
Water system design	CLOS + NGOS	18	Istanbul	19 – 23 DEC

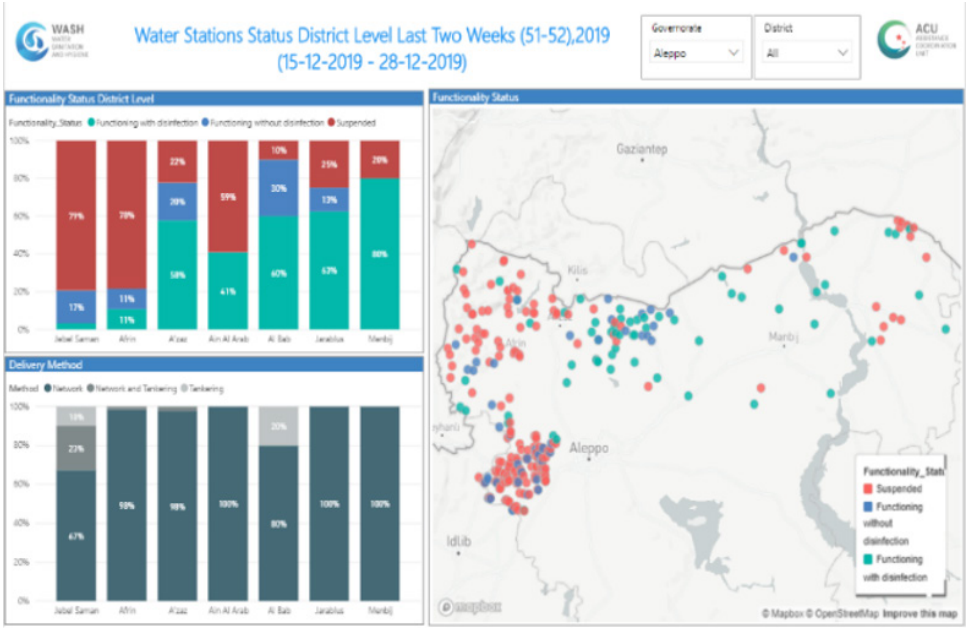
Figure 65: NGOs training in Kafr Takharim_ Sep 2019

Figure 66: Training in Turkish Water Institute _ Istanbul Dec 2019

COORDINATION WITH WASH SECTOR

In the monthly WASH-cluster meeting, WASH team present the numbers and cases of waterborne diseases with their locations. Then the coordination with the organizations operating in these areas to increase water sterilization procedures, promote hygiene and distribute hygiene kits.

Figure 67: Water stations status interactive dashboard



IMPLEMENTATION OF ACTIVITIES IN WASH SECTOR

WASH Program implements some activities that support public health measures, such as hygiene campaigns, supporting the repair of some water stations, distribution of health awareness brochures.

Table 32: The details of WASH missions in WASH sector _2019

Mission	Governorate	District	Location
Maintenance of water station	Idleb	Al Ma'ra	Kafr Sajna
Maintenance of water station	Aleppo	Afrin	Al Mohamadea
Maintenance of water station	Aleppo	Afrin	Deir Ballut
Maintenance of water station	Hama	Maharada	Al-Latamneh
Maintenance of water station	Idleb	Ariha	Motaram
Maintenance of water station	Idleb	Jisr Ash-Shughur	Maraand
Maintenance of water station	Idleb	Ariha	Banin
Maintenance of sewerage network	Idleb	Ariha	Belyoun
Maintenance of reservoir of water	Hama	Muhrada	Latmana
Maintenance of water tank	Idleb	Al Ma'ra	Ein Elzarqa
Implementation of a solid waste management campaign	Aleppo	Afrin	Afrin
Implementation of a solid waste management campaign	Aleppo	Afrin	Jandairis
Implementation of solid waste management campaign	Aleppo	Afrin	Sheikh El-Hadid
Maintenance of water station	Idleb	Idleb	Maaret Tamsrin

Figure 68: WASH assessment in Qah camp_ Aug 2019

Figure 69: Maintenance of water network in Belyoun _July 2019

Challenges

- Absence of the coordination among of NGO's inside Syria.
  Lack of governance for WASH sector.
- Immigration of most of Syrian WASH specialist.
- Security issues in eastern governorates reflect on the training face to face, so Skype is used for training.

Future Plan

- Enhancement water quality surveillance.
- Increasing communication with stakeholders in WASH sector.
- Increasing the number of the trainees in WASH sector.
- Using of modern electronic techniques and enhancing electronic surveillance, especially Tableau, QGIS and Power BI.

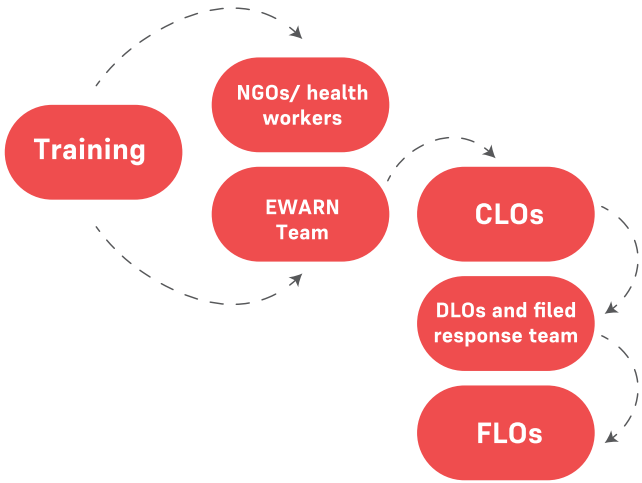
SECTION

04

BUILDING CAPACITY AND ADVOCACY

Training is an essential cornerstone in EWARN, with a vital objective in order to strengthen the surveillance and response system (EWARN) for communicable disease in Syria through capacity building of EWARN and NGO staff, and include raising awareness for both local communities and health workers about communicable disease prevention. The training coordinator keeps al the scientific materials updated and provides the trained staff with the power point presentations; the training materials and tools are reviewed to suit the targeted trainees.

Figure 70: Training categories in EWARN



The donors for Training's Activities during 2019 are BMGF and WHO.
The training of Health workers with NGOs was planned and implemented according to both accessibility and control forces, thus, it was divided according to that into North West (NW) and North East (NE).

Section 04

NGOS HEALTH WORKERS' TRAINING

NORTH WEST NGOS / HEALTH WORKERS TRAININGS

That's including: Idleb, Hama, and some districts of Aleppo governorate (Afrin – A'zaz – Al Bab- Jebel Saman - Jarablus).

Strengthening role of Rapid Response Teams in Alert Management by using EWARS-in-a-box

323 health workers were trained from different organizations, in addition to FLOs and RRT. It was funded by WHO through Midmar organization.

The topics were:

- Role of EWARS-in-a-box in alert management and response.
- Role of RRTs in alerts management using EWARS-in-a-box in both desktop and mobile phone.

Figure 71: NGOs Training _ Idleb

Table 33: Strengthening role of RRT in Alert Management using EWARS Training / Health workers in NW_2019

Participants Area	Training place	No. of Male participants	No. of Female participants	Date
Idleb	Idleb Health Directorate	12	0	19 Mar
Idleb	Idleb Health Directorate	27	10	23 Mar
Idleb	Bab Al-Hawa	16	0	21 Mar
Idleb	Bab Al-Hawa	29	2	18 Mar
Idleb	Bab Al-Hawa	23	0	27 Mar
Idleb	Bab Al-Hawa	16	5	28 Mar
Idleb	Bab Al-Hawa	32	2	30 MAR
Idleb	Ain Al Baida	18	0	24 Mar
Aleppo	A'zaz	24	5	21 Mar
Aleppo	Afrin	24	7	20 MAR
Aleppo	Al Bab	31	0	22 Mar
Hama	Hama Health Directorate	28	0	23 Mar
Hama	Hama Health Directorate	12	0	26 MAR
Grant total		**292**	**31**	

Leishmaniasis Surveillance & Response

551 health workers were trained from different organizations in addition to FLOs. It was funded by WHO through Midmar organization.

The topics were:

- Leishmaniasis Global & Regional Burden.
- Types of parasites, life cycle of parasites, vectors, and Mode of disease transmission.
- Visceral leishmaniasis: Symptoms & Signs.
- General management protocols.
- Cutaneous leishmaniasis.
- Surveillance of leishmaniasis.
- Global Leishmaniasis Program reporting formats.
- Leishmania-case detection strategies.
- Response activities in outbreak situation.

Table 34: Strengthening role of RRT in Alert Management using EWARS Training / Health workers in NW_2019

Governorate	Training place	No. of Male participants	No. of Female participants	Date
Idleb	Idleb Health Directorate	40	23	5&6 Mar
Idleb	Idleb Health Directorate	40	3	7&11 Mar
Idleb	Idleb Health Directorate	22	5	9 Mar
Idleb	Idleb Health Directorate	16	1	10 Mar
Idleb	Bab Al-Hawa	51	10	4&5 Mar
Idleb	Bab Al-Hawa	48	3	4&11 Mar
Idleb	Bab Al-Hawa	32	6	5&6 MAR
Idleb	Bab Al-Hawa	28	10	6&7 Mar
Idleb	Ain Al Baida	30	5	11 Mar
Hama	Hama Health Directorate	18	3	12 MAR
Aleppo	A'zaz	34	3	16 Mar
Aleppo	Afrin	36	28	4&5 Mar
Aleppo	Al Bab	37	4	15 MAR
Aleppo	Jarablus	13	2	14 Mar
Grant total		**445**	**106**	

Surveillance and Response for Water Borne Diseases

378 health workers were trained from different organizations in addition to FLOs. It was funded by WHO through Midmar organization.

The topics were:

- Water Borne Disease Surveillance Status in Northern Syria.
- Syndromic Approach to manage common water-borne diseases in Northern Syria.
- Investigation of Water Borne Disease Outbreak.
- Acute Watery Diarrhea (Suspected Cholera), Emergency Cholera Preparedness and Response planning and operation.
- Epidemiological studies in waterborne outbreaks.
- Risk Communication and Social Mobilization in waterborne disease outbreak.
- Coordination &Medical Supplies Management.

Table 35: Surveillance and Response for Water Borne Diseases Training / Health workers in NW_2019

Governorate	Training place	No. of Male participants	No. of Female participants	Date
Idleb	Bab Al-Hawa	22	1	24&25 Apr
Idleb	Bab Al-Hawa	20	3	28&29 Apr
Idleb	Bab Al-Hawa	33	5	22&23 Apr
Idleb	Bab Al-Hawa	10	0	15&16 Apr
Idleb	Bab Al-Hawa	30	0	20&21 Apr
Idleb	Idleb	31	16	21&22 Apr
Idleb	Idleb	20	1	23&23 APR
Idleb	Ain Al Baida	17	5	24&25 Apr
Idleb	Kafr Nobol	39	2	22&23 Apr
Aleppo	A'zaz	32	5	15&16 APR
Aleppo	Afrin	23	8	30 Apr & 1 May
Aleppo	Al Bab	30	6	17&18 Apr
Aleppo	Jarablus	17	2	3&4 MAY
Grant total		**324**	**54**	

Emergency Risk Communication (ERC)

431 health workers were trained from different organizations in addition to FLOs. It was funded by WHO through Insan Charity organization.

The topics were:

- Introduction to Emergency Risk Communication.
- Coordination of public communication.
- Single overarching communication outcome.
- Audience analysis.
- Listening and two-way communication.
- Community engagement and rumor management.
- Message pretesting and adaptation.

Table 36: Emergency Risk Communication training / Health workers in NW_2019

Governorate	Training place	No. of Male participants	No. of Female participants	Date
Idleb	Bab Al-Hawa	32	8	7 Aug
Idleb	Bab Al-Hawa	30	2	8 Aug
Idleb	Sarmada	34	9	22 Aug
Idleb	Idleb	24	0	1 Aug
Idleb	Idleb	26	5	3 Aug
Idleb	Idleb	42	2	5 Aug
Idleb	Idleb	30	10	6 AUG
Idleb	Ain Al Baida	33	0	4 Aug
Aleppo	Daret Ezza	36	3	21 Aug
Aleppo	A'zaz	33	3	19 AUG
Aleppo	Afrin	24	8	4 Aug
Aleppo	Al Bab	33	4	3 Aug
Grant total		**377**	**54**	

AFP Surveillance & Case Definition

5281 health workers were trained from trained from all health facilities, these sessions were done in the venue of health facilities in between 24 August to 12 December 2019.

The topics were:

- AFP surveillance.
- Case definition & reporting mechanism.

Table 37: AFP surveillance & case definition Training / Health workers in NW_2019

Governorate	District	Doctors	Nurses	CHWs	Others	No. of participants
Idleb	Idleb	169	514	119	477	1279
Idleb	Al Ma'ra	43	231	34	157	465
Idleb	Harim	128	506	99	479	1212
Idleb	Jisr-Ash- Shugur	46	136	27	102	311
Idleb	Ariha	22	90	22	68	202
Aleppo	A'zaz	55	187	40	150	432
Aleppo	Al Bab	21	99	9	103	232
Aleppo	Jebel Saman	76	286	93	246	701
Aleppo	Afrin	70	163	59	94	386
Aleppo	Jarablus	9	32	3	17	61
Grant total		**639**	**2244**	**505**	**1893**	**5281**

North East NGOs / Health workers trainings

That's including Deir-ez- Zor, Ar-Raqqa, Al-Hasakeh and some districts of Aleppo governorate (Menbij - Ain Al Arab).

136 participants were trained from different organization though 10 sessions.

Figure 72: NGOs Training _ Idleb

Table 38: Health Workers Training in NE_2019

Topics	Facilitators	No. of participants	No. of Sessions	Training Place	Date
Case definition AFP Surveillance Measles Surveillance	DLOs	136	10	Syria	28 Apr to 9 May

Section 04

EWARN TEAM TRAININGS

CENTRAL LEVEL TEAM

Table 39: Central Level Team Trainings in Turkey _2019

Title	Topics	Facilitators	No. of participants	Date
Basics of Epidemiology	▪ Introduction to Epidemiology ▪ Introduction to PH surveillance/ Early Warning Systems. ▪ Designing an EWARN ▪ Case Definition ▪ Rapid Response Teams (RRTs) building ▪ Time, Place and Person ▪ Risk Assessment ▪ Line Listing ▪ Contact Tracing ▪ Laboratory in Surveillance and Response ▪ Outbreak investigation ▪ Epidemiological Basis of Vaccines ▪ Emergency Risk Communication ▪ Media Interviews: Do's and Don'ts ▪ Rumor surveillance and social media ▪ Epi Info: Creating Projects and Forms ▪ Epi Info: Adding Intelligence to Forms ▪ Epi Info: Analysis with Visual Dashboard	WHO Consultant	25 CLOs	28 Jan to 1 Feb
Polio Outbreak Simulation Exercise	▪ Definition of a Simulation Exercise. ▪ Strategies for rapidly interrupting a poliovirus outbreak.	WHO	22 CLOs	5 to 7 Feb
Surveillance & Response of Leishmaniasis	▪ Leishmaniasis Global & Regional Burden ▪ Leishmaniasis in the northern Syria: epidemiology, geographical distribution and burden ▪ Overview of EWARN leishmaniasis surveillance & Response activities ▪ Types of parasites, life cycle of parasites, vectors, Mode of disease transmission ▪ Types of leishmaniasis, Symptoms & Signs of different type of leishmaniasis, ▪ General management protocols ▪ Surveillance of leishmaniasis. ▪ Leishmania case detection strategies ▪ Risk Communication ▪ Communication Strategy ▪ Country Profiles ▪ Variables and Indicators needed by to complete country profiles ▪ Case and treatment outcome definitions ▪ Prevention & vector control activities	WHO	22 CLOs 5 DLOs 1 RRO 1 lab physician	21 Mar
EWARS-in-a-box in alerts management, outbreak investigations and outbreak response	▪ Role of EWARS-in-a-box in alert and response ▪ Role of Rapid Response Teams in EWARS. ▪ Refresher session on creating and submitting IBS/EBS reports to trigger alerts. ▪ Role of RRTs in management of alerts on desktop and mobile phone ▪ Role of EWARS-in-a-box in outbreak investigation and laboratory surveillance ▪ Conducting outbreak investigations and collecting laboratory samples ▪ Role of EWARS-in-a-box in outbreak response ▪ Conducting outbreak response using EWARS-in-a-box	WHO Consultant	15 CLOs 5 DLOs 1 RRO 1 lab physician	18 Mar

Surveillance & Response for Water Borne Diseases	▪ Water Borne Disease Surveillance Status in Northern Syria ▪ Syndromic Approach to manage common water-borne diseases in Northern Syria ▪ Investigation of Water Borne Disease Outbreak ▪ Acute Watery Diarrhea (Suspected Cholera) ▪ Emergency Cholera Preparedness and Response planning and operation. ▪ Epidemiological studies in waterborne outbreaks ▪ Computer-based tools for outbreak investigation ▪ Prevention activities by WASH cluster. ▪ Risk Communication and Social Mobilization in waterborne disease outbreak. ▪ Medical Supplies Management.	WHO	11 CLOs 5 DLOs 1 RRO 1 lab physician	8 to 10 Apr
Negotiation management skills	▪ Ethical value and negotiation ▪ Common social biases in negotiation ▪ Psychology of negotiation. ▪ Emotional intelligence ▪ Organization behavior and negotiation ▪ Strategic alignment of and negotiation and setting objectives ▪ Estimating negotiation case ▪ Networking and prioritizing negotiation issues metrics ▪ Determining Negotiation outcomes ▪ Negotiation communication planning ▪ Human resources planning ▪ Counter team management plan ▪ Logistics management planning ▪ Monitoring and controlling of negotiation ▪ Manage Negotiation team	Eng.Feras Al Jmeli	22 CLOs	8 to 10 July
Emergency Risk Communication (ERC)	▪ ERC intro and overview of communications response activities ▪ Review of priority public health threats and emergency lifecycle ▪ Single overarching communication outcome (SOCO), audience analysis and transparency and early announcement ▪ Coordination of public communication ▪ Instructional presentation and case studies. ▪ ERC plan writing for transparency and early announcement and coordination of public communication ▪ Listening and two-way communication ▪ Instructional presentation and case studies ▪ Instructional exercise w/ tool: Community engagement and rumor management ▪ Messaging to affected audiences (Message development and testing) ▪ Instructional presentation and case studies ▪ ERC plan writing for listening and two-way communication ▪ Effective channels and trusted influencers ▪ ERC plan writing for effective channels and trusted influencers. ▪ Review of communication/community engagement plans and use of tools	WHO	11 CLOs 5 DLOs	22 TO 24 JULY
Partnerships management	▪ Partnerships principles ▪ Partnerships Management cycle ▪ Implementing, M&E and reporting/closing out ▪ Capacity Strengthening process ▪ Monitoring and evaluating the partnerships	Eng.Mazen Housseiny	16 CLOs	4 & 5 Sep
Using R in data management	▪ Introduction to R commands ▪ Introduction to tidyverse ▪ R for Data Science. ▪ Data virtualization ▪ Data Wrangling in R ▪ Summarizing Data	Eng.Ammar Jebakji	6 CLOs	14 to 18 Oct
Building and developing institutional work	▪ Institutional building ▪ Institutional structure ▪ Shared Values ▪ Strategy and system of Institution ▪ Style of management ▪ Core competencies ▪ Performance evaluation	Eng.Ahmed Soliman	7 CLOs	16 TO 19 DEC

Figure 73: Epidemiology Training _ Gaziantep

Figure 74: Partnerships management Training_ Gaziantep

DISTRICT LEVEL TEAM

Three quarterly meetings were conducted for DLOs during 2019.mAll the details about topics, participants, and facilitators are in the table below:

Table 40: Central Level Team Trainings in Turkey _2019

Title	Topics	Facilitators	No. of participants	Date
1st	▪ AFP Surveillance indicators review ▪ VPD Case definitions reviewing ▪ Measles surveillance update ▪ Outbreak response ▪ Outbreak Case study using excel	5 DLOs 1 RRO 1 lab physician	Turkey & Syria	14 & 15 Feb
2nd	▪ AFP Surveillance Indicators review ▪ Active & Passive Surveillance Review ▪ High Risk Areas/Population ▪ Outbreak management ▪ Analytical epidemiological studies (Case control and cohort studies) ▪ Measles surveillance updated ▪ Epi Info session: visualize data and determine the etiology and exposures of health events ▪ EWARS-in-a-box refreshment: data capture and alert management	5 DLOs 1 RRO 1 lab physician	Turkey & Syria	3 to 5Apr
3rd	▪ AFP Surveillance indicators review ▪ AFP investigation form update ▪ AFP surveillance logistics ▪ Surveillance and response to Meningitis ▪ Brief on the surveillance of Meningitis inside Syria ▪ Epi Info session: visualize data and determine the etiology and exposures of health events	3 DLOs 2 RROs 1 lab physician	Turkey & Syria	25 & 26 July

Figure 75: DLOs Training _ 1st Quarterly Meeting

Figure 76: DLOs Training _ 2nd Quarterly Meeting

FIELD LEVEL TEAM

All the details about topics, participants, and facilitators are in the table below:

Table 41: The details of Field Level Team Trainings _2019

Title	Topics	Facilitators	No. of participants	Date	Place	Date
1st	▪ Case definition ▪ AFP surveillance	DLOs	81	10	Deir-ez- Zor Al-Hasakeh Ar-Raqqa Menbij	20 to 26 Apr
2nd	▪ Data collection: zero reporting and event-based reporting ▪ Role of EWARS-in-a-box in alert and response	DLOs	42	6	Deir-ez- Zor Al-Hasakeh Ar-Raqqa	21 June to 5 July
3rd	▪ Case definition ▪ AFP surveillance	DLOs	67	9	Deir-ez-Zor Al-Hasakeh Ar-Raqqa Menbij	19 to 26 Sep
4th	▪ Explore Computer architecture and windows ▪ Explore MS Office	DLOs	142	10	Deir-ez- Zor Aleppo Idleb	15 Oct to 8 Nov

Figure 77: 4th FLOs Training _ Idleb

Figure 78: 4th FLOs Training _ Deir ez zor

ADVOCACY

The good relationship with NGOs and local authorities is essential for the successful implementation of EWARN activities, and facilitate the team work, therefore, several advocacy meetings were conducted in Syria and Turkey to strengthen the relationship between EWARN and other organizations, amt to let them know what kind of support can be provided to them by EWAN field network and how they can be part of it.

Table 42: The details of Advocacy activities _2019

Targeted NGO / Partner	Goal	Related activities	Partici-pants No.	Place	Date
▪ Health workers in HFs that are supported by Syria Relief and Development Organization (SRD)	▪ Introduce EWARN, and case definition ▪ Strengthening co-ordination level	Introducing EWARN and case definition, Reporting mechanism Cooperation mechanisms	98	Afrin Al Bab Al Ma'ra	2 to 4 May
▪ Health workers in HFs that are supported Syrian American Medical Society Organization (SAMS)			25	Idleb Bab Al -Hawa	15 to 22 Oct
▪ Health Directorate of Hatay & NGOs that are working in Afrin			80	Hatay_Turkey	18 Jul

Figure 79: Advocacy meeting _ Aleppo

Figure 80: Advocacy meeting _ Idleb

Challenges

- Borders closure obstructs training sustainability.
- Serious security situation impedes moving between covered areas.

Plan 2019

- CLOs training: very important and needed to improve the skills of central team.
- Continue capacity building for health workers through the implementation of trainings activities in Syria, as well as for NGOs workers.
- Quarterly meetings or DLOs, FLOs and NGOs training are planned to be conducted three times next year.
- Health workers in private clinics training: important to increase the sensitivity of reporting, detection of AFP cases and other communicable diseases in health facilities and hospitals that not reporting.

SECTION 05

DATA MANAGEMENT IN EWARN

The data management team supports all programs of EWARN through providing efficient data collection tools and safe storage and release of data. To get that achieved, the team works persistently to create information solutions, build databases, design forms, and generate bulletins.
They implement and manage all the processes related to data manipulation and quality. they support the central and field staff, through supervision, training and building capacity in all computer-related aspects.
The data team plays an essential role in strategic planning through helping make data-driven decisions. In addition, they are involved in conducting researches and assessments, and in determining the proper presentation and reuse of data.

HIGHLIGHTS

2018

- Epi Info was utilized in alert management and outbreak response.
- EWARS-in-a-box pilot was rolled out in Aleppo, Idleb, and Hama.
- A field visit to train the staff on EWARS-in-a-box was implemented.
- The data team received an advanced training on EWARS-in-a-box system conducted by its developer.
- Built the capacity of the team to deal with research methodologies and statistical analysis through training conducted by Gaziantep University and WHO.
- Focus more on developing products using Power BI and Tableau.
- Participated in workshops organized by WHO concerning DHIS2.

2019

- Recruited six field data officers to support and provide cascading training to non-data EWARN staff.
- Epi Info was utilized in alert management and outbreak response.
- EWARS-in-a-box pilot was rolled out in North Western and Eastern Syria.
- Conducted several field visits to conduct in-office training and build the field staff's capacity.
- The data team received an advanced training on EWARS-in-a-box system conducted by its developer.
- Built the capacity of the team to deal with research methodologies and statistical analysis through training conducted by Gaziantep University and WHO.
- Utilized Power BI and Tableau to analyse data and present information.

  Started to utilize DHIS2 to manage the routine immunization data.

STRUCTURE

Different functionalities and tools are developed by the data team to support the team works. The data team provides required support in all EWARN scopes. Each member of data team is designated to manage the data of one division:

- AFP surveillance.
- Nutrition surveillance
- Alerts and WASH management.
- Syndromic weekly reporting and active surveillance.
- Vaccine-Preventable diseases.
- Vaccine campaigns and routine immunization.
- Labs and capacity building.

Six field data officers have been recruited as follows: Aleppo (2), Idleb (2), Ar-raqqa (1), Al-Hasakeh (1), and Deir-ez-Zor (1). This team is responsible for delivering computer-related training to non-data EWARN staff and for providing technical support and generating field-level analyses.

IMPLEMENTATION

UTILITIES AND SOFTWARE

Microsoft Office 365 package provides us with services to run a business office. MS Excel, Epi Info and ODK are used to design surveys, forms and other data collection tools. These tools enable us to include data validation rules to ensure the quality of data collection.

Epi Info is used to enrich health events and outbreaks studies with statistics, and to provide evidences while determining aetiologies.

MS Power BI and Tableau are used to better visualize data and track surveillance and response indicators.

Other ad-hoc tools are used to implement certain purposes such as information for action (IFA), which is a software developed by WHO EMRO and used to manage AFP surveillance data. The second application is emergency nutrition assessment (ENA) is developed by CDC and used to implement SMART surveys and analyse Plausibility and other anthropometry results.

In terms of maps, ArcGIS, QGIS, Power BI, and Tableau are used to store, analyse and visualize data.

Figure 81: The set of used tools

AFP Surveillance & Case Definition

On March 2015, WHO provided EWARN with a data management system called Information for Action for AFP surveillance (Figure 2).

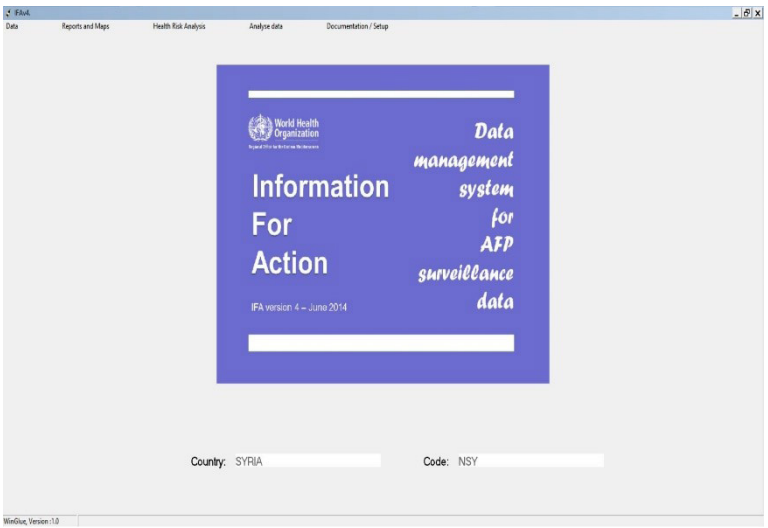
This system is adopted in EMRO, WHO and built based on MS Excel, EpiData, and EpiData Analysis software.

The system provides two main forms, the first one is used to record investigation data related to AFP index cases, whilst the second one is used to record data related to contacts of AFP index cases.

This system displays AFP indicators and variables using MS Excel, with ability to create customized dashboards and summaries.

It also provides data sharing through files, which have *.rec extensions, include up-to-date data associated with AFP index cases and contacts. On a weekly basis, AFP data is shared with EMRO, WHO.

Figure 82: IFA's main window



Emergency Nutrition Assessment (ENA)

ENA is a software developed by CDC; this tool is adopted by EWARN for nutrition surveillance at the mid of 2017. ENA is a user-friendly analytical program recommended by SMART. It has automated functions for sample size calculations, sample selection, quality checks, standardization for anthropometry measurements, and report generation with automatic analyses. ENA is highly favoured by field practitioners; it facilitates survey planning, data collection, analysis and reporting with the ability to generate automatic standard tables and graphs for anthropometric indices and plausibility check reports.

Data Flow

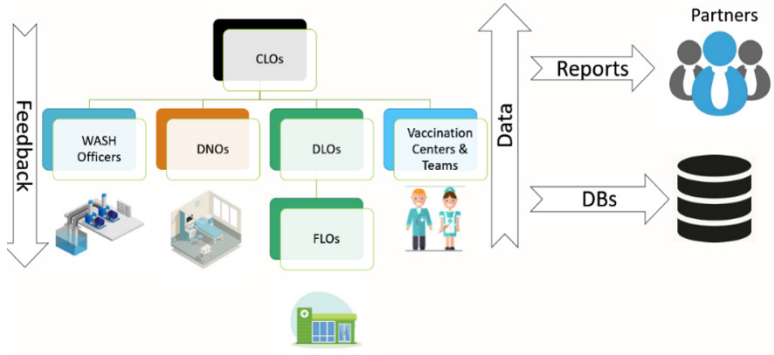
A few means are used to transfer data and communicate at central and field levels, the essential mean of receiving reports is by email. WhatsApp, Skype, and phone calls are used to communicate back and forth with the field staff, to guide staff and discuss health events in details.

There are three approaches of submitting data. Frist approach, reports are submitted by field level officers to district level officers who in turn submit reports to the central level of EWARN on an interval (weekly, semi-monthly, and monthly). Second approach, reports are submitted by DLOs right after occurred health events without the need to postpone reporting. Third approach, frontline users use ODK to submit reports to the ACU server, afterwards, the data team implements data processing at the central level.

The central team communicates with field staff and share feedback on a regular basis.

Data is stored in database, reused in further analyses and researches and shared with partners according to sharing policy.

Figure 83: IFA's main window



Data Collection Methods

Many data collection line-lists and forms are created according to WHO standards to collect data from reporting sites and key informants. At the central level, dozens of tools are developed and used in data cleansing and analysing. In terms of data presentation, summarization tools and dashboards are developed to support data-driven decision making.

Diverse regular and flash reports are developed and disseminated to public, partners, UN agencies and UN clusters.

Case-based Surveillance

The case-based surveillance system is activated for AFP, and measles surveillance.

Forms in this system are often detailed and contain thematic information related to personal details, investigation places, dates concerned cases developments, clinical signs and symptoms, immunization, lab tests, cases outcomes, follow-ups and contacts tracing.

The collected data is reviewed and verified by the surveillance coordinator. Afterwards, the data is compiled, cleaned, analysed and converted into line-list form. The case-related files are organized and archived based on DLO and area names.

Figure 84: AFP investigation form

Acute Flaccid Paralysis (AFP) Investigation Form
استمارة تقصي حالة شلل رخو حاد

Hot case مشتبهة بشدة

1. Basic Information معلومات اساسية

1.1 Personal Information معلومات شخصية

EPID # الرقم الوبائي — Unique ID Lab # الرقم المخبري
Case name اسم الحالة — Gender الجنس
Father الأب — Mother الأم
DoB (d/m/y) تاريخ الولادة — Age(m) العمر بالأشهر
Governorate المحافظة Idleb — District المنطقة Harim
Sub-district الناحية Armanaz
Detailed address العنوان بالتفصيل
Possible address after 60 days العنوان المحتمل بعد 60 يوم
Identified by - please specify معروف من قبل - يرجى التحديد بدقة
Phone No رقم الهاتف — Mobile No رقم الجوال

1.2 Case Reporting Information معلومات الإبلاغ عن الحالة

Is the case nomad, IDP or host-community? هل الحالة بدو رحل، نازحين أو محلي Host-community محلي
If nomad or IDP, for how long has the case stayed in this place? إن كانت الحالة من البدو رحل أو النازحين فمنذ متى بدأت إقامتهم في مكانهم الجديد
First Reporter مصدر الإبلاغ Doctor طبيب
If others, specify إذا كان غير ذلك حدد من فضلك
If the notification is done by doctor, specify the specialty إذا تم الإبلاغ من قبل طبيب يرجى تحديد اختصاص الطبيب طبيب أطفال
Notifying person اسم المبلغ
Detection Date تاريخ الاكتشاف 15-Feb-17 — Notification Date تاريخ الإبلاغ 15-Feb-17
Paralysis Onset Date تاريخ بدء الشلل 12-Feb-17 — Investigation Date تاريخ التقصي 16-Feb-17
Place of Investigation مكان اجراء الاستقصا Home منزل
Health Facility/Nearest HF اسم المرفق الصحي أو أقرب مرفق صحي للحالة
Delay/ Inadequacy Cause سبب تأخر الإبلاغ/عدم كفاية الحالة

Active Surveillance

In active surveillance, DLOs regularly conduct field visits to AFP reporting sites in order to detect missed cases. AFP reporting sites Active surveillance method reflects the quality of passive surveillance through revealing the probable not reported cases.

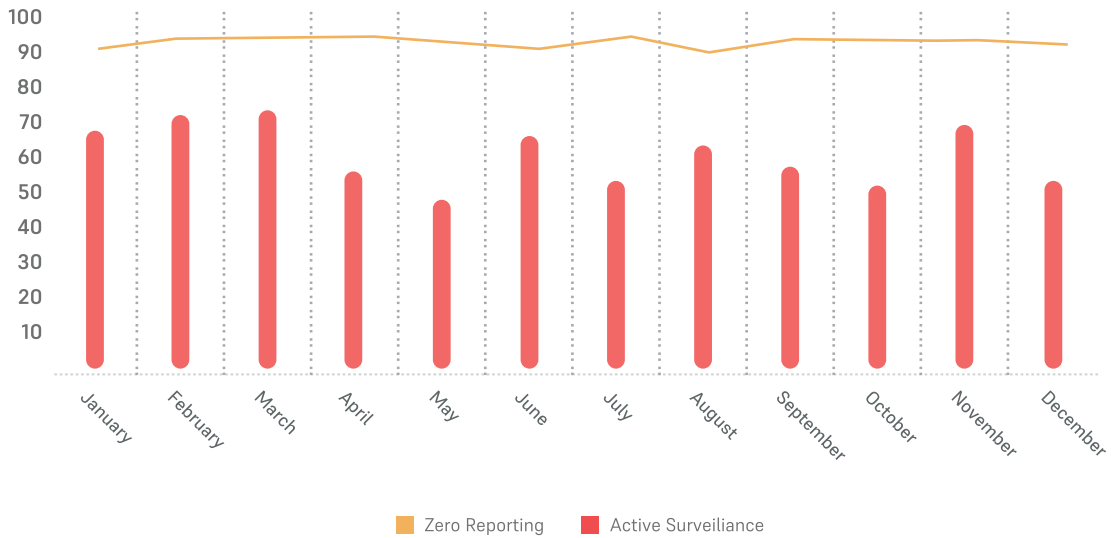
The field visits to AFP reporting sites are conducted on weekly, bi-weekly, or monthly bases, in accordance to sites types and the number of referrals received by the sites.

On a monthly basis, the active surveillance completeness is mapped out against the completeness of passive surveillance, to see a big picture of reporting performance.

In 2018, we shifted to using ODK in terms of collecting active surveillance data. ODK forms made data collection faster and easier.

Security constrains and continuous control switch in the field make some areas are hard to reach, consequently, drops in conducting the scheduled visits.

Figure 85: Active surveillance vs zero report 2019



Zero Report (Regular Reporting)

EWARN reporting sites submit reports to the central level at agreed intervals, weekly, semi-monthly, or monthly, according to the nature of collected data. In this kind of report, reporting sites are requested to submit their reports persistently, and when they have no cases or changes to be reported, they assign zeros to unchanged variables within reports and submit reports.

The essential zero report forms are as follows:

- The weekly syndromic zero report.
- The semi-monthly report of the water stations.
- The monthly report of nutrition surveillance.
- The daily routine reports of vaccination centres.

In zero reporting, two performance indicators are monitored. First is the timeliness that indicates that reports are received before an agreed deadline. Second is the completeness that means reports are received beyond the agreed deadline.

The data team creates consolidated ZR databases after communicating intensively with the filed and processing data. In those databases, we usually assign unique identification codes to reporting sites, and this feature enable us to better implement queries and track changes.

Zero reporting is considered the main information source, which gives a preliminary understanding about changes and events occurring in public health and WASH sectors.

Figure 86: Active surveillance vs zero report 2019

Basic Information معلومات أساسية										
Epi Week الأسبوع الوبائي		Month الشهر								
Health Center Name اسم المرفق الصحي										
هل المركز يخدم Does the health facility serve a		Please write down the camps served by the health facility		In the health facility considered as AFP reporting center?						
Governorate المحافظة		District المنطقة		Subdistrict الناحية						
Catchment Population عدد السكان المستهدفين		Community قرية / بلدة / حي								
Report Period الإبلاغ/الفترة من From		Report Period الإبلاغ/الفترة إلى To								
Name of reporter اسم المبلغ		Job title المسمى الوظيفي								
Date Received by DLO تاريخ التسليم إلى مشرف المنطقة		Entered to system by DLO on تاريخ ادخال المعلومات من قبل مشرف المنطقة								
Reporting of cases الحالات المبلغة										
DISEASE المرض	Code رمز	Type النمط	Alert threshold عتبة الإنذار	0 - 4 years		≥ 5 years		Alerts الإنذارات	TOTAL المجموع الكلي
				Male ذكر	Female انثى	Male ذكر	Female انثى		
Acute bloody diarrhea (suspected shigellosis) الإسهال الدموي الحاد (الاشتباه بداء الشيغلات)	ABD	B	5					0	0
Acute watery diarrhea (suspected cholera) الإسهال المائي الحاد (الاشتباه الكوليرا)	AWD	A	1					0	0
Acute jaundice syndrome متلازمة اليرقان الحاد	AJS	B	5					0	0
Severe Acute Respiratory Illness المرض التنفسي الحاد الوخيم	SARI	B	5					0	0
Acute flaccid paralysis الشلل الرخو الحاد	AFP	A	1					0	0
Suspected Measles الاشتباه بمرض الحصبة	Mea	A	1					0	0
Suspected Meningitis الاشتباه بمرض التهاب السحايا	Men	B	5					0	0
Unusual cluster of health events مجموعة مفاجئة من الأحداث الصحية غير الاعتيادية	UCE	A	1					0	0
Unusual cluster of death مجموعة مفاجئة من الوفيات غير الاعتيادية	UCD	A	1					0	0
Suspected Typhoid Fever الاشتباه بالحمى التيفية	STF	B	5					0	0

Immediate Reporting

Alerts are often monitored at the sub-district, the community, and reporting site levels . This approach provides a better way of detecting alerts; however, it sometimes raises false alerts. Thus, an enhanced approach has been built to raise alerts.

In 2019, the standard deviation was involved in driving alerts raising. When reported cases of in a given week range between the Mean ± STD, it means no alert to be raised, however, if cases are not in the norm, higher or lower, the rapid response team conduct variant measure to assess situation and focus on probable changes.

Map 23: Alert at sub-district level

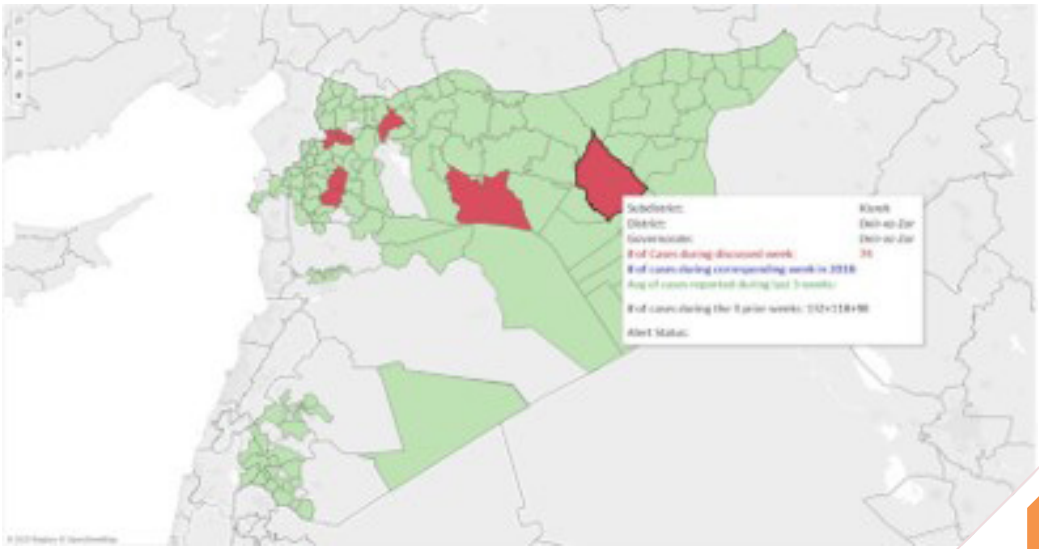
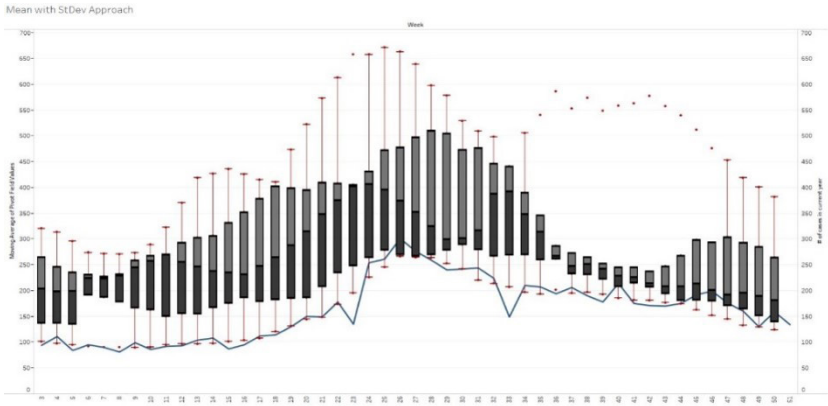


Figure 87: Alert tracking using moving average



Line Listing

Post to alert confirmation, the newly reported cases are collected and compiled in a line list format. Line lists usually contain information about three major themes, person, time, and place in order to follow up and monitor ups and downs during outbreaks.

Line-lists are live documents updated during outbreak timespan and play an essential role in addressing etiologies.

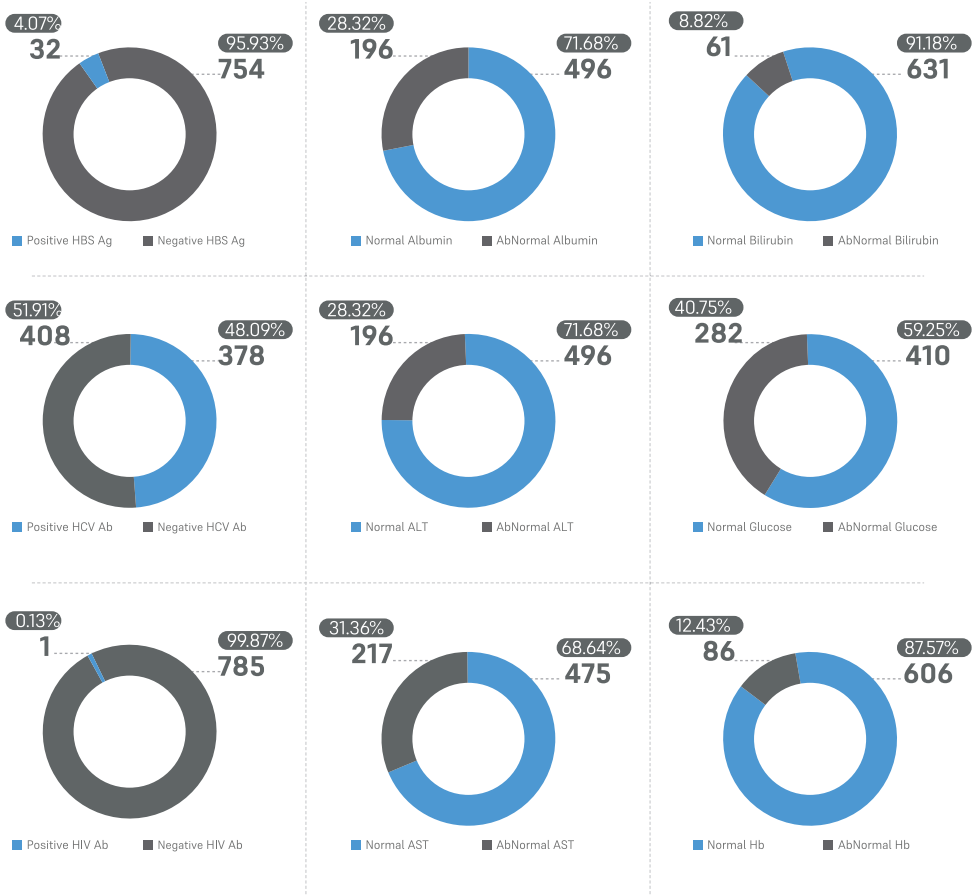
Figure 88: Line list of STF case control study_2019

No	Address	Patient	Age	Sex	Private Wells	Bottle	Sosyan Wells	Primary Water Source
1	Al Bab - Zamzam	Yes	15	Female	No	No	Yes	Sosyan Wells
2	Al Bab - Zamzam	No	20	Male	No	Yes	No	Bottle
3	Al Bab - Zamzam	No	45	Female	No	No	Yes	Sosyan Wells
4	Al Bab - Zamzam	No	19	Male	No	Yes	No	Bottle
5	Al Bab - Zamzam	No	20	Female	No	Yes	No	Bottle
6	Al Bab - Zamzam	No	27	Female	No	Yes	No	Bottle
7	Al Bab - Zamzam	No	33	Male	No	No	Yes	Sosyan Wells
8	Al Bab - Zamzam	No	40	Female	No	Yes	No	Bottle
9	Al Bab - Zamzam	Yes	37	Male	No	No	Yes	Sosyan Wells
10	Al Bab - Zamzam	Yes	16	Male	No	Yes	No	Bottle
11	Al Bab - Zamzam	No	21	Male	No	Yes	No	Bottle
12	Al Bab - Zamzam	Yes	9	Male	No	No	Yes	Sosyan Wells
13	Al Bab - Zamzam	No	22	Male	No	No	Yes	Sosyan Wells
14	Al Bab - Zamzam	No	40	Male	No	Yes	No	Bottle
15	Al Bab - Zamzam	No	31	Male	No	Yes	No	Bottle

Survey

The data team is requested to provide technical support as implementing surveys and researches.
In 2019, EWARN conducted survey concerning dialysis patients and workers in dialysis centres. The survey was conducted on two phases, one was in January and the other was in November.

Figure 89: Dialysis survey results_2019



ELECTRONIC SURVEILLANCE

EWARN is aiming to utilize surveillance to help detect health events, conduct analyses, disseminate findings in no time. Furthermore, to follow up and manage all responses activities efficiently.

EWARN utilizes MS Excel to collect data in different divisions of EWARN. In terms of statistics, Epi Info is used to calculate statistics on outbreaks. As of 2019, EWARS-in-a-box has been utilized as a system to manage weekly zero reports and event-based reports.

Open Data Kit (ODK)

ODK collection tool was utilized to develop forms to collect data on the active surveillance, routine immunization, and nutritional surveillance.

The field team received smartphones to submit reports in as effective and timely manner.

As ODK provides data validation rules to control data entry, it made data collection easier and much more accurate.

The collected data is stored on the ACU's servers.

Figure 90: Active Surveillance ODK

Epi Info

It is a tool developed for epidemiologists by an epidemiologist, in CDC. This tool was used to manage alerts and to guide outbreak responses through providing the statistical analyses and the maps required.
EWARN team received training by CDC on how to employ Epi Info for data collection, analysis, and presentation.
Plans are set to utilize this tool in data collection and analysis at the district level, that will enable DLOs to keep an eye on the health events in their respective areas.

Figure 91: Statistical analysis of STF outbreak

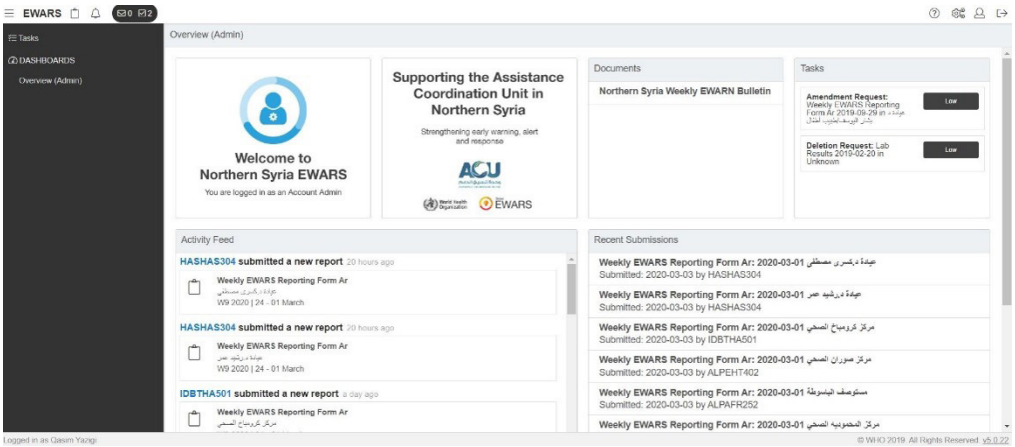
EWARS-in-a-box

This system is being developed by WHO to help ease data collection and manage alerts and outbreaks.
The system provides a variety of functionalities as follows:

- Design forms to collect data, control how frequently the forms should be submitted and from which locations, and track completeness and timeliness across locations and users
- Create reporting sites at health facility or community-level as per needs, and easily update and edit map boundaries to map our data as soon as it is collected.
- Assign users with accounts that match their profile. For example, as a frontline health worker, laboratory technician, or rapid response member.
- Set up dashboards to graph or map data in real-time as it is received, and design professional bulletins that can be automatically published and shared with a click of a button.
- Raise alerts to potential disease outbreaks in order to promote a rapid response, configure alerts to determine how and when they will be triggered, and configure alerts to determine how and when they will be triggered.
- In terms of mobile application, create reports and enter data immediately, save drafts offline to complete later, and sync any queued reports when a connection is ready.

  Add integrations to ensure all data collected is interoperable with other systems within a country or internationally.
- Control how external users' access data and approve external user access to specific indicators and timeframes.
- Remain part of the EWARS community by receiving updates when available.

Figure 92: EWARS portal of Northern Syria

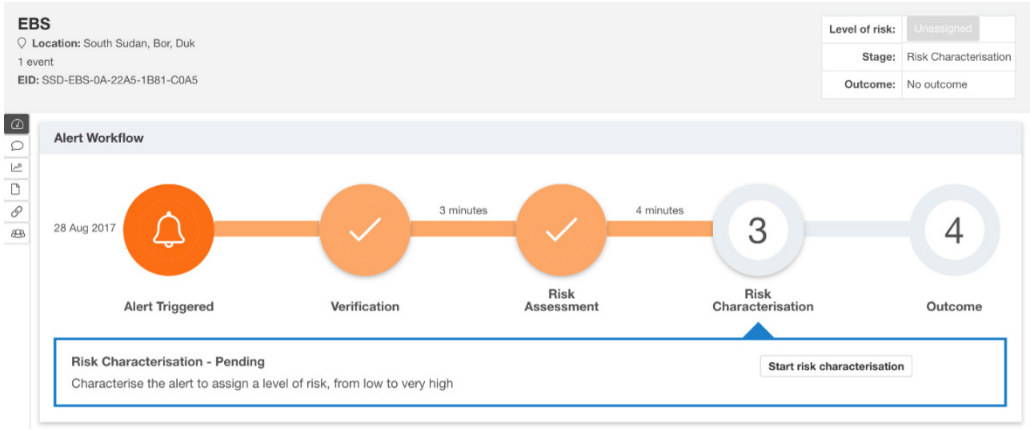


It has been used to collect weekly zero reports of the 13 syndromes and event-based reports. Besides, it will be utilized in alert management and following response tasks.

The frontline users , who are working in health facilities or detecting alerts, submit reports to the central level; however, the district level staff are able to review and confirm those reports and to monitor the health situation in their respective areas through mid-level dashboards.
In August 2018, the central data team conducted field visit to train the field staff on how to use the smartphone version of the system. The training was provided to the staff of reporting health facilities and the EWARN field staff.
In mid-2019, EWARN started to roll out this system in the Eastern Syria after a series of training conducted by the field data team.

Figure 93: EWARS-in-a-box main window

Figure 94: Alert management workflow



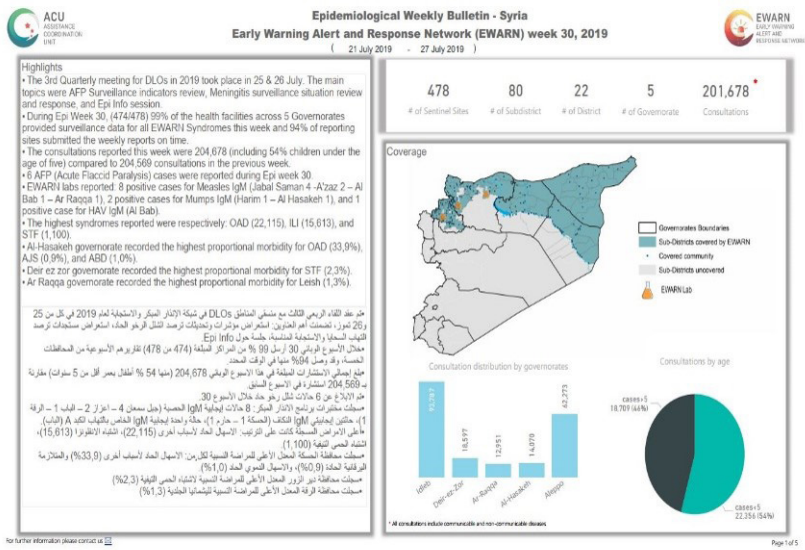
PRODUCTS

The EWARN produces 5 frequent and 1 ad-hoc bulletins that show updates on health and WASH. The products are developed in dual language, Arabic and English. In 2018, these bulletins were produced in Turkish language too. These bulletins highlight events through narrative information and storytelling visuals such as graphs, maps, tables and images. MS Power BI and Tableau have been used to generate interactive and printable versions of those bulletins.
The regular products are as follows:

- The weekly epi bulletin that shows updates on 13 syndromes.
- The monthly nutrition surveillance bulletin that exhibits the nutritional situation in North Western Syria. Nutrition data is collected from nearly 132 HFs.
- The weekly surveillance bulletin of acute flaccid paralysis (AFP) that shows cases distribution, the performance indicators of AFP surveillance and the immunity status of investigated AFP cases.
- The semi-monthly WASH bulletin that shows updates on more than 1144 water stations covering their functionality and chlorination.

Ad-hoc reports of vaccination campaigns are produced after the close of campaigns. Those reports show stats regarding vaccinated children, consumed vaccines, and challenges and learned lessons during campaigns. Data of previous implemented campaigns is considered the basis as planning further campaigns.
The EWARN vaccination team which is considered a part of the Syria Immunization Group (SIG) utilizes DHIS2 under the supervision of WHO, in order to manage EPI data collected from 33 routine immunization centres since mid-2019. Interactive versions of those bulletins are published on ACU websites, whilst printable versions of them are disseminated via emails to all stakeholders.

Figure 95: Epi weekly bulletin



Epidemiological Weekly Bulletin - Syria
Early Warning Alert and Response Network (EWARN) week 30, 2019
(21 July 2019 - 27 July 2019)

Highlights
• The 3rd Quarterly meeting for DLOs in 2019 took place in 25 & 26 July. The main topics were AFP Surveillance indicators review, Meningitis surveillance situation review and response, and Epi Info session.
• During Epi Week 30, (474/478) 99% of the health facilities across 5 Governorates provided surveillance data for all EWARN Syndromes this week and 94% of reporting sites submitted the weekly reports on time.
• The consultations reported this week were 204,678 (including 54% children under the age of five) compared to 204,569 consultations in the previous week.
• 6 AFP (Acute Flaccid Paralysis) cases were reported during Epi week 30.
• EWARN labs reported: 8 positive cases for Measles IgM (Jabal Saman 4 -A'zaz 2 – Al Bab 1 – Ar Raqqa 1), 2 positive cases for Mumps IgM (Harim 1 – Al Hasakeh 1), and 1 positive case for HAV IgM (Al Bab).
• The highest syndromes reported were respectively: OAD (22,115), ILI (15,613), and STF (1,100).
• Al-Hasakeh governorate recorded the highest proportional morbidity for OAD (33,9%), AJS (0,9%), and ABD (1,0%).
• Deir ez zor governorate recorded the highest proportional morbidity for STF (2,3%).
• Ar Raqqa governorate recorded the highest proportional morbidity for Leish (1,3%).

478	80	22	5	201,678 *
# of Sentinel Sites	# of Subdistrict	# of District	# of Governorate	Consultations

Coverage

Governorates Boundaries
Sub-Districts covered by EWARN
Covered community
Sub-Districts uncovered
EWARN Lab

Consultation distribution by governorates

Consultations by age

Figure 96: Epi weekly bulletin

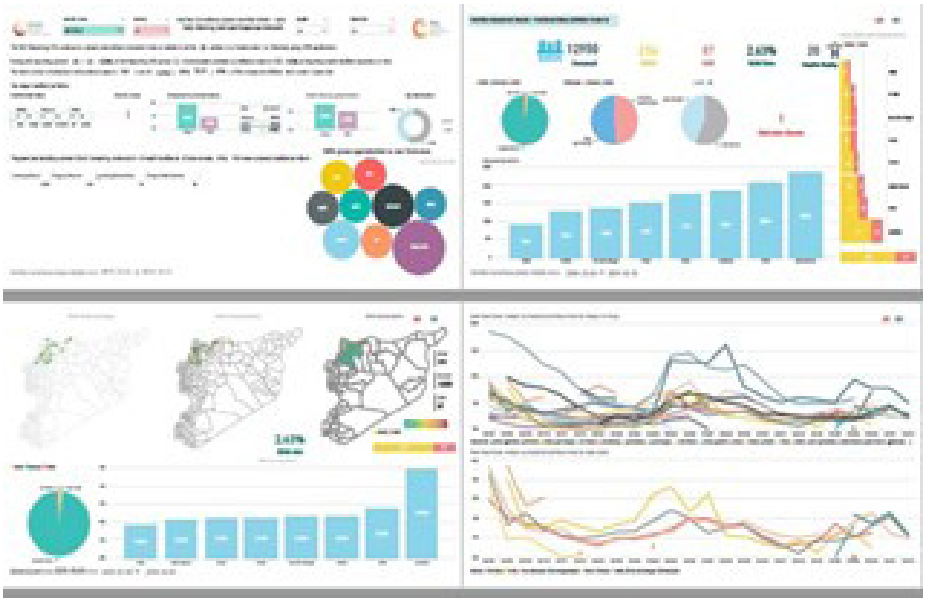


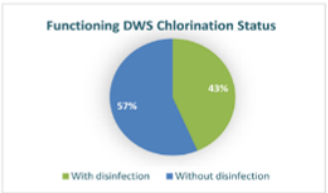
Figure 97: Drinking water status – WASH bulletin

Drinking Water Stations Status in Each Governorate

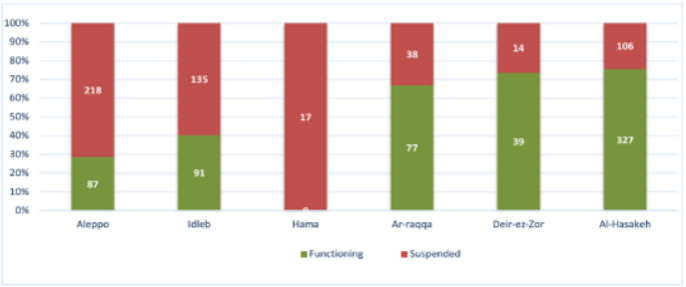
Governorate	Drinking Water Stations Status		
	Total	Functioning	Percentage
Aleppo	305	87	29%
Idleb	226	91	40%
Hama	17	0	0%
Ar-raqqa	115	77	67%
Deir-ez-Zor	53	39	74%
Al-Hasakeh	433	327	76%
Total	1149	621	54%

Governorate	Functioning DWS Clorination Status		
	Total	With disinfection	Percentage
Aleppo	87	61	70%
Idleb	91	76	84%
Hama	0	0	0%
Ar-raqqa	77	44	57%
Deir-ez-Zor	39	20	51%
Al-Hasakeh	327	69	21%
Total	621	270	43%

Drinking Water Stations Status



Drinking Water Stations Status in Governorates



Interactive Dashboards

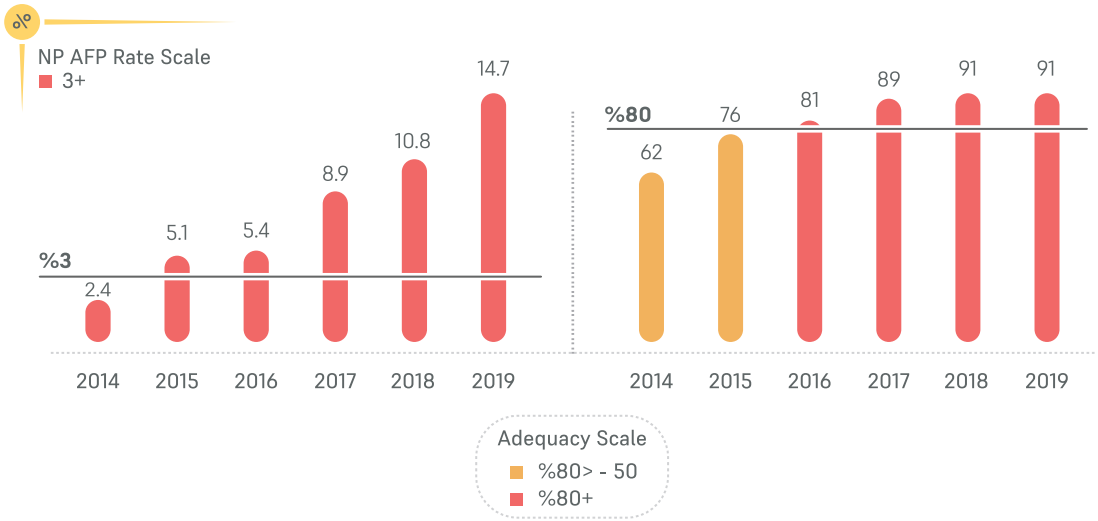
The data team always aims to learn cutting-edge data visualization and analytics tools, in order to convey information in an attractive compelling way. Data is visualized through a variety of visuals such as graphs, maps, tables, and dynamic texts. The combination of those visuals usually helps create bulletins, dashboards, summaries, and ad-hoc reports.

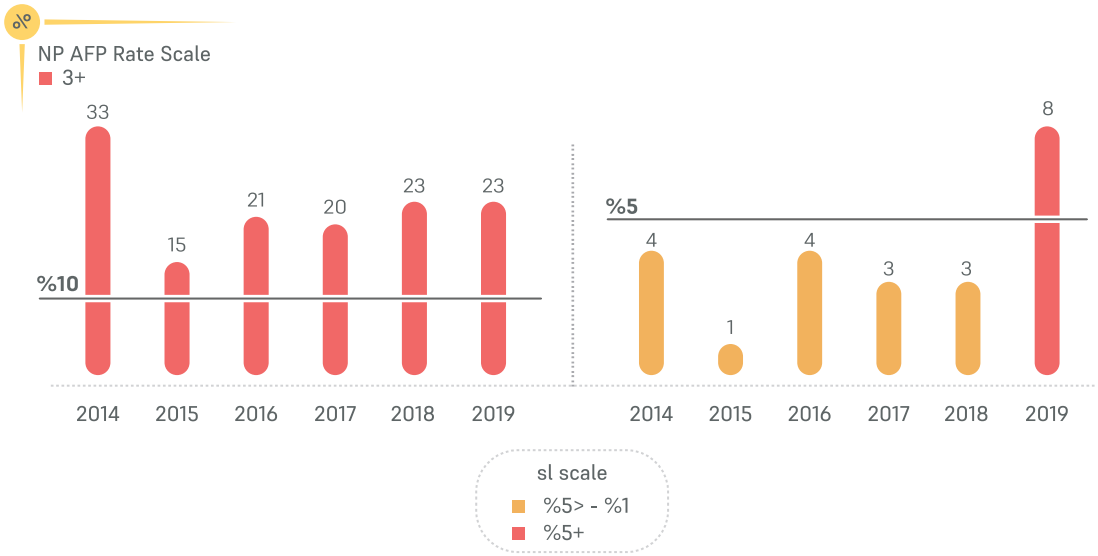
In 2018, we started using Business Intelligence (BI) tools such as Power BI and Tableau to generate interactive visualization. Those tools provide better understanding of data and conducting rapid analyses at granular levels, leading to monitor health events accurately and timely.

Some examples of dashboards generated using BI tools are as follows:

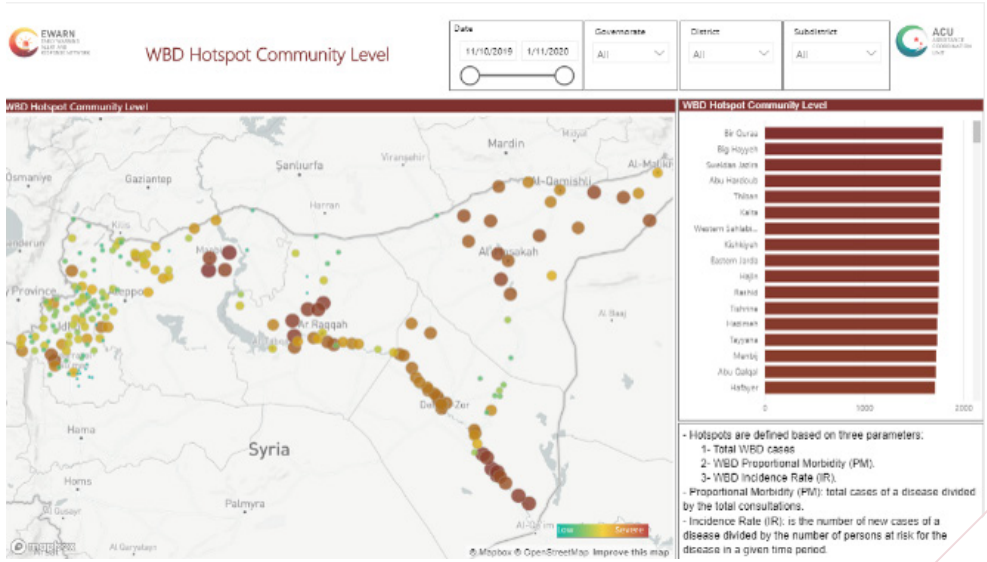
- The weekly AFP surveillance updates dashboard which is used to guide the AFP surveillance on national and subnational levels.
- The monthly WBD surveillance dashboard which is used to show hotspot areas that need response.
- The semi-monthly Epi dashboard which gives general overview about the 13 surveyed syndromes.
- The nutrition surveillance dashboard which shows the nutritional situations of children and pregnant and lactating women.
- Campaign monitoring dashboard which helps the SIG (Syrian immunization group) evaluate the vaccination teams and plan to target missed children.
- The monthly coverage map which shows the changes of EWARN target areas regularly.
- The accessibility map which describes the access to target area, whether accessible, partially accessible, or inaccessible.

Figure 98: Key indicators of AFP surveillance

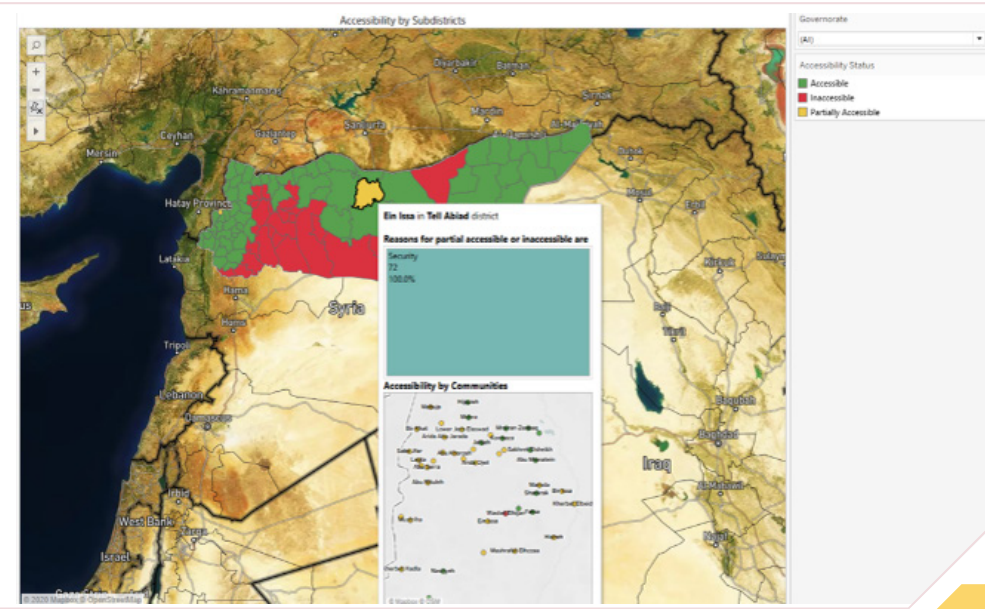




Map 24: WBD hotspot communities throughout the 4 past weeks



Map 25: Accessibility at subdistrict level



DATA STORAGE

Data backup and data archiving are business processes designed to protect corporate digital assets.
Data backup focuses on preserving multiple copies of data, so it can be recovered promptly in the event of loss due to disaster, outage, system corruption, human error, or other unforeseen interruption.
Data archiving focuses on retaining a single provably correct copy of non-changing data that may be required for historical, legal, or external compliance reasons.
BMGF has donated us accounts of Office 365. Therefore, OneDrive for Business is used to store files from local computers into the cloud, and access them from any device anywhere, or share them with others. In addition, SharePoint is used, so we can collaborate on files, documents, and ideas. It is set up to facilitate two-way communication between team members.
Copies of archives and backups are often kept on the server of ACU. There are also multiple shared drives designated for different departments, to enable them to store and share their files internally.
Naming conventions of files and folders are set to enable users to access files fast and efficiently. The data team ensures that the naming convention maintained among the Central team members.

SHARING POLICY

Data sharing is essential for maximizing the benefits that can be obtained from institutional and research datasets.
Since EWARN is considered a part of the health department of ACU, it follows ACU's data sharing policy. It commits to share and disseminate health data from its programs and studies in an open, timely, and transparent manner in order to promote health benefits for populations while respecting ethical and legal obligations towards patients, participants, and their communities.
Principles Underlying Data Sharing in EWARN

- **Ethics:** EWARN data sharing will abide by the following ethical principles:
  - Medical confidentiality is fully respected.
  - The privacy and dignity of individuals and communities are not jeopardized.
  - Collaborative partnerships are undertaken in line with EWARN's Ethical Framework for Medical Research and emergencies response; recipients of EWARN datasets will engage, wherever possible, with the local community where the EWARN dataset originates.
- **Equity**: EWARN data sharing will recognize and balance the needs of researchers who use health data, other organizations which may want to reuse such data, and communities and funders who expect health benefits to arise from surveillance and response.

- **Efficiency:** EWARN data sharing will improve the quality and value of the delivery of health care and increase its contribution to improving public health and hygiene promotion. Approaches should be proportionate and build on existing practice and reduce unnecessary duplication and competition.
- **Non-maleficence:** Data sharing shall not put at risk, or be used against, the interests of EWRAN investigated cases, EWARN research participants, EWARN employees, or EWARN partners.

  Social benefit: To promote health benefits and rapid responses to the greater population, data sharing should bring health benefits to individuals and communities outside of those in which the data were collected.
- **Open access:** Recipients of EWARN datasets shall strive to avoid prohibitively costly approaches, restrictive intellectual property strategies, or other approaches that may inhibit or delay the use of the results of their research to the benefit of the Syrian society. Recipients shall not seek any intellectual property rights of any kind with respect to results generated by or arising out of the use of EWARN datasets without prior written consent.

Challenges

- The dire situation and insecurity inside Syria cause delay in reporting and acquiring clearances to collect data in some sites.
- Raise alerts at the sentinel site level is challenging without using EWARS-in-a-box system.
- Lack of on-site field training leads to adopt online training as alternative which may lead to monologue learning and eventually demotivate the team.
- Add or remove sentinel sites from the health map can cause late reporting in some areas.
- There is no one complete data management solution to implement data collection, analysis and presentation, that forced us to use diverse tools to cope with tasks.
- Some non-data staff consider SharePoint and OneDrive difficult to use, although such tools are prerequisites for data storage and sharing.

Recommendation

- Seek certified and accredited training and courses regarding data management.
- Build strong trust bounds with all partners and working groups for the sake of knowledge exchange.
- Establish networks with other management teams across local and international organizations to share experiences and to improve gained knowledge.

Future Plans

- Strengthen the utilization of EWARS-in-a-box system in Northern Syria and import historical data into this system.
- Carry on utilizing Business Intelligence tools to generate smart storytelling dashboards.
- Epi Info to be employed increasingly in outbreak response as a tool to provide the needed statistics.
- Two more data field officers to be recruited, in order to increase the support to the field staff.
- Strengthen the bound between lab results and the response and surveillance activities.
- Receive advanced data-related training to build the capacity of the data team at the central and field levels.
- Utilize data science advanced tools such as R script and Python in data analysis and visualization.
- Raise awareness of the importance of **SharePoint** for data storing and sharing.

SECTION

06

COORDINATION WITH WHO, CLUSTERS & OTHER PARTNERS

Regular meeting with the WHO, EOC and SIG team continued in 2019 to review the updates and develop strategic plans:

- The program maintained the regular communication channels with WHO. Weekly meeting to review the AFP surveillance indicators and discuss the needed actions related the vaccination status of AFP cases. The vaccination teams report all suspected AFP cases that they encounter during the SIAs to the surveillance team to commence the verification process. Regular visits to the polio laboratory in Ankara continued, to maintain the good relationship with the lab, update the lab management of the latest updates from the field.
- Visits from WHO EMRO to Gaziantep helped in maintaining the communication channels with the regional office.
- Weekly meetings to review VPDs surveillance indicators, a detailed discussion about the zero dose investigated cases, a presentation of measles death related and complications justifying the confirmed but vaccinated measles cases, updating the classification, recommendation for Epi centres coverage and the need for vaccination campaign, challenges and plans.
- Providing regular update to EOC on the field situation, and continuous analysis of the situation and feedback from the field staff to reflect the actual situation on the ground.
- Daily meetings with SIG, WHO and QRC to pre, during and post campaign, to present and discuss the planning, team technical performance and coverage results.
- Coordination with SIG during the vaccination activities to notify the suspected AFP cases.
- Regular reviews and sessions with WHO and UNICEF to share information with them and to receive the required technical support and guidance.
- Providing regular feedback to EMRO through sharing the IFA's rec file on weekly basis and the weekly AFP surveillance presentation.

Also, regular and occasional meetings are conducted with the health, WASH, and the nutrition clusters in order to review the communicable disease's situation updates in health cluster, water-borne diseases updates in WASH cluster, and malnutrition situation in nutrition cluster.

Sharing data is shared with clusters and other NGOs in different forms such as dynamic reports, summarizations, maps, and data sets.

A lot of coordination with the Ministry of Health of Turkey, few organizations, and researchers were carried out to promote health benefits and rapid responses.

SECTION 07

MEDIA ASPECTS IN EWARN

Each year the media plan is being reviewed and revised, in order to access to the largest recipients, spread the benefits to the target group, create an active and attractive channel with stakeholders, partners, beneficiaries and public.

WEBSITE

Working on improving the EWARN page on the ACU website is ongoing *(http://www.acu-sy.org/en/early-warning-alert-and-response-network/)* , all the related materials are available for downloading. All materials are generated and uploaded in both Arabic and English, in addition to Turkish for the frequent issued reports.
The search results for EWARN on Google search engine comes in the fourth position.

Figure 99: EWARN Page on ACU

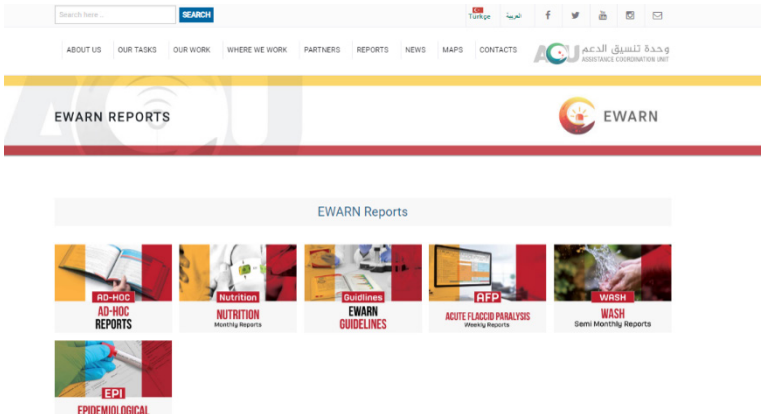
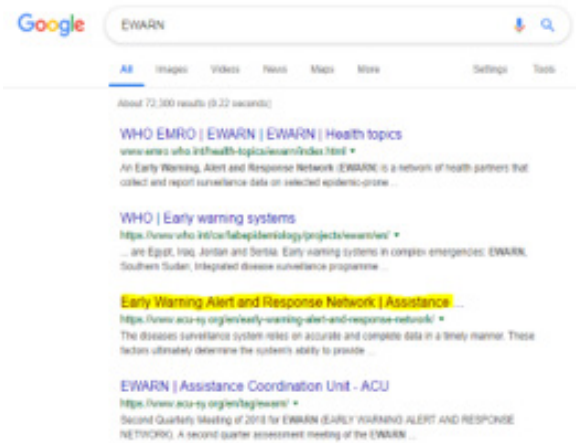


Figure 100: EWARN standing on Google



IECS MATERIALS & AWARENESS ACTIVITIES

Those materials are very important to increase the impact of the awareness campaigns, strengthening the knowledge about the communicable diseases, enhancing the reporting from the HFs, and facilitating the field teamwork.

A marathon was organized in Aleppo governorate in December 2019, to raise the awareness about AFP.

Figure 101: EWARN patients' register with Promotional materials_ Dana

Figure 102: Marathon in Aleppo_ Awareness campaign about AFP

Many awareness and education materials were designed or revised according to the feedback for the stakeholders.

Table 43: The main IEC material which have been designed and / or revised in 2019

Brochures	▪ EWARN definition	Measles awareness	Lice awareness	Typhoid fever awareness	Pertussis awareness	Rabies awareness
	▪ Leishmaniasis awareness	Mumps awareness	Meningitis awareness	Pertussis awareness		
Fliers	▪ Cholera awareness	Water treatment at home and safe storage	Influenza awareness for public	Hand Hygiene		
Posters	▪ Case definition	Influenza awareness for health workers	Rules of safe injection	AEFIs awareness	EPI awareness	Butterfly`s Poster
	▪ Tetanus Vaccine awareness	EPI Program awareness				
Guidelines	▪ AFP surveillance	Measles and Rubella surveillance	Laboratory Surveillance	AEFI Surveillance	EWARN guidelines – English and Arabis version	
Others	▪ 2019 Calendar ▪ & notebook	Wall Clocks	Pens & bags	Mugs	Prescription for clinician	USB Memories
	▪ Children Scales	Blood Pressure Gauge	Length scale	Blood Glucose Meter	Reflex Hammer	Vests

Figure 103: IEC materials samples

Figure 104: IEC materials samples

VIDEOS (PRODUCING, TV)

Supporting the producing of a health TV show on Aleppo Today channel, which is widely seen in northern Syria. This show was named (Alikom Alafia). 12 episodes were presented about the main syndromes monitored by EWARN.

Table 44: The main IEC material which have been designed and / or revised in 2019

Alikom Alafia TV show / Aleppo Today TV Channel	*www.youtube.com/playlist?list=PLY8ccXV4iN5REkNtVf85mknkYYT6LQU5l*
Building Capacity for local council WASH officers	*www.facebook.com/ACUSyria/videos/2442342995992654/*
Evaluation study of the Sewerage Sector in Idleb Governorate	*www.facebook.com/ACUSyria/videos/2280854335529020/*
EPI centers promotion video	*www.facebook.com/ACUSyria/videos/766353857160520/*
Polio vaccination campaign in July 2020	*www.facebook.com/183006108570955/posts/1048018385403052/*
World Immunization Week: meetingd & activities with local councils, civil society, & health directorates	*www.facebook.com/183006108570955/posts/991678741037017/*
Awareness about Acute Flaccid Paralysis	*https://onedrive.live.com/?cid=e18df6fddb25c352&id=E18DF6FDDB-25C352%2144278&authkey=%21AI%2DnGlUeDffWOfA*

For Better Health


EWARN
EARLY WARNING
ALERT AND
RESPONSE NETWORK

incilipınar Mah. 3 Nolu Cd.
Akınalan iş Mrk. Kat:5
Şehitkamil, Gaziantep. Turkey

EWARN
EARLY WARNING
ALERT AND
RESPONSE NETWORK

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