ASSISTANCE
COORDINATION
UNIT

ANNUAL REPORT
2018

EWARN
EARLY WARNING
ALERT AND
RESPONSE NETWORK

Our Mission

Driving Down Mortaltiy
& Morbidity Rates In Syria
For Better Health

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ALERT AND
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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 evaluation 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 collapse of the health system in mid-2013.

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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
HNO	Humanitarian Needs Overview
IDA	Independent Doctors Association
IDDKs	Interagency Diarrheal Disease Kits
IEC	Information Education Communication
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).

Map01: Coverage map for EWARN _ December 2018

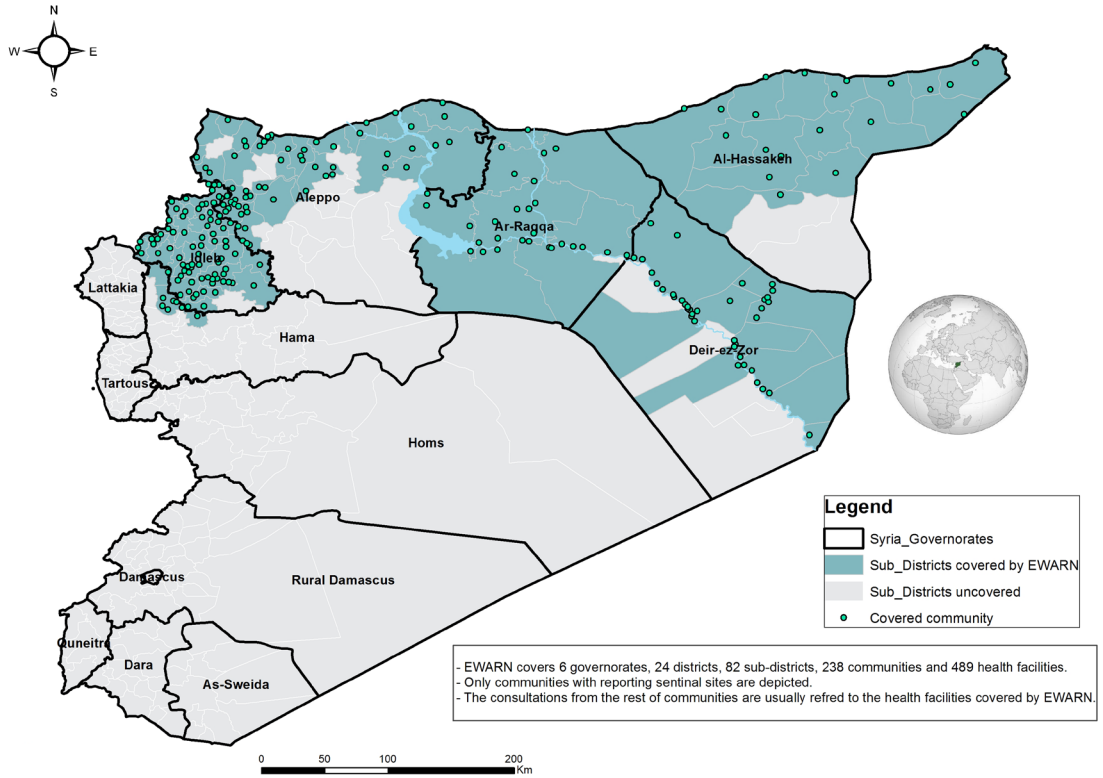


Table 01: The population percentage and Area percentage that covered by EWARN -2018

GOVERNORATE	Syria Population_ HNO	EWARN Population	Population%	Area %
Aleppo	3,700,776	1,826,734	49%	50%
Al-Hasakeh	991,894	991,894	100%	95%
Ar-Raqqa	674,123	634,171	94%	57%
Deir-ez-Zor	739,864	431,517	58%	47%
Hama	1,483,755	176,467	12%	13%
Idleb	2,341,627	2,336,831	100%	100%
All of Syria	**19,739,922**	**6,397,614**	**32%**	**40%**

* 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: EWARN team review per year

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**

REVIEW OF DISEASES IN SURVEILLANCE LIST

After EWARN and WHO have reviewed and modified both case definition and the alert threshold for the diseases during 2017, EWARN team kept that during 2018, with one exception for Measles alert threshold. Due to the large Measles outbreak in 2018, and after the discussion with WHO and SIG, alert threshold for Measles modified after April to be: Double the average of the last 3 weeks in a given location.

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

SECTION 02
SURVEILLANCE UPDATES IN 2018

ACUTE FLACCID PARALYSIS (AFP) SURVEILLANCE

Main features of AFP surveillance in 2017

In 2017, Several factors had affected the epidemiological situation in North of Syria; 469 new AFP cases detected with high NP-AFP rate, an outbreak of cVDPV2 in northern Syria, massive population displacement, rapid changes in the controlling forces, to name a few.

All contributed to the increasing need in keeping AFP surveillance indicators at the highest level of the global standards.

Table 04: Performance and quality indicators of AFP surveillance

Indicator	2014	2015	2016	2017
Reported Cases	106	267	344	469
NPAFP Rate	2.5	5.1	5.3	8.9
Adequacy Rate %	62.3	79	81.1	89.3
NPEV %	33	15	20.6	19.6
SL%	3.8	1.5	3.8	3.4

In 2017, the NP-AFP rate increased at the national level from 5.3 in 2016 to 8.9 ; also, the overall stool adequacy was nearly 90%, only Rural Damascus had an adequacy of 0% as we unfortunately lost all the collected stool specimens.

Figure 01: AFP Epi Curve Year Comparison - EMRO

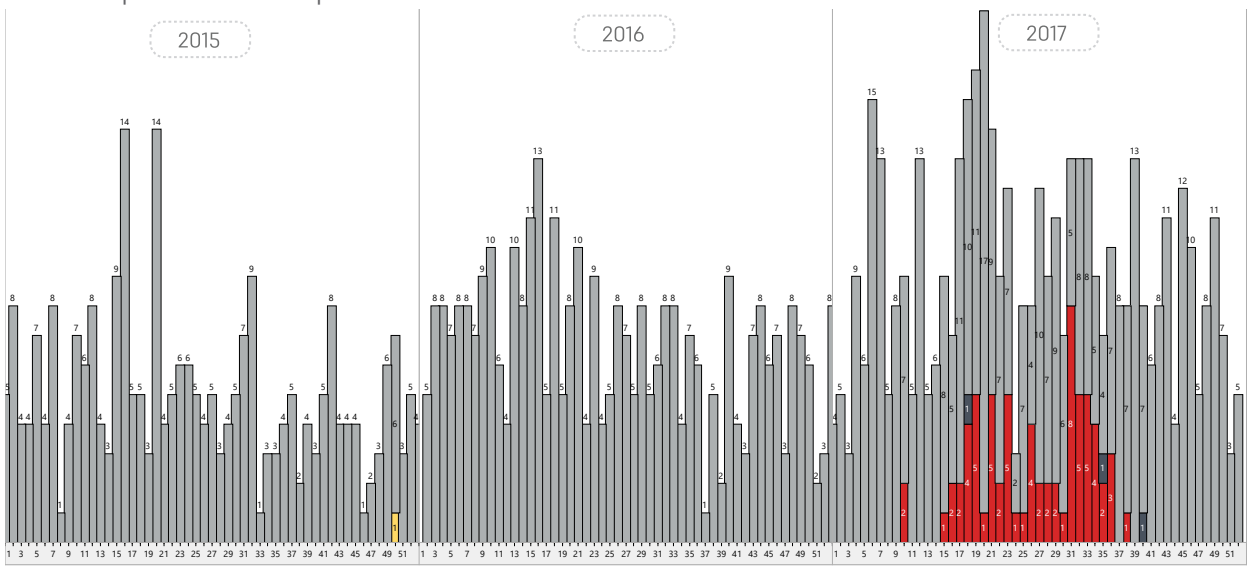
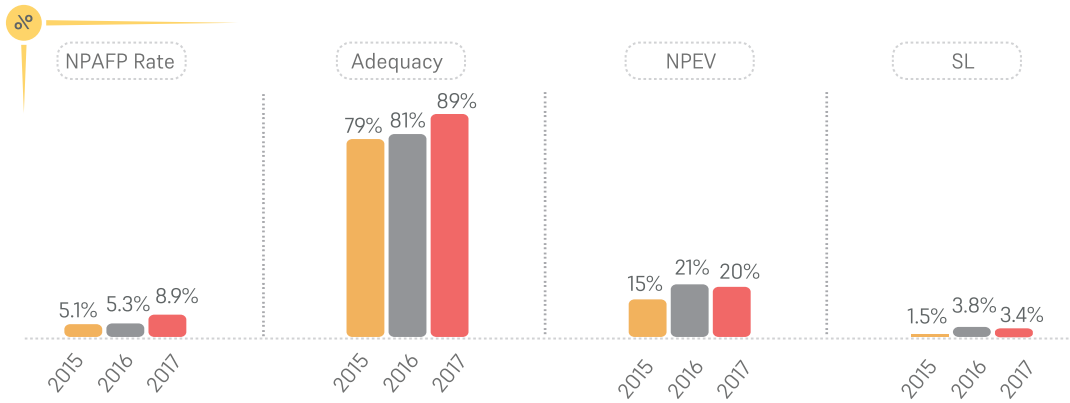
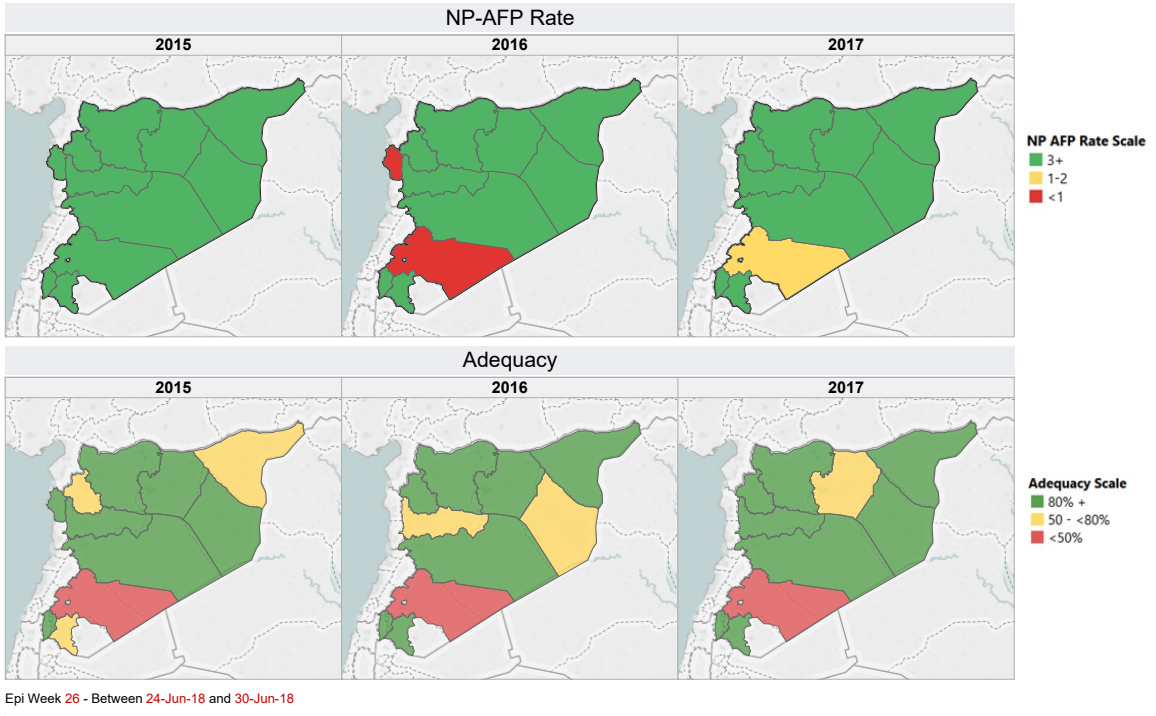


Figure 02: Main AFP Surveillance Indicators - National Level- 2015/2016/2017



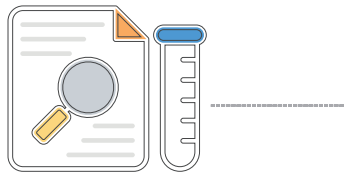
Map 02: Indicators Comparison _ Governorate Level - Syria



EWARN team played in 2017 and through 2018 an essential role in cVDPV2 outbreak detection, re-evaluation of the cases, continuous detection and investigation of the AFP cases, sensitizing the physicians and health care providers about the role of early notification in getting the optimal outcomes and response. In 2017, the team investigated 128 AFP cases from Deir ez Zor governorate (out of which 68 case turned out to be cVDPV2 cases).

Main AFP surveillance indicators in 2018

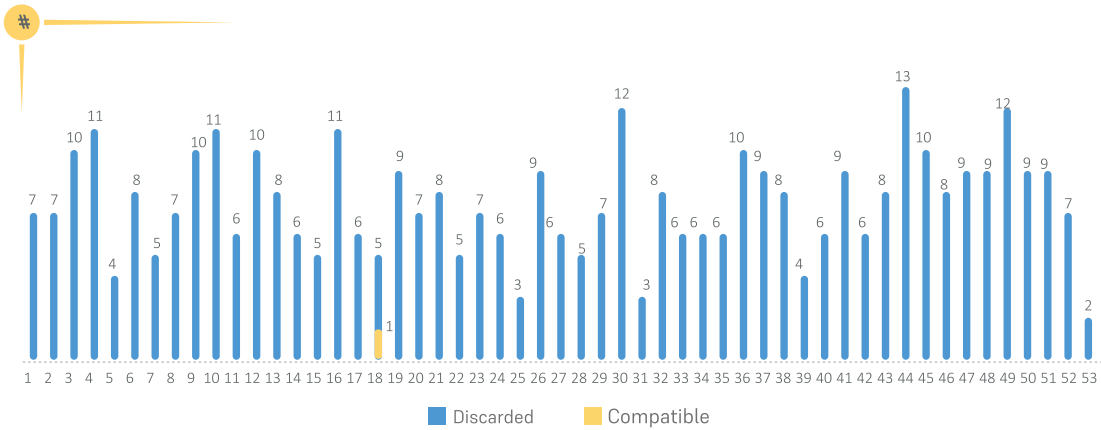
399 AFP cases investigated in 2018.When comparing the numbers of investigated cases between 2017, 2018; we see that the numbers were considerably higher in 2017, but if we exclude the cVDPV2 case and the compatibles the numbers becomes almost the same.



399

AFP cases investigated in 2018

Figure 03: AFP Cases Epi-Curve 2018



The plot of sum of AFP Case for Onsetweek broken down by Epi Year. Color Shows details about Classification EMRO. the marks are labeled by sum of AFP Case. the data is filtered on Governorate, Year Set, AFP Case Source, Class Set, District, Action (Class with hotspot only), Epi week and Poptype. The Governorate filter keeps 12 of 12 members. The year Set filter keeps 6 members. The AFP Case Source filter keeps 4 members. The class set filter keeps 5 members. The district filter keeps 43 of 43 members. The action (Class with hotspot only) filter keeps 5 members. The Epi week filter keeps 54 of 54 members. The PopType filter keeps Null and Hostand IDPs. the view is filtered on Epi Year, which keeps 2018.

Despite the fact that EWARN has lost geographical access to 4 regions; Homs, rural Damascus, Dar'a and Quneitra. But the population movement was mainly towards the safe havens in the north, namely Idleb. 138 AFP cases were IDPs, nomads and non-Syrian out of the investigated 399 cases.

Number of different activities were conducted in order to enhance the basic surveillance indicators on the national and sub-national level. Those activities included but not limited to: three sensitisation sessions targeting the health care providers working with NGOs in EWARN covered areas, more than 500 health care providers were trained throughout 2018. In the session they were reminded of the case definition of AFP, and the role of the health care providers.

Figure 04: AFP Cases Year Comparison (16-17-18) _ Confirmed & Compatible Cases Excluded

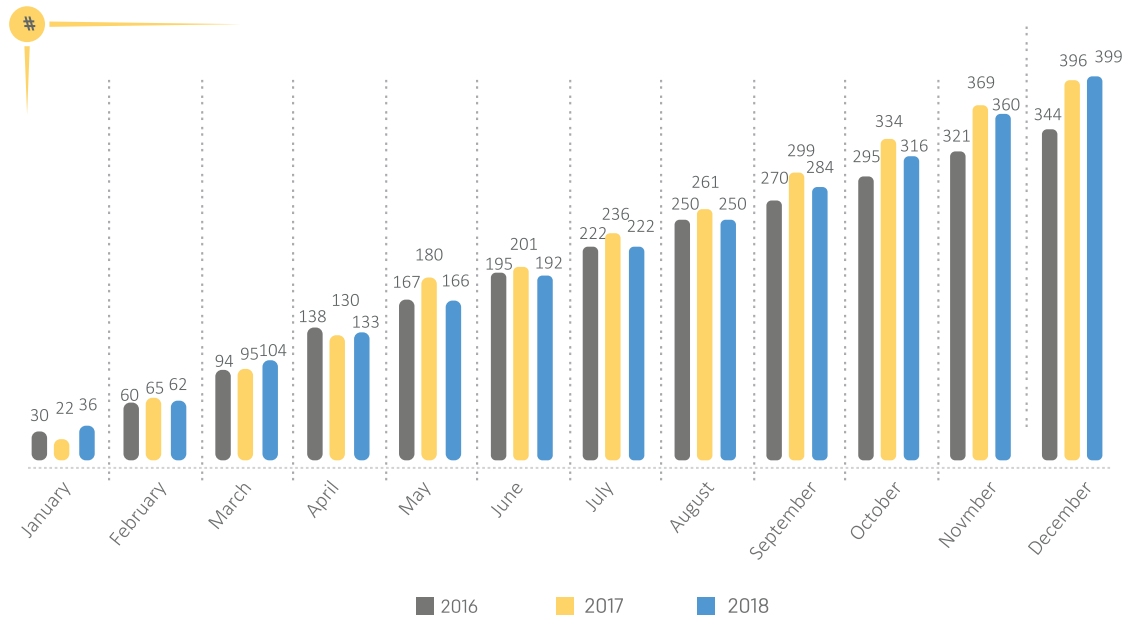
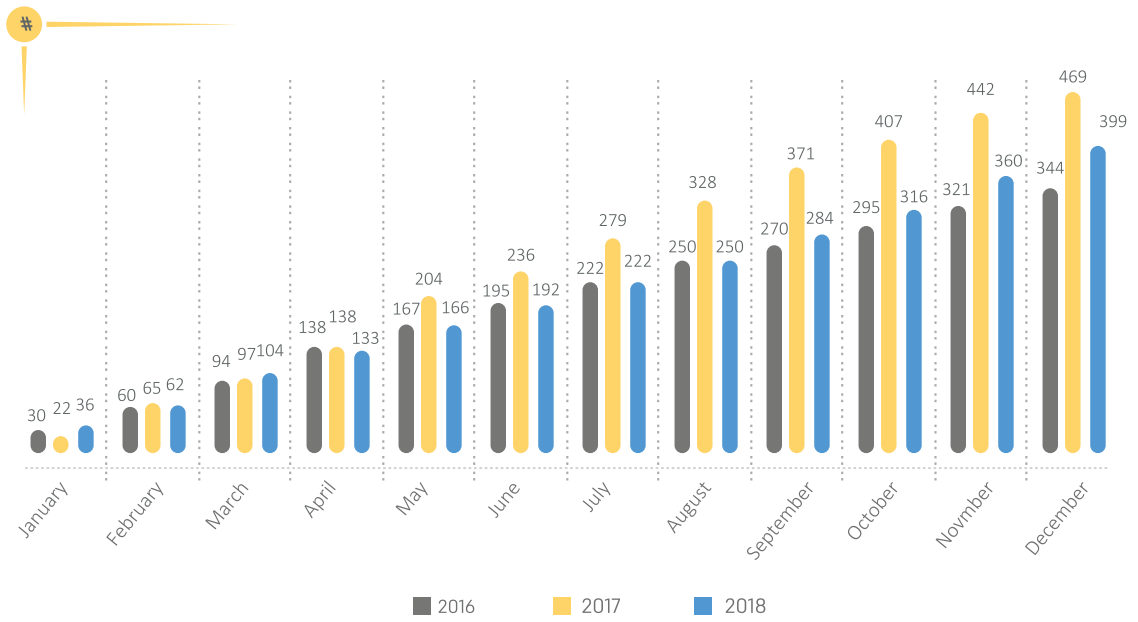


Figure 05: AFP Cases Year Comparison (16-17-18) _ Aggregated Data



Outbreak Risk Assessment (OBRA) Mission

Two visits by outbreak risk assessment team took place in 2018. The main objective was to evaluate the surveillance system run by EWARN from Gaziantep. Recommendations of the first visit were mainly on maintaining the AFP surveillance practices from Gaziantep Hub.

Focusing on ensuring uniformity of AFP surveillance sensitivity and quality at the sub-governorate levels, focusing on high risk areas/ population, paying special attention to silent areas and clustering of AFP cases, with special attention to Idleb as it is considered a watershed for the IDPs from all over Syria, continuing the contacts sampling for all AFP cases, and presenting all AFP cases with inadequate stool specimens to ERC for final classification.

In the second visit conducted in October 2018, OBRA team followed up on the recommendations and acknowledged the implementation of almost all of them by EWARN team. They recommended the closure of the outbreak with caution as the risk of re-emerging is still there due to the low vaccination status and the other risk factors in Syria.

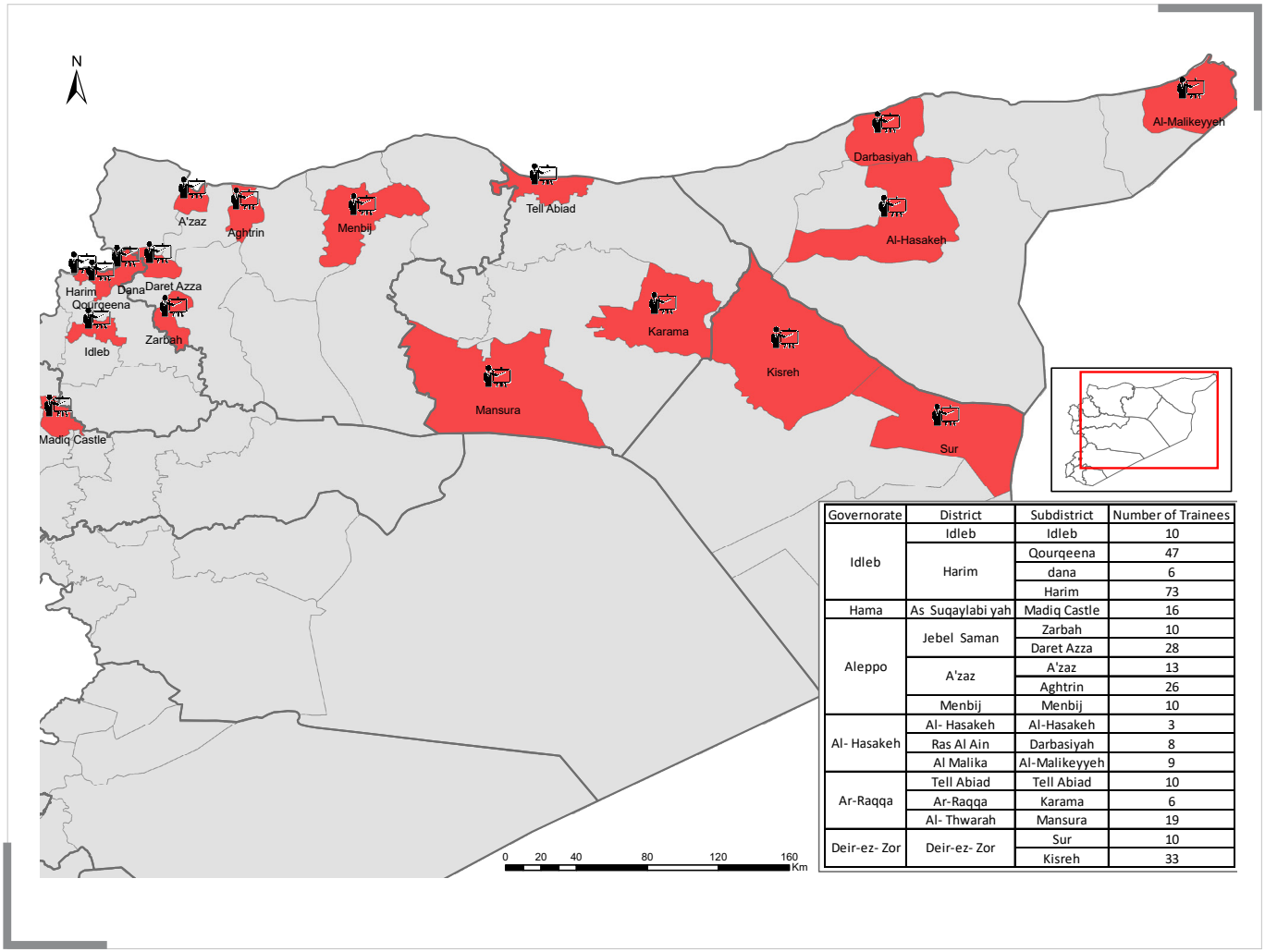
Figure 06: OBRA Mission Meeting _ WHO's Office

Figure 07: OBRA Mission Meeting_ ACU's Office

Community Based Surveillance

This initiative aims to support the existing AFP surveillance system and complement its activities and not to replace it. One training session was conducted in 2018 targeting 337 volunteering focal point. In 2018, more than 40 reported cases through community-based surveillance were excluded and 7 cases (from Al Hasakeh, Deir ez Zor, Aleppo and Idleb) were enrolled in the line list after conducting the appropriate investigation and sample collection steps.

Map 03: Community Based Surveillance Training



Governorate	District	Subdistrict	Number of Trainees
Idleb	Idleb	Idleb	10
	Harim	Qourqeena	47
		dana	6
		Harim	73
Hama	As Suqaylabi yah	Madiq Castle	16
Aleppo	Jebel Saman	Zarbah	10
		Daret Azza	28
	A'zaz	A'zaz	13
		Aghtrin	26
	Menbij	Menbij	10
Al- Hasakeh	Al- Hasakeh	Al-Hasakeh	3
	Ras Al Ain	Darbasiyah	8
	Al Malika	Al-Malikeyyeh	9
Ar-Raqqa	Tell Abiad	Tell Abiad	10
	Ar-Raqqa	Karama	6
	Al- Thwarah	Mansura	19
Deir-ez- Zor	Deir-ez- Zor	Sur	10
		Kisreh	33

Coordination with reference Laboratory in Ankara

As a part of the efforts to strengthen laboratory capacity, EWARN team visited the reference laboratory in Ankara regularly; to inform them of the outbreak situation and express EWARN's gratitude of their crucial role in the efforts to interrupt circulation of the virus. A unified file to share the lab results was agreed with the Turkish Lab and in helped in facilitating the feedback and minimized any possible typos and data discrepancies.

Advocacy meetings were also held with different national and international organization in the field and in Turkey, to inform them about the epidemiological situation of cVDPV outbreak and AFP surveillance status and coordinate the necessary training sessions needed for their staff in the field to ensure the regular flow of data and timely notification.

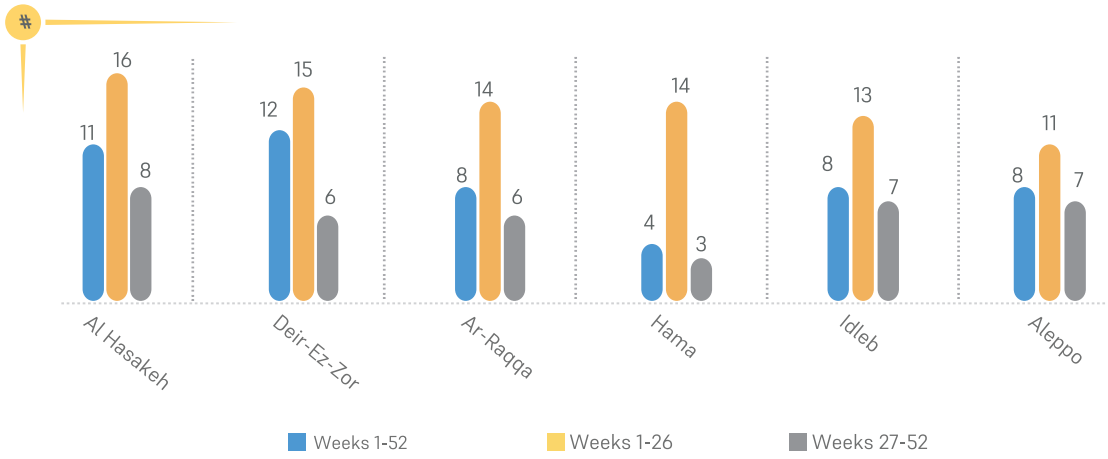
Figure 08: Ankara Virology Laboratory Visit

Challenges

Major and difficult to overcome challenges are insecurity and operational environment imposed by the controlling forces in the field. Time required to transport samples collected is much longer than desired. Further to that, Internet connection is inconsistent, especially in eastern governorates.

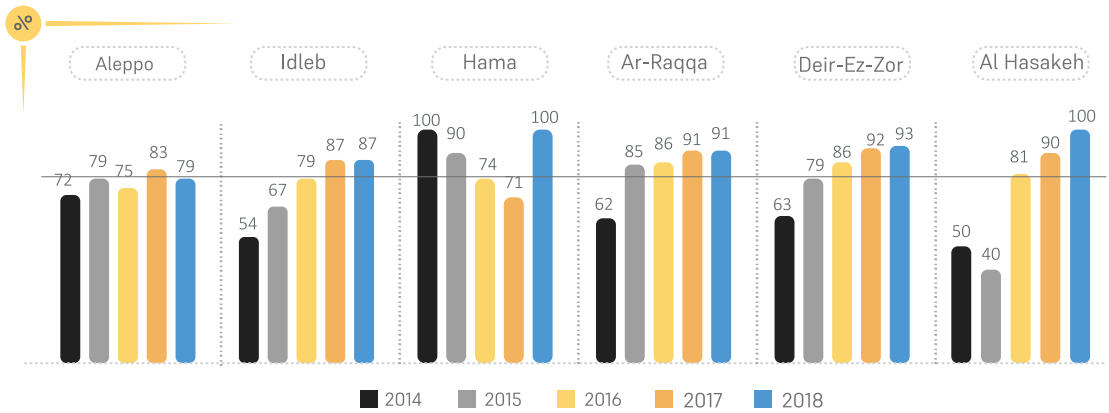
Although the changes in the controlling forces in the north-east parts helped to a degree in conducting the surveillance activities with variations. Usually, in Deir ez-Zor and parts of Ar-Raqqa, conducting all AFP surveillance activities (including area coverage survey) are after obtaining the permissions from the health authorities, whereas in other parts under SDF control, only the basic activities were conducted due to security constraints.

Figure 09: Median Days of Specimens Transportation Comparison



The check-points between the different controlling forces remained a factor that causes delays in specimens transportation. the military operation in Afrin lead to interruption in the transportation routes at first, but after that it helped in decreasing the time required for transportation.

Figure 10: Early Detection - Year Comparison



Early Detection% for each EpiYear broken down by Governorate. Color shows details about EpiYear. The marks are labeled by Early Detection%. The data is filtered one Governorate set. AFP case Source, EpiWeek and PopType. The Governorate set filter keeps 11 members. The AFP case Source filter keeps 4 members. The EpiWeek filter keeps 54 of 54 members. The PopType filter keeps Null and HostandIDPs. The view is filtered on EpiYear and Governorate. The EpiYear filter keeps 2015.2016,2017 and 2018.The Governorate filter exclude Dar'a, Homs, Lattakia, Quneitra and Rural Damascus.

Capacity of the EWARN workforce stays a challenge as well. Despite the extensive experience and knowledge in epidemiology accumulated through the fieldwork and sporadic training sessions, the staff did not receive any certified training program except for the CDC training in 2017, and bio-statistics training course in Gaziantep University supported by WHO in 2018. In addition, lack of external exposure through participation in conferences and international meetings also limits potential professional growth of EWARN team.

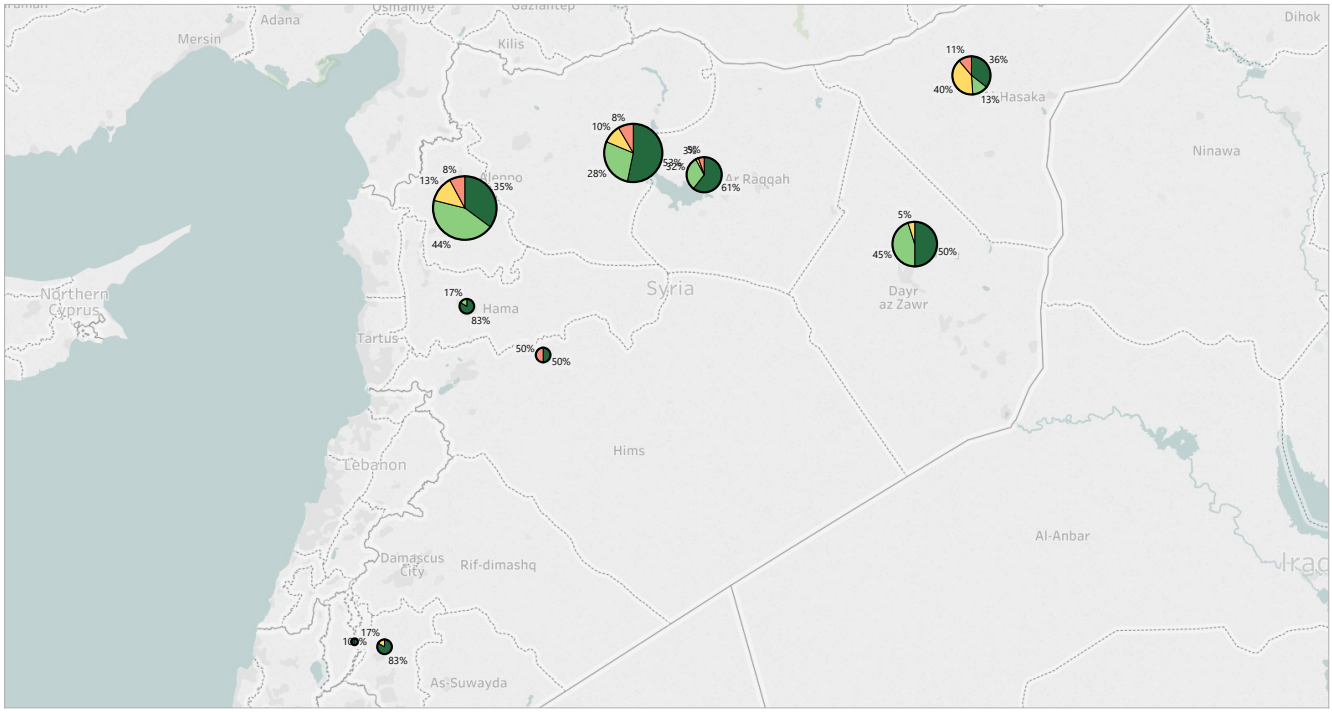
cVDPV2 outbreak also placed additional workload on the staff at all levels.

Some physicians, especially with the purely clinical background, have difficulties to cooperate. Despite the improvement in the notification of cases within 7 days of the onset of paralysis, yet more work is needed to be done to keep the alertness of the health care providers.

It is particularly challenging to get the specimens from the contacts of the index case, as relatives might argue of the necessity of sampling a healthy child. The map demonstrating the distribution of contacts sampling, showing the reluctance in areas with relatively better access and security, such as Idleb.

That said, it is suggested to open channels of communication with the community about polio and the role of AFP surveillance in polio eradication.

Map 04: Contacts Sampling

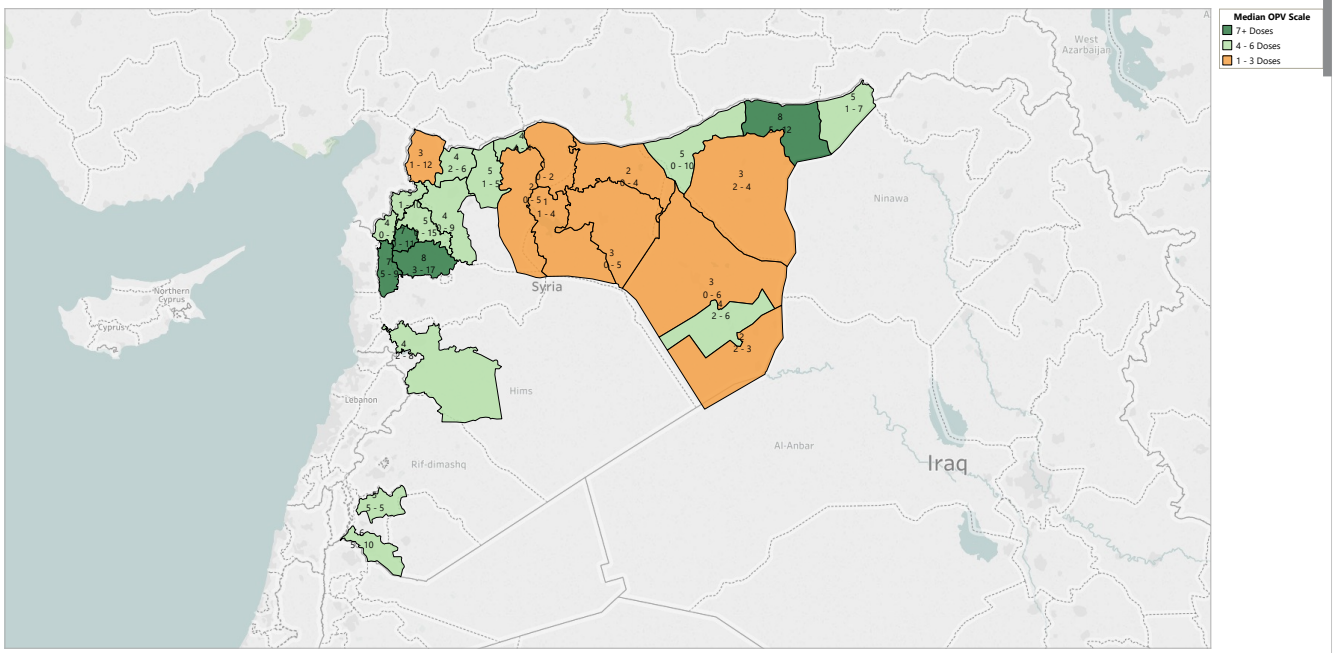


Map based on Longitude (generated) and Latitude (generated). Color shows details about ContactScale. Size shows sum of AFPCase. The marks are labeled by % of Total AFPCase. Details are shown for Governorate. The data is filtered on EpiYear, Governorate Set, Contact Scale Set, AFP Case Source, Epiweek and PopType. The EpiYear filter keeps 2018. The Governorate Set filter keeps 11 members. The Contact Scale Set filter keeps 4 members. The AFP Case Source filter keeps 4 members. The Epiweek filter keeps 54 of 54 members. The PopType filter keeps Null and HostandIDPs. The view is filtered on Governorate, which keeps 12 of 12 members.

Lastly, the vaccination status of the AFP cases shows low coverage in eastern governorates through 2018, the immunity levels are still less than optimal and efforts should continue to bring back the routine vaccination services to that high-risk area. The situation is better in western governorates but the population movement that took place throughout 2018 adds a risk factor that cannot be neglected.

The revitalization of routine vaccination activities in Afrin is ongoing in attempt to enhance the immunity levels for the children in that district.

Map 05: Median OPV Doses - District Level- 6-59 Months



Lessons learned and measures to enhance surveillance:

E-Surveillance.

ODK is used for active surveillance data collection. Tableau is used for data visualisation of AFP surveillance indicators.

Community based surveillance.

Still not fully mature initiative but work is ongoing to enhance it and obtain the best outcome out of it.

Healthy children stool survey.

Conducted only once in 2018, but possible whenever indicated after communication with the Turkish laboratory.

Future plans

- Further capacity building is needed for the health care providers in the field, namely expansion of the training for the health workers of all specialties and keeping the level of sensitisation with regard to the importance of early detection and reporting of AFP cases. It was noted that the sensitivity of the health care providers in eastern governorates (mainly Deir ez-Zor) in higher than other governorates, as they have witnessed two outbreaks.
- A slight regression in the reporting within 7 days was noticed in Aleppo and Idleb, which necessitates regular orientation sessions to all the health care providers. The health care providers' training sessions are planned three times, right after the DLOs and FLOs training sessions.
- Community based surveillance initiative was launched in January 2018, two training sessions were conducted and more than 300 volunteers were included in each session. Deir ez-Zor and Ar-Raqqa were added in the second half of the year.
- Enhancing the capacity of the FLOs will be an objective of the program, in order to have more involvement of FLOs into AFP surveillance, other than only receiving the notifications and assisting in the specimen collection. Participation in area coverage survey, and the active case search is required. The FLO will be evaluated in the 1st quarter of 2019 and the FLOs with the highest capacity will have a direct training by the central level to refine their knowledge and provide them with the needed concepts of surveillance.
- Maintaining the field staff and minimizing the turn-over rates is essential for the continuity and level of the program.
- Measures to strengthen the active surveillance needs to be elaborated.
- Deteriorating economic status of the population inside Syria is affecting access to health care and rehabilitation for children affected by diseases that constitutes acute flaccid paralysis syndrome. The program covers part of the financial burden on the families, although small amount but it is very critical for the people suffering for the last 8 years. 141 AFP cases benefited from the financial support (Table 5).

Table 05: Percentage of distribution of expenses

Transportation compensations	35%
Diagnostic tests (MRI, CT-Scan, CSF Puncture, serological tests)	27%
Medicines	6%
60 Days FUP	5%
Physiotherapy	27%

VACCINE PREVENTABLE DISEASES (VPDS) SURVEILLANCE

Introduction

Vaccine-preventable diseases (VPDs) is one of the priorities of EWARN. During 2018, the work on the most oppressive measles outbreak in the north of Syria that ever happened through the past few years was a big challenge. The surveillance of the other vaccine-preventable diseases during 2018 in accordance with the plans and concepts outlined at the end of 2017. EWARN has sounded the alarm to respond to measles outbreak and to launch an urgent vaccination campaign, as well as to increase the number and strengthen the role of the Expanded Program on Immunization (EPI) centers in Idleb, Aleppo, and the north of Hamah. This what were achieved through vaccination campaigns against measles & rubella in April and November respectively, and scaling up the EPI centers up to 90.

The importance of vaccine-preventable diseases surveillance lies in the early detection, identification, reporting, and rapid response to outbreaks, including cooperation with (SIG) to implement vaccination activities, in order to reduce the related morbidity and mortality.

The following VPDs - in addition to measles - are being monitored as well: rubella, pertussis, mumps, neonatal tetanus, meningococcal meningitis, and diphtheria.

In fact, surveillance of the adverse events following immunization (AEFI) is another back bone of vaccine-preventable diseases surveillance. EWARN cooperates with the SIG and involved health partners to optimize the surveillance of these effects.

Measles Surveillance

- Since mid-2016, the measles surveillance has been shifted from aggregated to case-based surveillance. In 2018, the reported cases were investigated through two ways: the investigation form, and the line list. Due to a large number of suspected measles during 2018, 12% of the total number of suspected cases was investigated as public health methodology criteria and EWARN guidelines. About 90% of the investigated cases have been confirmed in EWARN laboratories network.
- The notifications of suspected measles cases were received from the sentinel sites (about 500 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 measles investigation form includes detailed information about: the health center, suspected cases personal data, symptoms, clinical signs, complications, epidemiological, vaccination status, laboratory investigations, as well as case management and preventive procedures followed with the recommendations provided to the patient and the contacts.
- The line list includes the most important epidemiological information, especially the elements of the definition of measles case and the patient's health status, complications and follow-up information of the case. This line list is developed and derived from the above-mentioned investigation form.

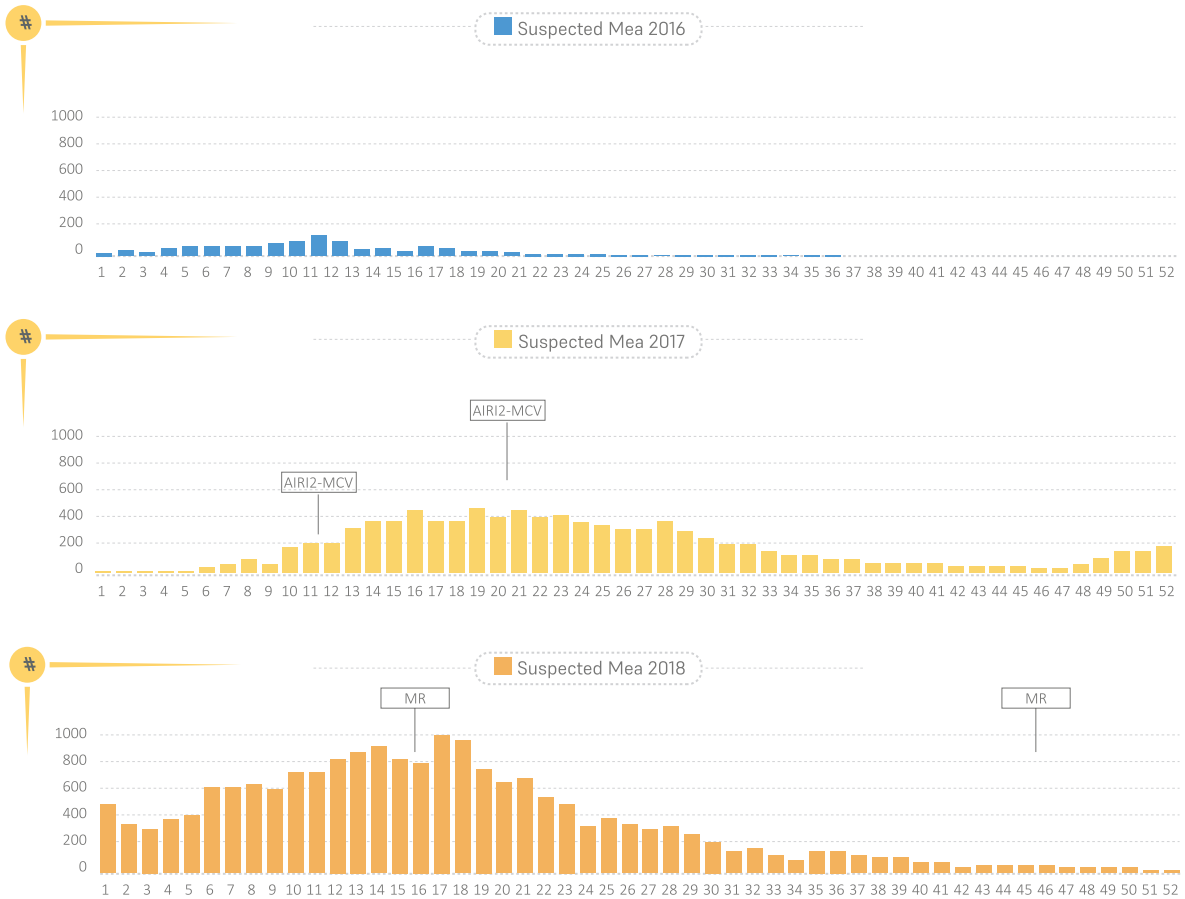
- During 2018, measles cases have been monitored up to 30 days since the onset of the rash to define the fate of the cases, especially those that have a risk factors and complications, in order to enhance measles mortality surveillance.
- The latest updates report was presented on weekly basis using 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.
- In 2018, EWARN reported the most oppressive measles outbreak in the north of Syria that ever happened through the past few years. Many factors have been intertwined in flaring up this outbreak:
  - Frequent displacement of populations.
  - The deterioration of the vaccination situation against measles due to the lack of measles vaccination campaigns.
  - The delayed geographical spread of routine vaccination centers.
  - Deterioration and instability of the security situation.
  - Obstacles against vaccine access to some targeted areas.
- More than 17,931 cases of measles have been registered from the six governorates.
- The highest number of cases was recorded from Ar-Raqqa Governorate (6516 suspected cases). The laboratory confirmation (positive measles IgM antibody) percentage was 79% of the investigated cases.

Table 06: Suspected cases of Measles per week & governorate 2018

Governorate	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	Total
Aleppo	64	47	17	23	16	71	88	58	78	121	85	87	102	129	126	119	166	123	111	107	156	125	117	41	72	49	46	45	30	24	27	22	17	9	9	8	7	11	5	6	2	9	10	7	3	4	1	0	3	9	6	1	2619
Al-Hasakeh	2	0	4	1	4	3	4	5	4	6	3	7	7	6	2	3	5	10	5	7	6	11	3	6	0	1	0	0	5	2	1	0	1	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	128
Ar-Raqqa	234	166	151	174	220	327	325	343	313	248	307	290	302	260	202	232	278	286	197	162	157	100	101	97	74	94	59	94	91	67	41	67	48	47	65	83	45	38	52	34	16	5	7	4	5	2	0	2	2	2	0	0	6516
Damascus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dar'a	4	2	7	2	2	1	2	0	0	0	5	3	2	3	0	4	3	2	4	1	2	2	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56
Deir-ez-Zor	123	99	92	130	122	144	115	85	67	116	128	137	189	211	127	103	118	149	157	128	123	112	116	104	117	96	105	94	89	76	40	39	35	24	31	28	32	31	25	28	35	14	16	16	14	11	17	12	12	17	11	11	4071
Hama	0	0	0	0	0	1	1	2	1	2	0	5	3	2	2	5	6	6	5	1	3	2	0	0	3	2	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	56
Homs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Idleb	20	23	30	26	31	27	50	103	85	177	148	222	207	242	311	272	357	316	226	206	186	163	134	49	87	79	73	71	48	37	24	39	19	13	32	22	23	18	28	16	24	17	13	18	26	30	21	22	16	11	5	10	4453
Quneitra	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Rural Damascus	2	0	0	4	4	2	0	2	7	0	0	0	0	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
Total	450	338	302	360	399	576	585	598	555	670	676	751	813	854	770	738	935	894	705	613	633	516	472	299	355	321	283	306	263	207	133	167	120	93	137	142	107	99	110	84	78	46	46	45	49	47	39	36	33	39	22	22	17931

- When comparing epi curves of measles suspected cases for 2016,2017, and 2018, it will be clear that 2017 and 2018 appeared to have a major measles outbreak. The outbreak of measles in 2018 was an extension of its 2017 outbreak and reached its peak during the second quarter of 2018, specifically within the Epi week 17.

Figure 11: Comparison of suspected Measles cases Epi curves 2016-2017-2018

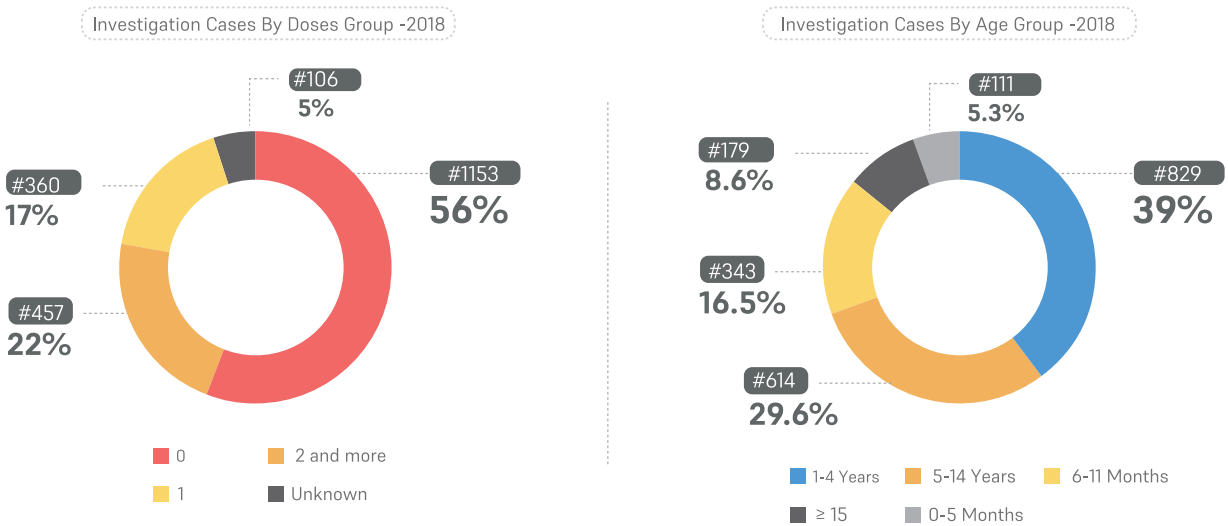


- When comparing between the age groups of suspected measles cases (smaller and older than 5 years) in 2018, it showed that the proportion in age group under the age of 5 years

Figure 12: Age distribution for suspected measles cases

- In terms of age groups, it is clear that the age group under 5 years represents the largest proportion of investigated measles cases by 62%, and the percentage of cases unvaccinated with the MR vaccine was 56% of all investigated cases .

Figure 13: Age distribution of measles cases with the vaccination status



- Five confirmed cases of rubella have been confirmed by EWARN lab. There is no registered congenital rubella syndrome during 2018.
- In terms of the vaccination status, it seems that only 39% of the total number of investigated measles cases have been received one dose at least of the MR vaccine.
- The final classification of measles cases that been investigated during 2018: 44,4% are positive for IgM-specific antibodies (laboratory confirmed), 34,3% of the cases are clinically confirmed, 11% Epi-linked, and about 10% of the cases have been discarded by lab.
- The vaccination status per age group of investigated measles cases are shown in the figure 15:

Figure 14: Final classification of investigated measles cases during 2018

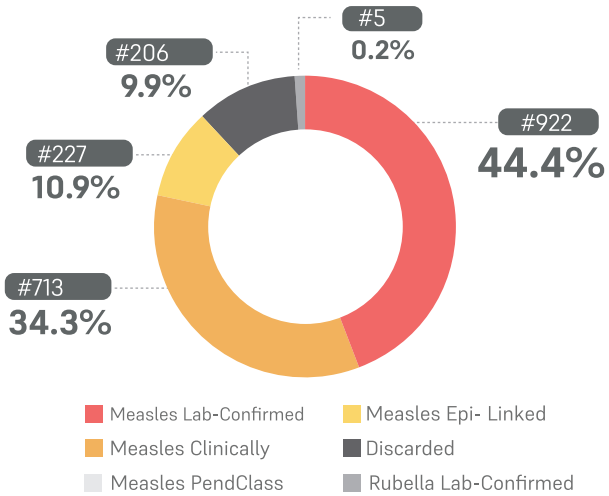
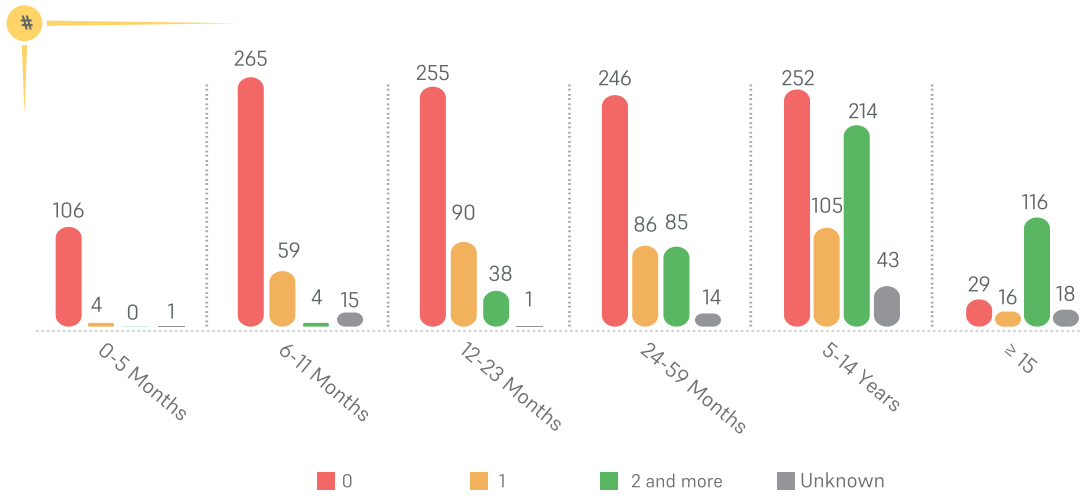


Figure 15: Vaccination status of investigated measles cases by age group during 2018



- This summons for 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.
- In the following, the epidemiological indicators of measles surveillance for investigated cases:

2075 cases of measles have been investigated out of 17,931 suspected measles cases (approximately 12%). And that has done according to the principles and policies of public health by proving the outbreak for each district or catchment area laboratory. The relative shortage of the percentage of investigated cases due to a large number of suspected measles cases.

The overall incidence rate for confirmed measles was 82%, the largest incidence rate was in Aleppo governorate (90% of the laboratory samples was from Aleppo).

Annualized measles incidence per 100'000 total population for measles was (172).

The rate of laboratory-confirmed measles cases per million population is 88,4, 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 close to 2, which meets the global standard for every 100,000 of the population.

Table 07: Measles Surveillance Indicators in 2018 _ 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	2,437,335	2619	792	30%	376	373	337	90%	36	138.3	1.5
Idleb	3,610,990	4453	690	15%	366	365	296	81%	68	82.0	1.9
Hama	200,675	56	39	70%	21	21	16	76%	5	79.7	2.5
Ar-Raqqa	869,808	6516	267	4%	134	133	105	79%	28	120.7	3.2
Deir-ez-Zor	547,867	4071	119	3%	97	97	63	65%	34	115.0	6.2
Al Hasakeh	1,147,380	128	142	111%	124	124	103	83%	21	89.8	1.8
Rural Damascus	584,389	26	2	8%	0	0	0	-	0	0	0
Dar'a	904,724	56	24	43%	18	18	2	11%	14	2.2	1.5
Quneitra	122,575	6	0	0%	0	0	0	-	0	0	0
Total	10,425,740	17,931	2075	12%	1136	1131	922	82%	206	88,4	1,98

Table 08: Measles Surveillance Indicators in 2018 _ 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 2	Sampled within 4-28 days from rash date	Target≥80%
	#	#	%	#	%	#	#	%
Aleppo	792	736	93%	733	93%	376	370	98%
Idleb	690	635	92%	539	78%	366	337	92%
Hama	39	36	92%	35	90%	21	20	95%
Ar-Raqqa	267	204	76%	192	72%	134	129	96%
Deir-ez-Zor	119	74	62%	36	30%	97	70	72%
Al Hasakeh	142	139	98%	141	99%	124	120	97%
Rural Damascus	2	2	100%	2	100%	0	0	-
Dar'a	24	21	88%	24	100%	18	12	67%
Quneitra	0	0	-	0	-	0	0	-
Total	2075	1847	89%	1702	82%	1136	1058	93%

For more details about measles report, please click on this link : Measles Report of Syria 2018 - [1] www.shorturl.at/cenB3

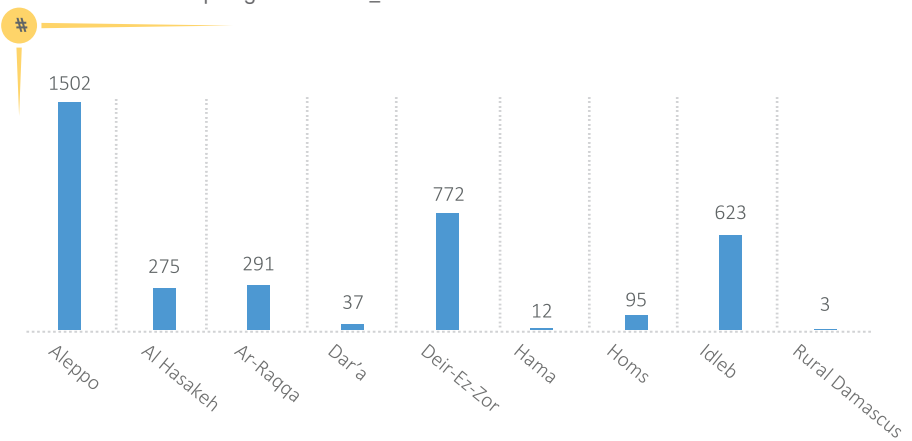
[1] https://app.powerbi.com/view?r=eyJrIjoiNzc4ZmQ3YzMtMjVkYy00NDU5LWEwYWQtNjMxZWQwYjRhZTExIiwidCI6ImZiMTU5MTQzLTlhNTYtNDRlYS04MWM-zLTNiM2NkNGJkMmQ2NyIsImMiOjl9

Other Vaccine Preventable Diseases Surveillance

Mumps

- 3,610 suspected cases of mumps have been reported during 2018. Aleppo has been ranked as the first with 1,502 cases, followed by Deir-ez-Zor with 772 cases.
- 3 cases of meningitis and 2 cases of acute pancreatitis were identified as complications in mumps cases in A'zaz _Aleppo, where positive mumps IgM antibodies have been confirmed by EWARN's lab in Jarablus.
- 166 laboratory tests for mumps IgM antibodies, however, 112 (67,4%) of them were positive.
- There were no registered deaths as a complication in mumps during 2018.

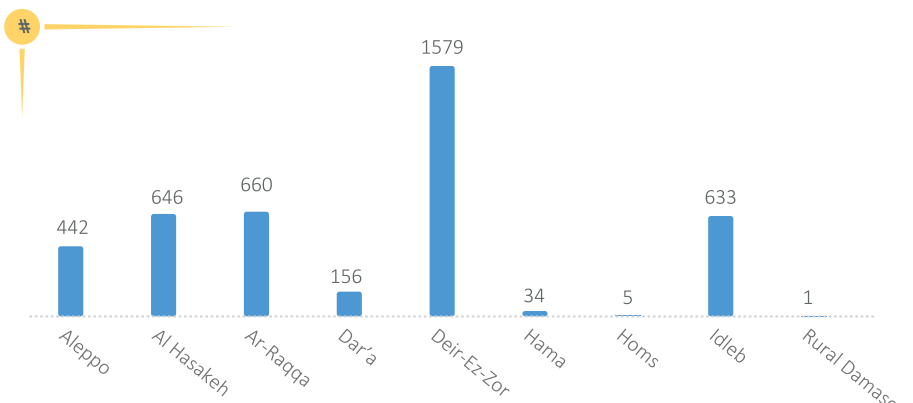
Figure 16: Mumps cases distribution per governorate_2018



Pertussis

- 4,156 cases of suspected pertussis have been reported during 2018. Deir ez-Zor has been ranked as the first with 1,578 cases, followed by Ar-Raqqa Governorate with 660 cases of pertussis.
- There were no registered deaths as a complication of pertussis during 2018.

Figure 17: Pertussis cases distribution per governorate_2018



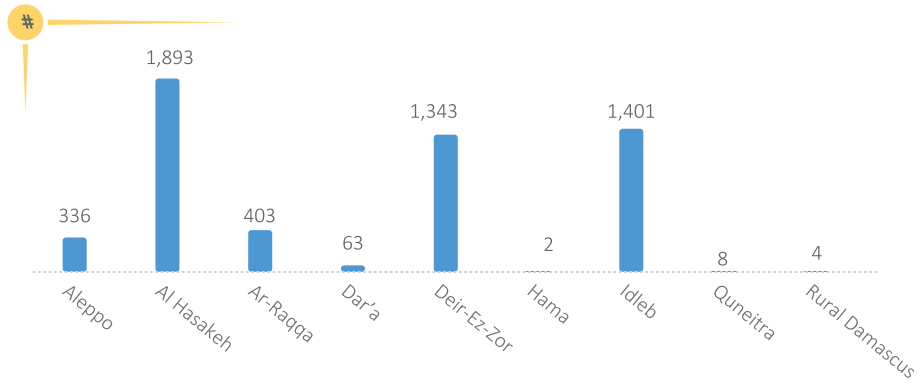
Neonatal Tetanus and Tetanus

- One confirmed case of tetanus has been reported in a 6 years old boy in A'zaz_Aleppo. He was internally displaced from Aleppo city to Shamarakh camp. He got none of the vaccinations.
- Another confirmed case of neonatal tetanus has been recorded for a 7 days old neonate in Al-Bab_Aleppo, as well as a displaced person from the Deir Hefer region, where it was found that his mother had not received any tetanus vaccine throughout her life.
- Both of the cases were referred to Turkey without knowing their final fate.

Meningitis

- The cases of meningitis that reported during 2018 have a variety of clinial manifestations (viral, bacterial and tuberculosis), but no case of meningitis has been confirmed by CSF culture, despite of several specimens of CSF have been cultured but the results came negative in all suspected cases..
- The number of reported meningitis cases during 2018 was 5,458, most of them in Al- Hasakeh governorate (1,893 cases), followed by Idleb governorate (1,401 cases),

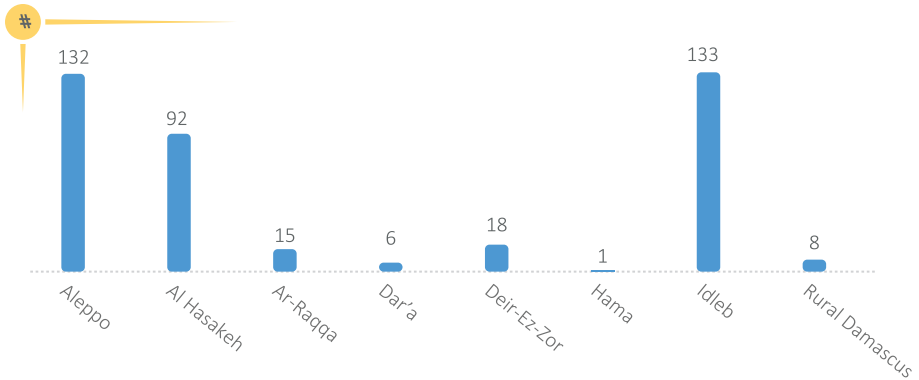
Figure 18: Meningitis cases distribution per governorate_2018



Tuberculosis

- The data of registered tuberculosis cases were aggregated from the zero-weekly report, there are no effective centers to detect or manage TB cases in the EWARN coverage areas.
- Attempts are being made to establish specialized TB management centers, and more efforts are performed in collaboration between Health Directorates and WHO.
- The number of patients that were registered as tuberculosis was 405 patients during 2018 (133 in Idleb governorate and 132 in Aleppo governorate).

Figure 19: TB cases distribution per governorate_2018



Diphtheria

- One probable case of diphtheria has been reported in Aghtrin subdistrict_ Aleppo. After epidemiological surveillance and surveys, it was found that the case was not consistent with the clinical standard definition of diphtheria, thus was discarded.

Table (9) summarizes the number of suspected vaccine-preventable diseases in 2018 according to epidemiological weeks.

Table 09: VPDs cases number_2018

Diseases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	Total
Measles	450	338	302	360	399	576	585	598	555	670	676	751	813	854	770	738	935	894	705	613	633	516	472	299	355	321	283	306	263	207	133	167	120	93	137	142	107	99	110	84	78	46	46	45	49	47	39	36	33	39	22	22	17931
Rubella																	2		1																																					3
Mumps	99	131	119	80	51	77	81	87	70	82	87	71	89	63	69	78	87	76	89	103	94	72	80	61	50	64	39	47	60	58	61	49	49	33	50	77	71	66	55	43	57	51	44	48	47	62	57	68	103	77	76	52	3610
Meningitis	95	59	71	47	67	55	61	70	66	74	68	74	97	89	80	80	79	90	120	116	140	111	116	106	97	112	119	110	138	137	137	146	140	129	143	147	130	121	138	126	130	123	102	108	117	105	115	131	103	107	119	97	5458
Tetanus																																			1																			1
Neonatal tetanus	1																																																					1
Tuberculosis	5	7	13	10	8	11	14	12	6	12	6	12	5	4	9	8	8	4	11	8	11	6	7	5	5	4	2	2	6	21	11	10	7	4	7	6	3	2	5	4	6	11	13	8	5	7	8	8	7	7	17	7	405
Probable Diphtheria																					1																																		1
Pertussis	124	99	130	118	110	201	202	158	103	88	70	88	71	96	74	68	68	50	92	69	68	82	73	50	67	78	71	70	78	65	63	58	54	46	53	59	79	59	90	51	71	69	64	81	80	35	68	79	64	43	56	53	4156

VACCINE PREVENTABLE DISEASES- DEATH RELATED

- 9 measles-related deaths have been reported during 2018, 5 of them were from Deir-ez-Zor governorate, 3 from Idleb governorate, and 1 from Aleppo governorate.
- It so important to clarify that 8 of them did not get any dose of MR vaccine, except 1 case from Al Ma'ra _Idleb.

Figure 15 shows important epidemiological information with the cause of death as a complication of measles. In addition, the information of age and vaccination status.

Table 10: Measles-Related Death_2018

GOVERNORATE	District	Sub-District	Age(M)-Gender	MCV	Cause	Dead Date	IDP-Resident
Idleb	Al Ma'ra	Kafr Nobol	105/M	0	Encephalitis	9-Feb-2018	Resident
Deir-ez-Zor	Deir-ez-Zor	Kisreh	24/M	0	Pneumonia	18-Feb-2018	IDP
Idleb	Al Ma'ra	Ma'rrat An Nu'man	8/M	1	Encephalitis	29-Apr-2018	Resident
Aleppo	Afrin	Raju	9/M	0	Encephalitis	24-Apr-2018	IDP
Deir-ez-Zor	Deir-ez-Zor	Kisreh	9/M	0	Gastroenteritis	3-Apr-2018	Resident
Deir-ez-Zor	Deir-ez-Zor	Kisreh	2/M	0	Pneumonia	2-Mar-2018	Resident
Deir-ez-Zor	Deir-ez-Zor	Kisreh	12/M	0	Pneumonia	4-Apr-2018	Resident
Deir-ez-Zor	Deir-ez-Zor	Kisreh	49/M	0	Gastroenteritis	24-Apr-2018	Resident
Idleb	Idleb	Maaret Tamsrin	49/M	0	Encephalitis	5-Jun-2018	Resident

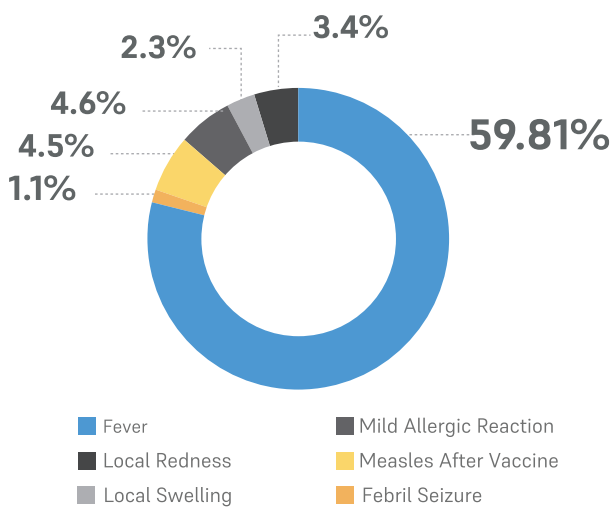
Adverse Event Following Immunization (AEFI) Surveillance

- EWARN monitors AEFI of both vaccination campaigns and 90 routine vaccination centers. 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 reported AEFI during a vaccination campaign are being analyzed and assessed through the meetings with SIG on daily basis, then a report on AEFI is issued after each vaccination campaign.
- 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 MR vaccination campaign / April 2018

- This campaign covered: Idleb, Aleppo, and Hama, and targeted the age group in-between 6-59 months.
- The campaign included 61 team-support centers. EWARN has received 591 daily zero-reports through the campaign days with 97% completeness.
- 73 AEFI cases have been registered and classified as follow: 71 as mild and 2 as sever (febrile seizure in 12-month-old boy and gastroenteritis with mild dehydration in 10-month-old girl). Both of them were kept 1 day in the hospital for management and observation.
- Fever was the most frequent adverse event (81%). Usually, many of fever cases do not referred to the health centers, as caregivers advised to use paracetamol based on recommendations of pediatricians and side effects doctors.

Figure 20: AEFI% of MR vaccination campaign in April-2018



AEFI surveillance of MR vaccination campaign / November 2018

This campaign covered 3 governorates: Idleb, Aleppo, and Hama, and targeted the age group in-between 5-15 years.

- The campaign included 66 team-support centers. EWARN has received 1,168 daily zero-reports through the campaign days with 98% completeness.
- 126 AEFI cases have been registered and classified as follow: 125 as mild and 1 as moderate (acute allergic reaction in a 6-year-old female, she was kept few hours in the hospital for management and observation).
- Fever was the most frequent adverse event (37%).

Figure 21: AEFI% of MR vaccination campaign in November-2018

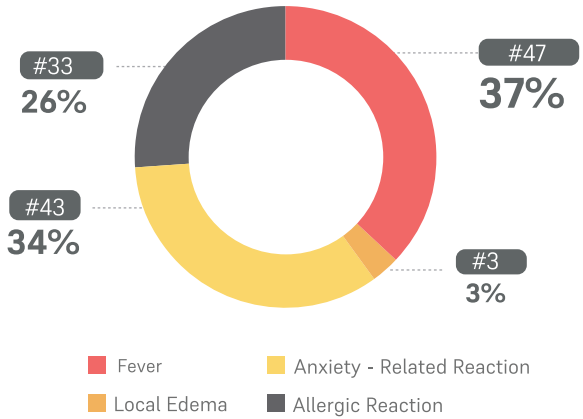


Figure 22: Daily zero-report model of AEFI of MR vaccination campaign

التقرير اليومي للإبلاغ عن التأثيرات السلبية التالية للتلقيح - على مستوى المركز

مركز دعم الفرق	مركز أريحا
المحافظة	إدلب
المنطقة	أريحا
الناحية	أريحا
المدينة / القرية	أريحا
تاريخ التقرير	2018-11-03
هل تم اكتشاف تأثيرات سلبية تالية للتلقيح؟	لا

الاسم الثلاثي	العمر (شهر)	العنوان	التشخيص المبدئي	تاريخ التلقيح	رقم الطبخة	الإجراء المتخذ

Figure 23: Investigation Form pf AEFI

استمارة تقصي الأحداث السلبية التالية للتلقيح

الاسم الأول: ___ اسم العائلة: ___ تاريخ الميلاد: ___

الجنس: ___ العنوان: ___

المحافظة: ___ المنطقة: ___ الناحية: ___

مكان موقع التلقيح: ___

رمز الفريق: ___ اسم مشرف الفريق: ___ مركز دعم الفرق التابع له: ___

اللقاح المعطى	طريقة الإعطاء	موقع الحقن	رقم الدفعة	تاريخ انتهاء الصلاحية	رقم دفعة المذيب	تاريخ انتهاء صلاحية المذيب

تاريخ التلقيح	تاريخ ظهور الحدث السلبي	الفاصل الزمني	تاريخ الإبلاغ	المبلغ

وصف الحدث:

التشخيص الأولي: ☐ ارتكاس موضعي شديد ☐ ارتكاس تحسسي ☐ صدمة تحسسية ☐ تجرثم دم
☐ متلازمة الصدمة السمية ☐ الاختلاج (بما فيه الاختلاج الحروري) ☐ خراج
☑ أحداث سلبية أخرى (حددها): ___

السوابق المرضية: ___

عدد الحالات التي تلقت اللقاح المشتبه به خلال فترة زمنية محددة: ___

الاستقصاء السريري: ___

الفحوصات المخبرية: ___

التشخيص النهائي: ___

مصير الحالة: ☐ شفاء ☐ دخول مشفى ☐ وفاة

ضع استنتاجك حول سبب AEFI ضع إشارة بجوار الفئة الملائمة إذا كان هناك أكثر من سبب واحد:

☐ ارتكاس مرتبط بأخطاء التلقيح:	☐ ارتكاس للقاح:	☐ حوادث مصادفة:
☐ حقن غير عقيم ☐ حل اللقاح بشكل غير سليم	☐ مشكلة في دفعة محددة من اللقاح	☐ نفس الحوادث لدى غير الملقحين
☐ أعطي اللقاح بطريقة غير صحيحة أو مكان غير ملائم	☐ ارتكاس متوقع للقاح	☐ أخرى ☐ غير معروف
☐ نقل وتخزين اللقاح بشكل غير صحيح ☐ أخرى	☐ أخرى	

الإجراءات التصحيحية: ___

إجراءات أخرى ينصح بها: ___

اسم موظف التقصي: ___ التوقيع: ___ التاريخ: ___

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, and northern Hama.
- The completeness during 2018 reached up to 94% (85 out of 90), whereas the timeliness reached up to 88% (79 out of 90 centers sent zero reports on time, during the first week of every month).

Classification of AEFI according to severity

- There are 3 types of AEFI:
  1. Mild: It doesn't need treatment or doctor's intervention.
  2. Moderate: It needs some observation by the doctor.
  3. Sever: It needs hospital admission for management and treatment.
- The reported AEFI cases was 367 during 2018, and they were classified as follow: 344 as mild (93%), 29 as moderate (6%), and 4 as sever cases (1%).
- The 4 severe cases were: febrile seizure, moderate allergic reaction, and anxiety shock from vaccination. The sever cases needed admission. However, all of those 4 AEFI cases have discharged from the hospital with good health status.

Classification of AEFI according to etiology

- Vaccine product-related reactions: 232 cases (63%), due to the following postoperative fever, with except of 2 cases with febrile convulsions after PENTA vaccine, 6 cases with swelling and local redness also after PENTA because of existing - cellular-vaccine for pertussis.
- Immunization error-related reaction (programmatic): 23 cases (6%), as a result of injections, subcutaneously instead of intramuscularly injection or vice versa.
- Coincidental: 57 cases (16%).
- Immunization anxiety-related reaction: 53 cases (14%), essentially following Td vaccine administration.
- Unknown: 1%.

Figure 24: Classification of AEFI according to severity from EPI centers _2018

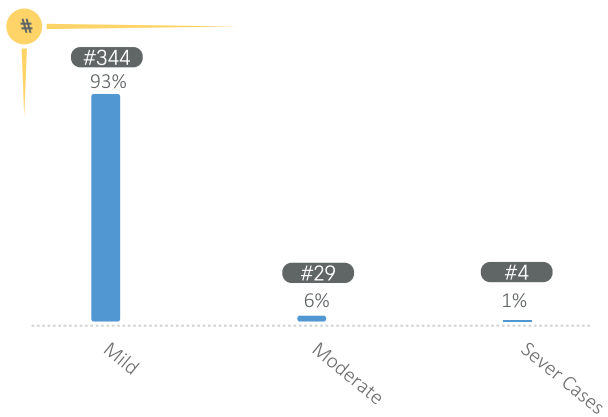
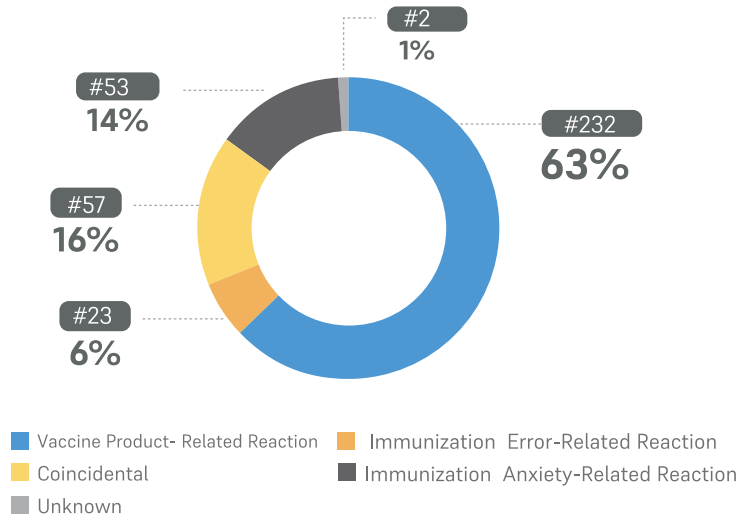


Figure 25: Classification of AEFI according to etiology from EPI centers _2018



The AEFI cases are usually referred to hospitals and referral ambulance system in order to provide the optimal treatment and management.

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 26: AEFI cases referral form

إحالة لتدبير مصاب بالآثار السلبية التالية للتلقيح

الجهة المحيلة : فريق اللقاح في مركز .....

اسم المحيل : ..... مكان جلسة اللقاح: .....

المنظمة التابع لها :.....

الجهة المحال اليها :..... ، مكان الجهة المحال اليها:.....

الطبيب المختص لاستقبال الحالة : .....

معلومات الحالة :

اسم الحالة الثلاثي :..... عمر الحالة :.....

الجنس: .....

سبب الاحالة:

ملاحظات عن الحالة :

اسم وتوقيع المحيل التاريخ

Figure 27: Zero monthly report of AEFI from EPI centers_2018

المحافظة :	إدلب	سجل ترصد الآثار الجانبية التي قد تنجم عن التلقيح (شهري)																				
المنطقة :	حارم																					
المركز :	أطمة																					
المنظمة الداعمة :	ACU																					
تقرير شهر :	شباط																					
ت	الاسم الثلاثي	العمر بالأشهر	عنوان الطفل	وصف الأثر الجانبي	تاريخ بدء الأعراض	مركز التبليغ وتاريخه	مركز التلقيح	تاريخ آخر جرعة	نوع اللقاح المسبب	الشركة المصنعة	جنسية الشركة	رقم الوجبة	تاريخ انتهاء الصلاحية	شفاء	دخول مستشفى	وفاة						
1	0																					
2	0																					

Challenges

- 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 inadequate health staff.
- Difficult to send reports of the eastern governorates due to lack of communication tools.
- Lack of governance for the health sector.
- The difficulty of direct face-to-face training for some field team (eastern governorates), where Skype is used as an alternative way.
- Security concerns in some areas that lead to field staff collecting basic data without collecting -sometimes- the needed specimens.
- Lack of laboratory investigation in some areas due to the absence of the laboratory, especially specimens of CSF that need culture.

Future Plans

- 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 monitor AEFI at the level of routine centers (EPI).
- Increase the capacity of medical staff and raise their capacity by conducting more training, introducing modern electronic techniques and enhancing electronic surveillance, especially Tableau, Epi Info, and Power BI.
- To make more efforts to hold the necessary training inside Syria, where the team of VPD 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.
- Make more effort to enable DLOs to enter Turkey and attend the quarterly meetings.

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 28: A water tank- A'zaz Camps

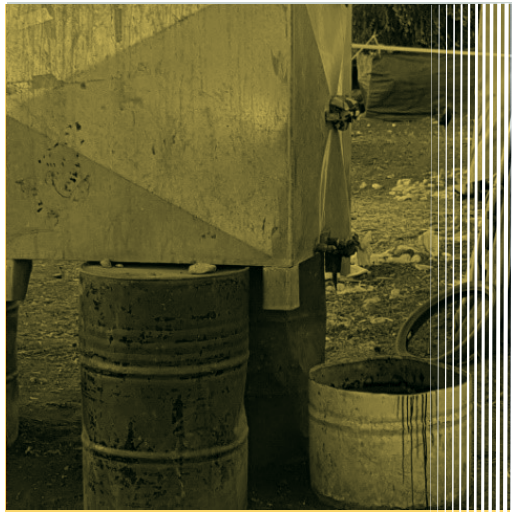
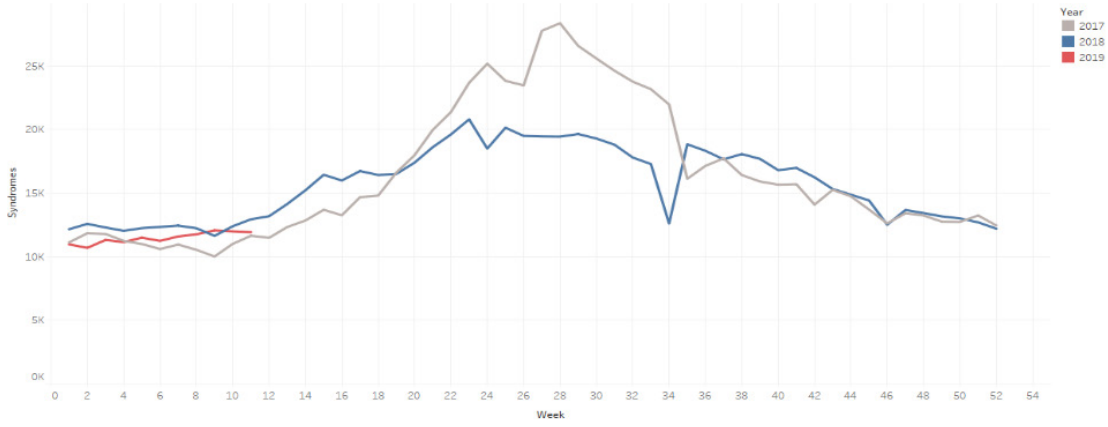


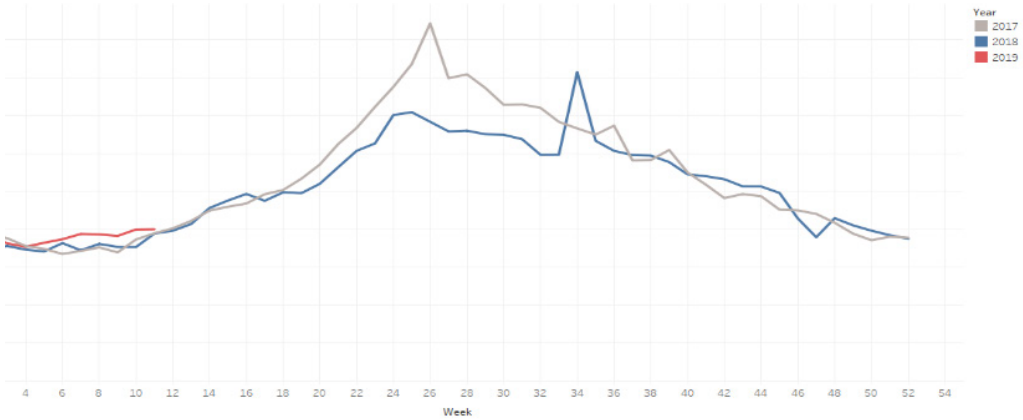
Figure 29: Cases No. of Diarrheal Diseases 2017 . 2018 , 2019



Activities of 2018

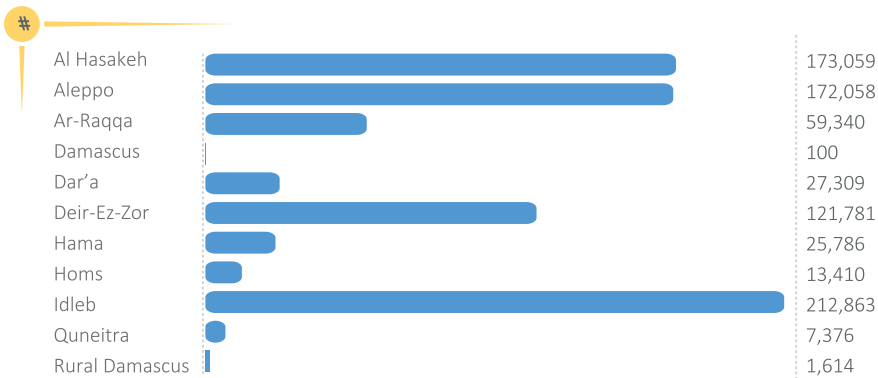
- Verified and investigated more than 16 WBDs alerts in 5 governorates (Aleppo, Idleb, Ar Raqqa, Deir-Ez-Zor, and Al Hasakeh), with the adequate sampling (stool or blood culture, serum), testing of water sources and disseminating IEC materials. The details of the response actions are mentioned in the 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 15 complete IDDKs, and keep them in the main warehouses to prepositioning them in case of need.

Figure 30: Proportional Morbidity of Diarrheal Diseases 2017 , 2018 ,2019 Year



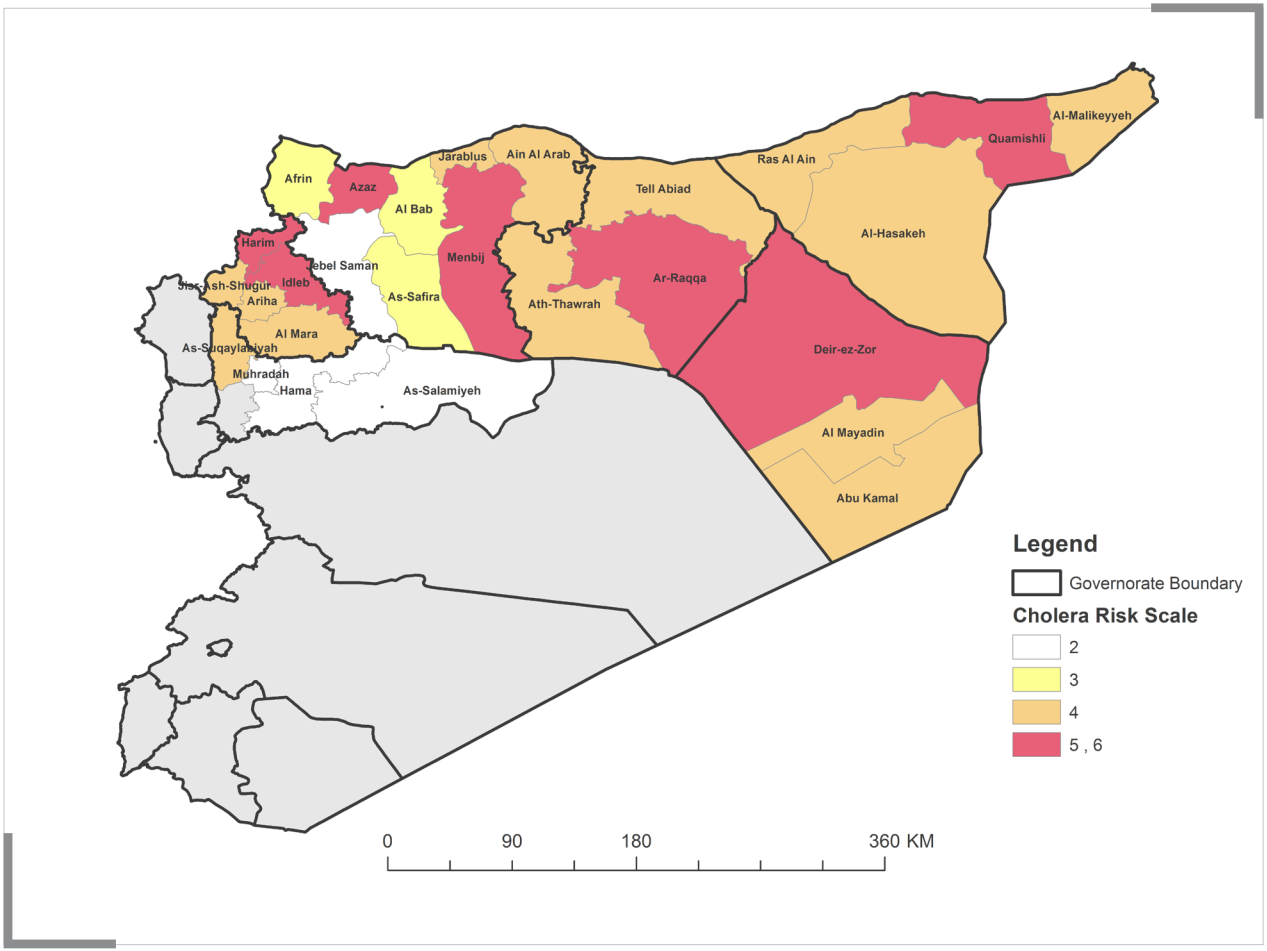
- Needs assessment: Identify gaps, needs and capacities (coordination and technical) using appropriate tools for gap/need analysis.

Figure 31: Cases No. of Diarrheal Diseases per governorate_2018 Year



- Generate the Cholera risk map in northern of Syria on weekly basis, and share it with both Health and WASH clusters, in addition to cholera technical group.

Map 06: Cholera Risk Scale_2018



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

Table 11: Expected numbers of cases and estimated cholera kits needed_ IDP camps.

IDPs camps estimated population	Attack Rates	Scenario for 5% (221,331 population)
Attack Rate = number of expected patients	5%	11,066
Severe cases = 10% of expected patients	5%	1,106
Peak caseload in 1 week (week 3 or 4) = 30% of expected severe cases	5%	332
Peak case load / day = peak case load per week / 7	5%	95

Table 12: 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% (2,766,365 population)
Attack Rate = number of expected patients	0.6%	16,600
Severe cases = 30% of expected patients	0.6%	1,660
Peak caseload in 1 week (week 3 or 4) = 30 % of expected severe cases	0.6%	500
Peak case load / day = peak case load per week / 7	0.6%	142

- Detecting 5 suspected cases of cholera, RDT was done for 5 cases and stool culture for 5, all the results came negative.

Figures 32: Cholera suspected cases investigation_ A'zaz camps

- 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 13: WBDS cases No. per governorate _ 2018

GOVERNORATE	ABD	AWD	OAD	AJS	STF
Aleppo	1,049	0	171,009	5,129	5,491
Idleb	486	0	212,377	12,668	14,742
Hama	9	0	25,777	134	267
Deir ez zor	7,392	0	114,389	9,530	23,255
Ar Raqqa	1,551	1	57,788	7,078	4,090
Al Hasakeh	4,274	0	168,785	10,837	4,892
Homs	14	0	13,396	144	59
Rural Damascus	23	0	1,591	254	109
Damascus	0	0	100	3	12
Dar'a	124	1	27,184	796	1,901
Quneitra	29	0	7,347	24	306
Quneitra	**14,951**	**2**	**799,743**	**46,597**	**55,124**

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. However, there is proper early detection of suspected cases due to good understanding of case definition of suspect cholera suspected cholera.
- WBD are endemic in Syria. Control procedures need a strong coordination between all partners and sectors, which is very challenging and high cost implications.

Future Plans

- 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.

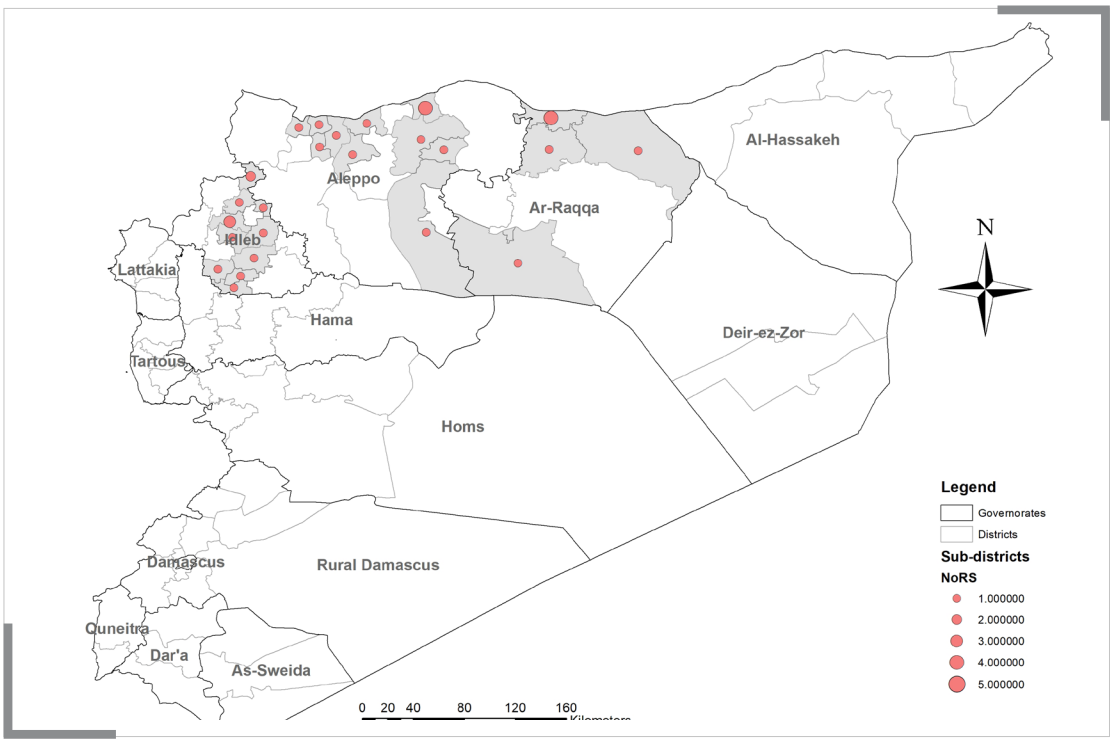
According to the accessibility, availability of integration with both health (diarrheal diseases) and WASH, in addition to the experience of ACU in surveillance, ACU team start working on the needed preparations through defining the areas of gaps, thus planning to implement the NSS there.

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 07: Nutrition Surveillance System_Dec 2018



Nutrition Surveillance for children under 5 years

During 2018, the reporting HFS reached up to 107 health facility.
At the beginning of 2018, NSS was activated in Rural Damascus, then expanded to Dar'a and Quneitra, in addition to many centers were added in eastern of Euphrates river (specially in Ath-Thawrah) which lead to an increase in the numbers of screened cases in that period.

More than 451,111 children were screened, 14,943 of them were detected as malnourished (children under 5 years GAM was 3.4%).

The sex distribution for the screened children was almost the same (51% male - 49% female).
The age distribution for the screened children was: 58% < 2 years and 42% ≥2 years (this is justified as the younger children have more frequent visits to HFs).

Figure 33: Screened Children in 2018

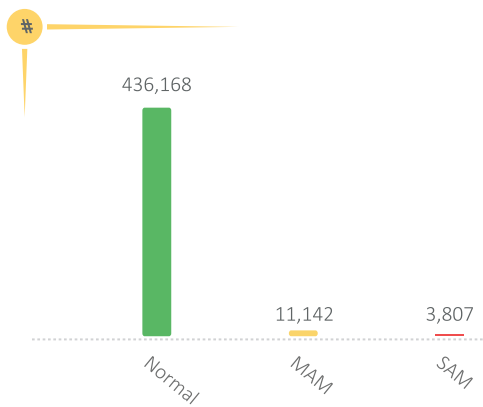


Figure 34: Classification of the screened Children_2018

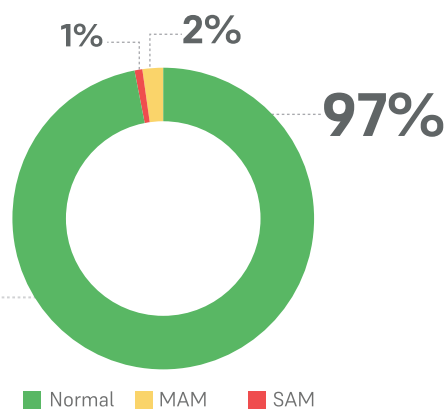


Figure 35: Age and Sex distribution for the screened Children in 2018

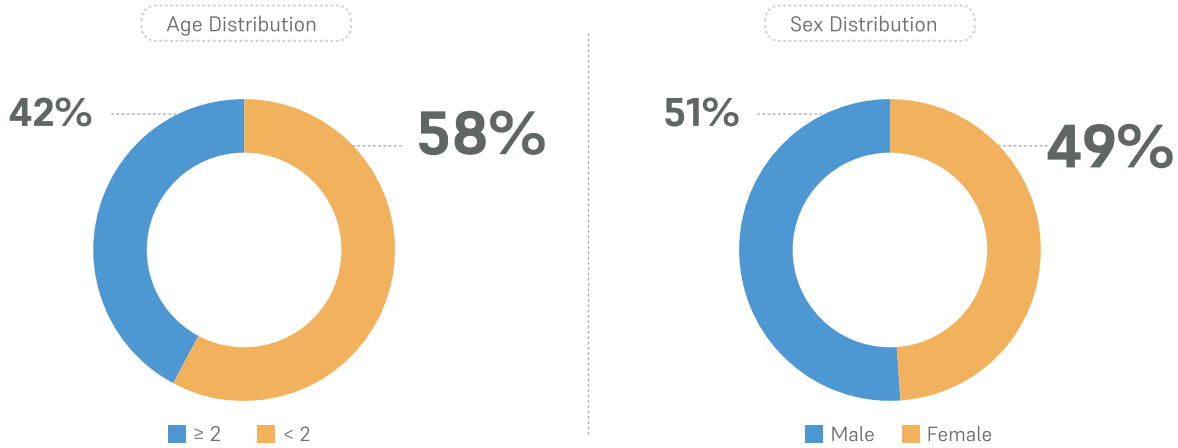
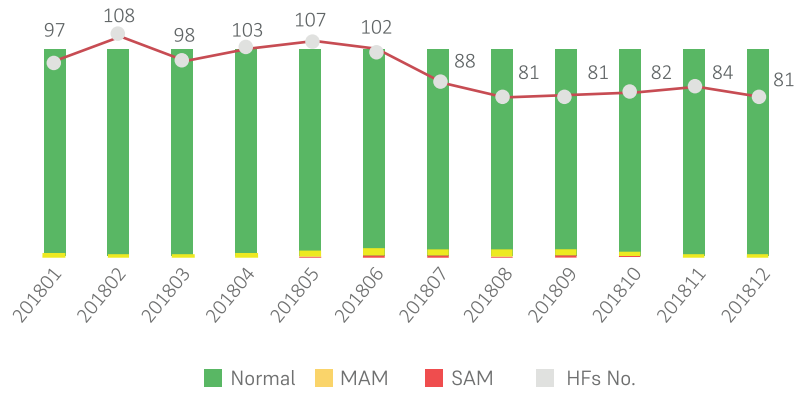


Table 14: Classification of the screened children comparing to health facilities number_2018

GOVERNORATE	Measured children	Normal	MAM	SAM	HFs No.
201801	41,842	40,735	887	220	97
201802	43,616	42,599	767	250	108
201803	51,668	50,573	867	228	98
201804	51,261	49,955	1,032	274	103
201805	41,719	39,923	1,328	468	107
201806	31,567	29,878	1,157	532	102
201807	34,639	32,986	1,188	465	88
201808	27,711	26,449	908	354	81
201809	32,974	31,445	1,101	428	81
201810	35,434	34,249	874	311	82
201811	29,136	28,444	529	163	84
201812	29,544	28,932	504	108	81
Total	**451,111**	**436,168**	**11,142**	**3,801**	**1,112**

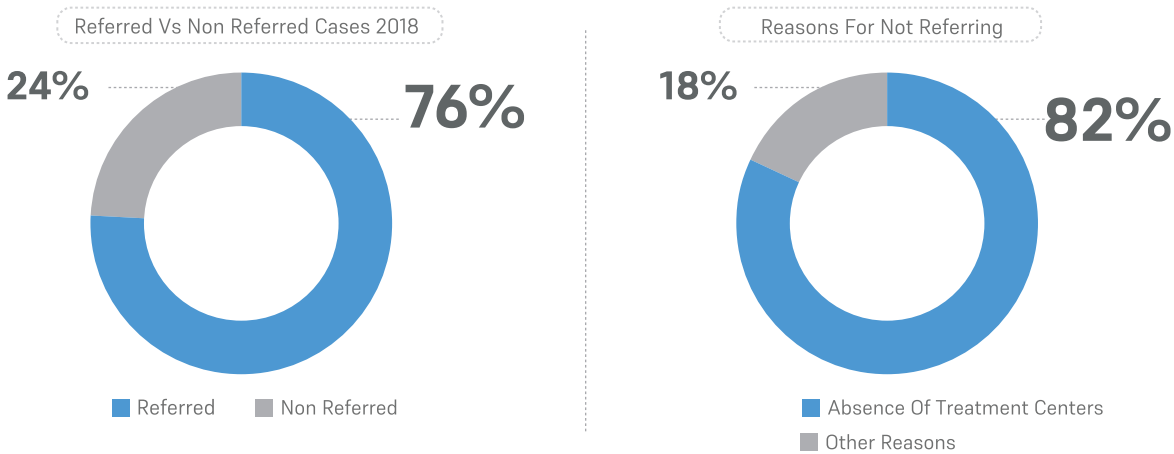
It is noteworthy that the decrease in centers number (appeared in July) after losing the geographical access the to many areas (Rural Damascus- northern of Homs, Dar'a and Quneitra), resulted in the number of screened children and PLWs, in addition to the discontinuity and instability in the program funding, which affected the quantity but not in quality.

Figure 36: Screened Children per Month



3,615 malnourished cases (25.2% from the total GAM cases) were not referred to the treatment centers, because of the absence of the management services 80% of the total referred cases (in some areas there are no CMAM services, specially Tell Abiad- Ar Raqqa governorate).

Figure37: Referral % & the reasons of not referring



For follow up the detected malnourished cases after 15 days of detection, the field team could reach for 94% from the referred cases after 15 days, and it showed 89% from the reached cases were visited the treatment centers, whereas 11% of them didn't due to 2 major reasons:

- Far distances to reach the treatment centers.
- The misconception of the parents about the importance of the treatment.

The referral of detected cases to treatment centers is a significant part of the work of NSS.

The number "94% has been referred" means that some cases have not been referred due to the absence of treatment centers in the area, which reduces the value and usefulness of work in the community where the case was detected but no treatment was provided, as a result the case nutritional status well deteriorates and may reach life-threatening stages, as what happened in the East Euphrates areas of Ar-Raqqa, Tell Abiad, Ain Issa, and Menbij. This was a major challenge needed to work hard with the medical teams and nutrition cluster partners to provide supplies. In cases of emergency the medical staff there used the manual preparation of malnutrition treatment products, such as formula 100 and formula 75, in addition to biscuits stuffed with dates.

It is not enough to refer cases only, but they should be followed up after two weeks of referral to verify the accessibility to treatment, this is also important in assessing the adequacy of treatment centers in terms of quantity and quality of work and the availability of treatment supplies.

Figure 38: GAM reached cases after 15 days from detection 2018

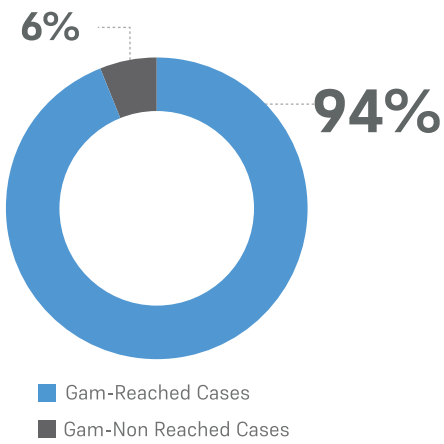
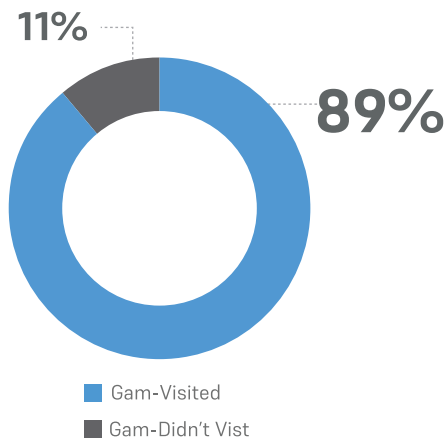


Figure 39: GAM % that visited the treatment centers 2018



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 127,743 pregnant and lactating women were screened, 6,318 (about 2.5%) out of them were detected as malnourished.

Table 15: Classification of the screened PLWs_2018

PLWs	Normal	Malnourished
Pregnant	62,139	3,119
Lactating	65,604	3,199

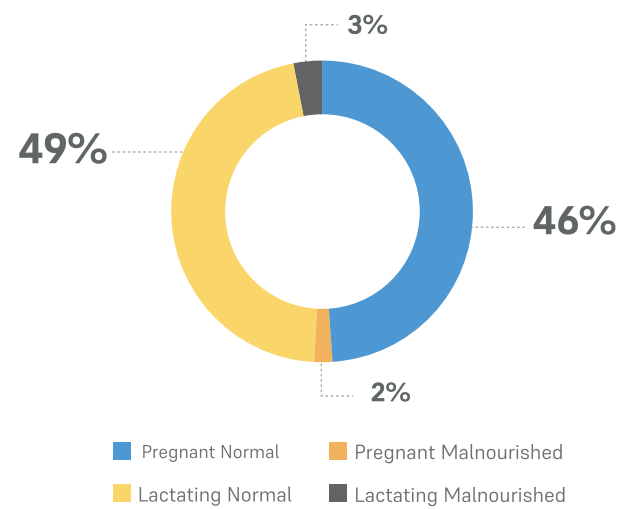
This number is about 70% of the target, as there was a reluctant at the beginning of the program for several reasons:

- Lack of knowledge about the program and its importance, and impact on the health status of the newborn and child.
- The social culture in some areas, which prevent taking measurement in a correct way where women do not accept to remove clothes of the arm to perform the measurement unless there is a very important reason.
- Lack of a privet place for measurement that ensures privacy and comfort for ladies.

PLWs reluctant starts to improve as a result of:

- Raised awareness of the targeted population about mal-nutrition issues.
- Friendly and trusting relationship with the working teams.
- Start distribution of pregnant and lactating multi vitamin for prevention purpose during the measurement for Preg-nant and lactating women MUAC for all above 230 mm (those supplements were provided by Vitamin Angels Or-ganization).
- Many partners collaborate to provide a suitable place for measurement that ensures privacy and comfort for ladies.

Figure 40: Screened PLWs classification_ 2018



Nutrition SMART Survey_Tell Abiad

The purpose of this survey was to estimate the prevalence of undernutrition of 6-59 months children in northern Ar-Raqqa _Tell Abiad district and assess the severity of nutrition situation in the area (about 40% of the population is IDPs).

A two-stage cluster sampling methodology was used. The field data collection was conducted between the17th to 27th January 2018 and was under taken by seven teams selected after training.

All 42 pre-selected clusters were visited, 924 HH were visited where 916 children 6 -59 month were measured for malnutrition.

The overall plausibility score of the Survey was 1% which is considered as vary good.

Map 08: SMART survey in Tell Abiad _ Selected clusters PLWs classification_ 2018

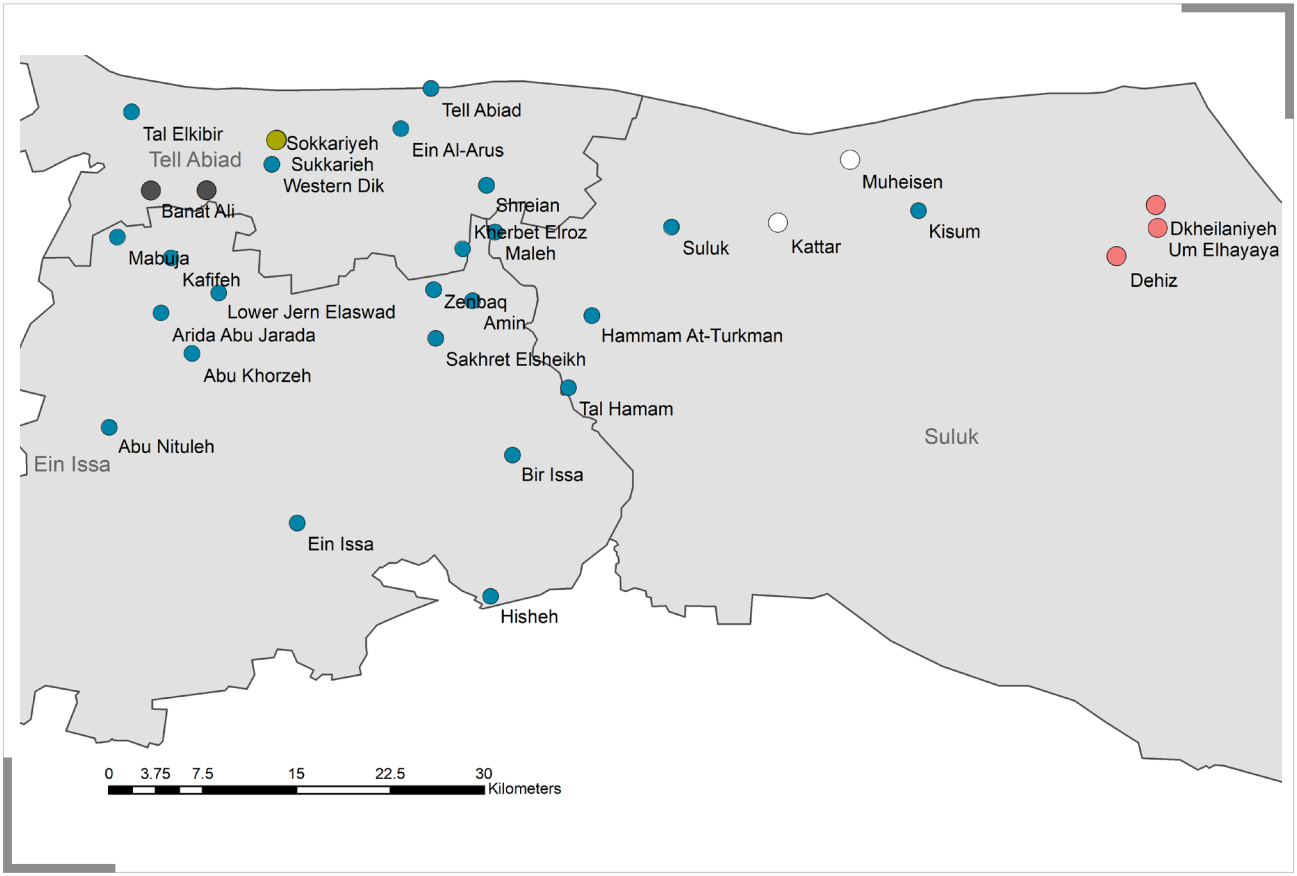


Table 16: Summery table for Tell Abiad SMART survey results

Prevalence of acute malnutrition based on weight-height z-scores2	N.#	%	95 % CI
Prevalence of global acute malnutrition (WFH <-2 z-score and/or edema)	19	2.1	1.2 – 3.7 95% C.I.
Prevalence of moderate acute malnutrition (WFH <-2 z-score and >=-3 z-score, no edema)	16	1.8	1.0 – 3.2 95% C.I.
Prevalence of severe acute malnutrition (WFH <-3 z-score and/or edema)	3	0.3	0.1 – 1.0 95% C.I.
Prevalence of acute malnutrition based on MUAC			
Prevalence of global malnutrition (< 125 mm and/or edema)	17	1.9	1.1 – 3.2 95% C.I.
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no edema)	11	1.2	0.7 – 2.2 95% C.I.
Prevalence of severe malnutrition (< 115 mm and/or edema)	6	0.7	0.3 – 1.6 95% C.I.
Prevalence of underweight based on weight-for-age z-scores2			
Prevalence of underweight (WFA <-2 z-score)	94	10.3	8.3 – 12.7 95% C.I.
Prevalence of moderate underweight (WFA <-2 z-score and >=-3 z-score)	80	8.8	7.0 – 10.9 95% C.I.
Prevalence of severe underweight (WFA <-3 z-score)	14	1.5	0.8 – 2.8 95% C.I.
Prevalence of stunting based on height-for-age z-scores2			
(WFA <-3 z-score)	295	32.4	27.9 – 37.3 95% C.I.
Prevalence of moderate stunting (HFA <-2 z-score and >=-3 z-score)	203	22.3	19.3 – 25.7 95% C.I.
Prevalence of severe stunting (HFA <-3 z-score)	92	10.1	7.7 – 13.2 95% C.I.
Prevalence of overweight based on weight for height cut-offs2			
Prevalence of overweight (WHZ > 2)	24	2.6	1.7 – 4.0 95% C.I.
Prevalence of severe overweight (WHZ > 3)	1	0.1	0.0 – 0.8 95% C.I.

Figures 41: The detected edema case

Figures 42: SAM case detected by MUAC

Tell Abiad Survey recommendation:

- Implement IYCF programs to consult the mothers and provide them with the proper feeding practices for infants and young children
- According to the survey results, it is preferred to conduct an IYCF survey, to better understand the actual IYCF practices and to explore the causes behind the IYCF malpractices
- Enhancing the ongoing nutrition programs (increasing the coverage, including additional nutrition component such as IYCF, micronutrition suppling and CMAM)
- Implement the CHW (Community Health Worker) programs in the area to focus on improving the knowledge and practices of care givers at the community level.
- Enhance the nutrition surveillance sites for monitoring in order to activate a timely response.
- Advocate for additional preventative nutrition supplies to be delivered to Ar-Raqqa.
- Improving the availability of health services and water, hygiene and sanitation conditions to reduce the prevalence of stunting.
- Early recovery and livelihood support to sustain and restore lives and livelihoods affected by the conflict.

Nutrition SMART Survey Jarablus

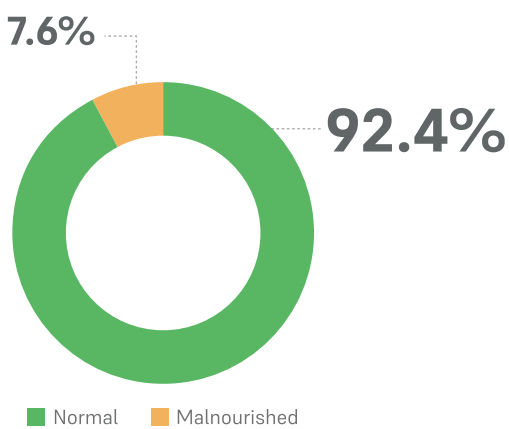
Jarablus district witnessed the succession of control forces, in between December 2014 up to August 2016. IDPs is about 40% from the total population.

This survey was conducted by Independent Doctors Association (IDA) with the support and technical supervision of ACU team.

The nutrition surveillance system, which was activated on July 2017, showed very high trends at the first 5 months. The proportion of malnourished / screened was 4.2% from 9 health facilities in Jarablus District from Jan to Apr 2018, according to the feedback from the field team and the follow up of the detected cases, therefore of the malnourished cases are become remarkable after each wave of displacement.

The survey showed GAM rate in children 6- 59 month 0.4 % (0.1 – 1.7 95% C.I.), the severity of this prevalence classified as "low" based on WHO classification for severity of malnutrition, if compared to other SMART surveys conducted in Syria in the last years, we find approximately same level of malnutrition (< 5%) ,The Table 1 below provide a summary of the main indicators. The GAM rate of pregnant and lactating women identified by MUAC <230 mm was 7.6 % (6 of 79); (3.2 – 17.0 95% C.I.). The prevalence of PLW malnutrition was 7.6% (3.2-17.0 95 % CI).

Figure 43: PLWs malnutrition%_ Jarablus



Jarablus SMART Survey Recommendations:

- Conduct an Infant and Young Child Feeding (IYCF) assessment (Survey or need assessment according to the context) to better understand the actual IYCF practices and to explore the causes of inappropriate IYCF practices.
- Implement and enhance IYCF programs to engage mothers and provide them with the proper feeding practices for infants and young children.
- Continue preventive interventions such as supplementary feeding or food security interventions.
- Scale up Community Health Worker programs in the area to focus on improving the knowledge and practices of caregivers at the community level.
- Implement and enhance the ongoing nutrition programs in the area.
- Continue and scale up treatment programs for all malnourished pregnant and lactating women in the area.

Challenges

- Unsustainable fund, which caused instability in work conditions.
- The absence of treatment centers in areas of Ar Raqqa and Tell Abiad, Menbij, and Ath- Thawrah.
- Employees high turnover rate, which led to train new staff.
- 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.
- Scaling up the coverage to include the western and southern rural of Idleb, western rural of Aleppo, Afrin district, northern Hama rural and the rest of Ar-Raqqa governorate.
- Increase the number of field supervisors, and develop a plan of weekly supervision visits by them.
- Planning for periodic field visits by the central team
- Work on development of partnerships with organizations working in health and nutrition sector.
- Updating the monthly nutrition surveillance data to be introduced through Power BI program.

SECTION 03

RESPONSE UPDATES
2018

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 2018, 772 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).

Map 09: Type B alerts in Sub district level Epi week 52_2018

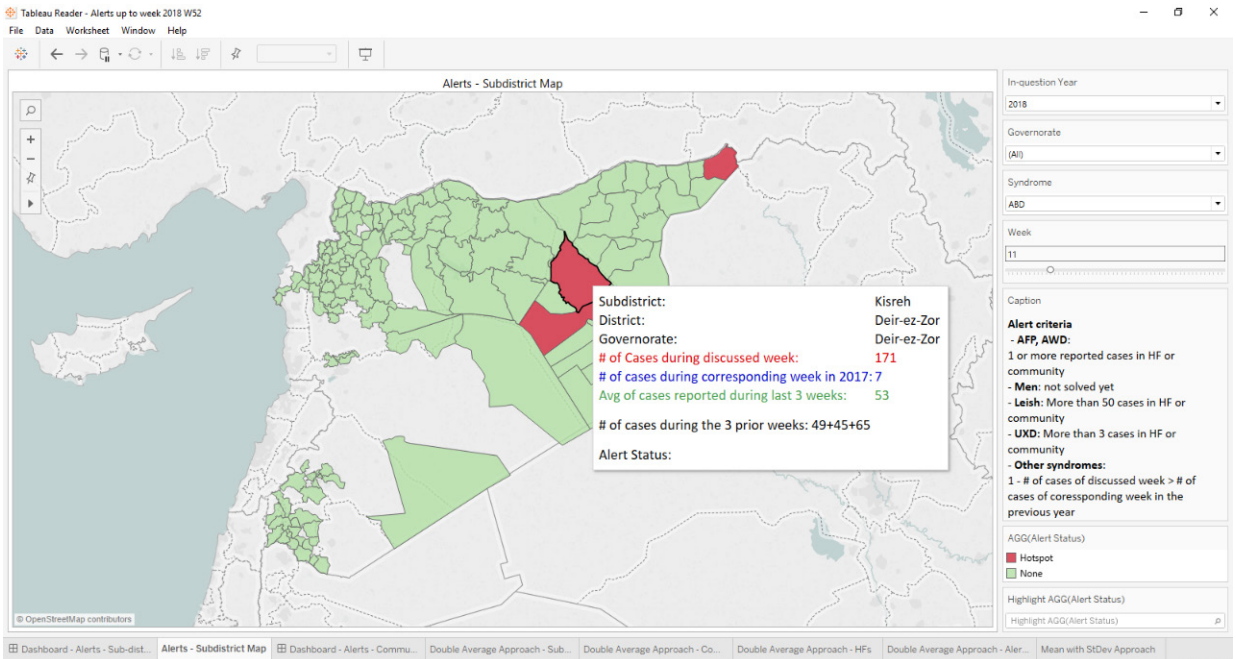


Figure 44: Mean and SD approach

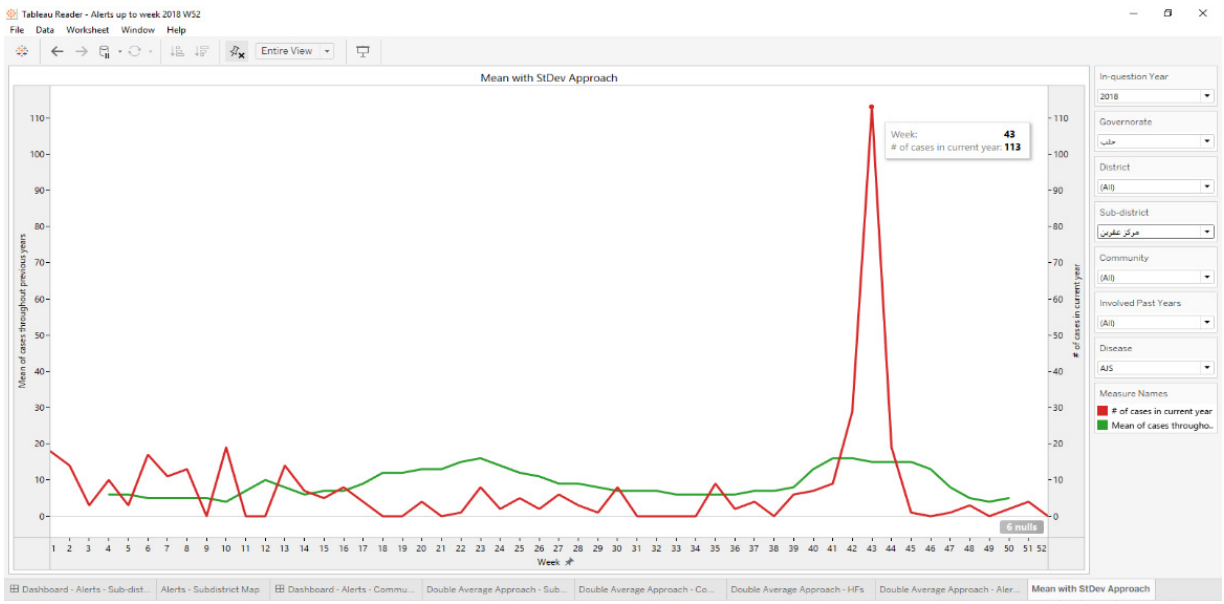


Figure 45: Double average approach_HF level

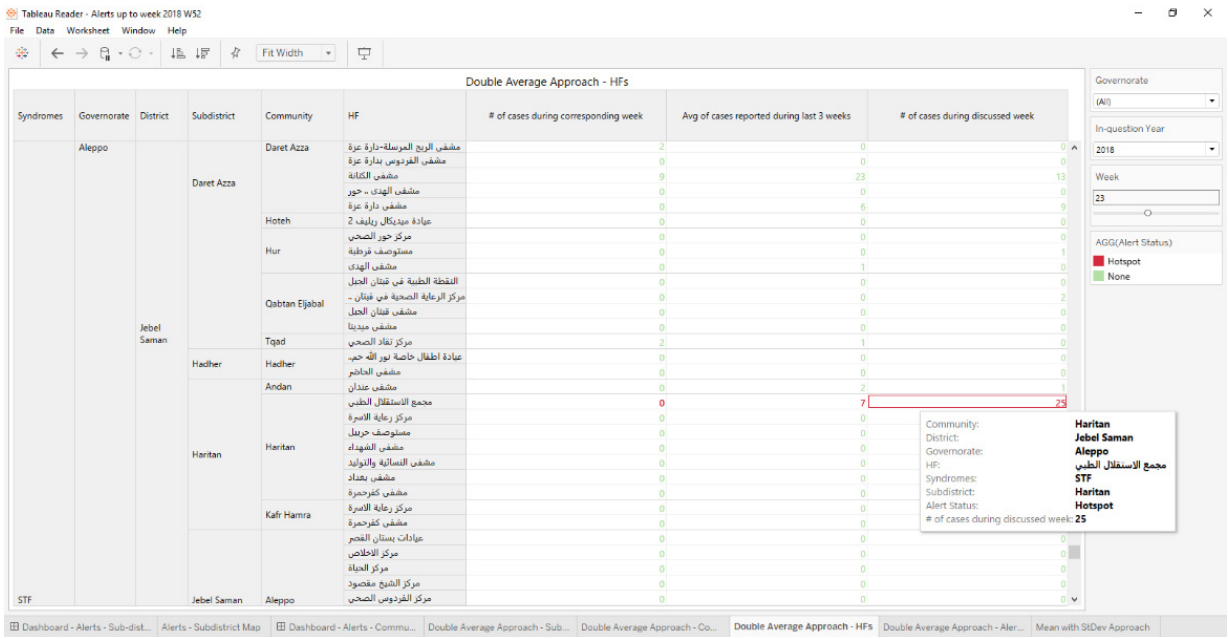
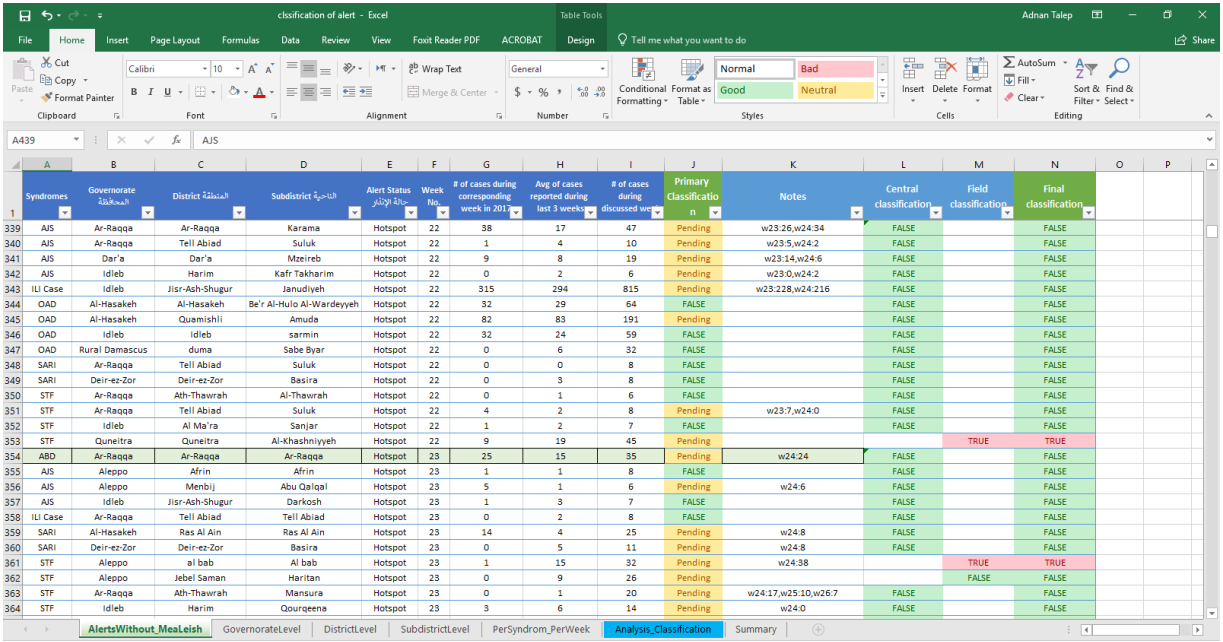


Figure 46: Alerts classification list

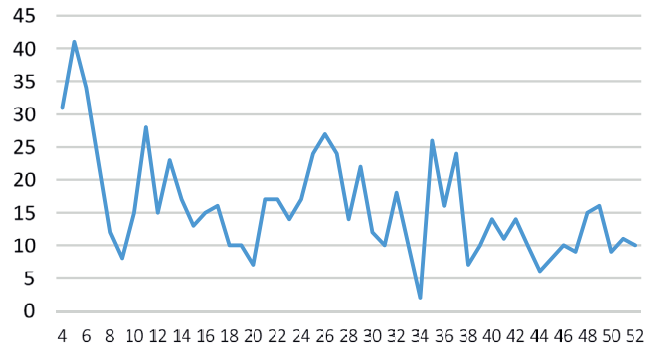


Distribution of weekly alerts according to the Epidemiological week

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 between Epi weeks 4 and 7, other peaks were reported in Epi-weeks 24,25,26, and Epi-weeks 35,36,37.

Figure 47: B-type alerts distribution by time

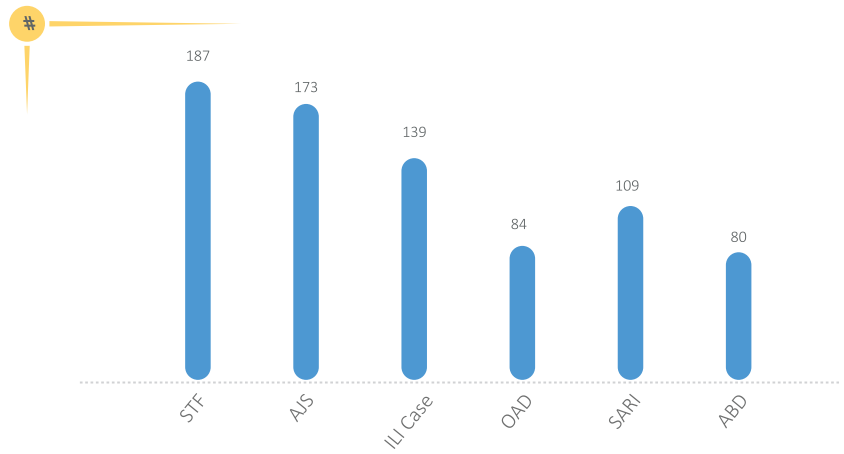


Distribution of weekly alerts according to the disease / syndrome

The alerts of waterborne diseases were the most notified alerts, with total number of 524. While the alerts of acute respiratory diseases (ILI, SARI) were 248.

Most of the syndromes notified were an STF (187 alerts), then AJS (173 alerts). ABD syndrome was the lowest (80 alerts).

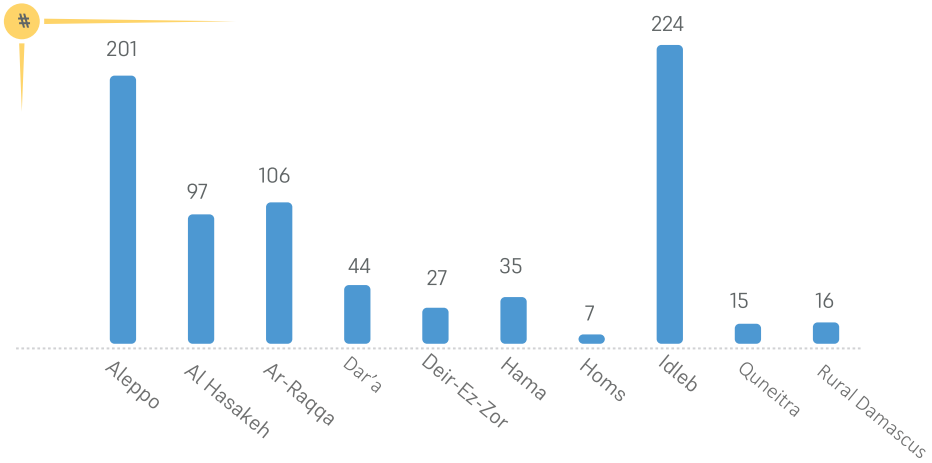
Figure 48: B-type alerts distribution by syndrome/ disease



Distribution of weekly alerts according to the governorate and district

Most of the alerts were notified from Idleb governorate (224), then Aleppo governorate (201).
For distribution by district: Harim district _ Idleb governorate was the highest (69 alerts), then Jebel Saman district _ Aleppo governorate (63 alerts).

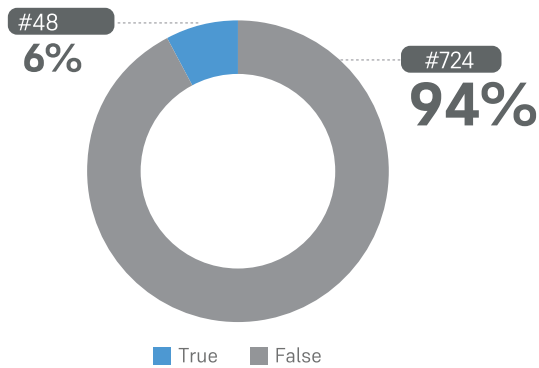
Figure 49: B-type alerts distribution by governorate



Weekly Alerts_Final classification

The final classification of 772 alerts that were received during 2018 on a weekly basis was: false alerts in 724 (94%), and true alerts in 48 (6%).

Figure 50: Final classificatiob of the weekly alerts



Alerts Verification

During 2018, 91 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 51: Alerts & outbreaks list

No.	Year	Epi-Week	Suspected Disease	Alert Type	Governorate	District	Sub-district	Community	Notification Source
1	2018	3	Lice	Type B	Rural Damascus	Rural Damascus	Arbin	Arbin	Local Council
2	2018	7	OAD	Type A	Idleb	Harim	Dana	Atma	Health Facility
3	2018	11	ABD	Type B	Deir-ez-Zor	Deir-ez-Zor	Kisreh	Zghir Jazireh	Health Facility

Alert Notification Date	Date Verified	Date Investigated	Alert Verified	Alert Verification Mean	Key Informant	Reported Cases
18-Jan-2018	18-Jan-2018	20-Jan-2018	Yes	Personal Visit	Others	
15-Feb-2018	15-Feb-2018	16-Feb-2018	Yes	Phone Call	Doctor	100

Cases that fits the case definition	Clusterd cases (Time,Place,Person)	Alert Classification	Cases Sampling?	Sample Type	Cases' Lab Confirmation	Environmental Sampling
	Yes	TRUE	Not Required			Not Required
100	Yes	TRUE	No			Yes
83	Yes	TRUE	Yes	Stool	Yes	Yes

Environmental Sample's Type	Environmental Sample's Result	Reported Deaths	Outcome	Investigated By	Response Indicator (Hours)	Log data status
		0	Outbreak	DLO	24 - 71	Completed
Water	Contaminated	0	Outbreak	DLO	< 24	Completed
Water	Contaminated	0	Outbreak	DLO	< 24	Completed

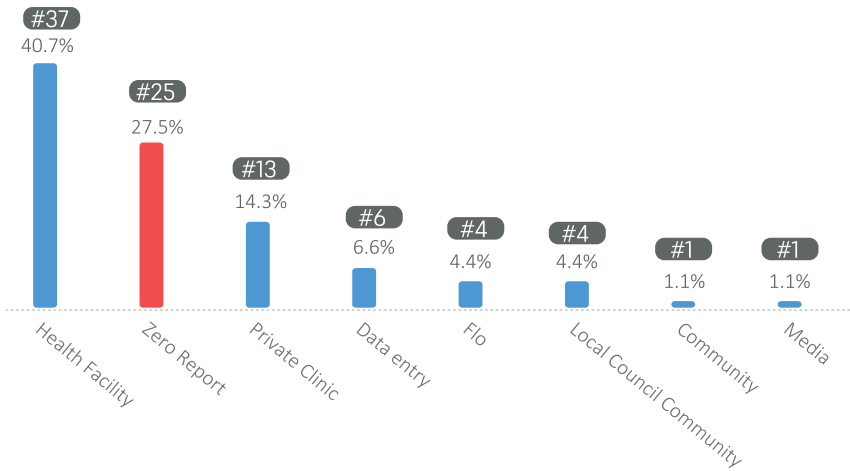
After verification, the alert is being classified as a true or false, thus the rapid response to be taken in case of a true alert. Finally, the investigator (DLO, RRO) sends the alert verification form to the central response officer.

Sources of Notification

The alerts notified from the field were 66 alerts (72.5%), whilst the alerts showed in the weekly alert's tableau were 25 alerts (27.5).

Most of the notified alerts were submitted by health facilities (40%).

Figure 52: Sources pf notification

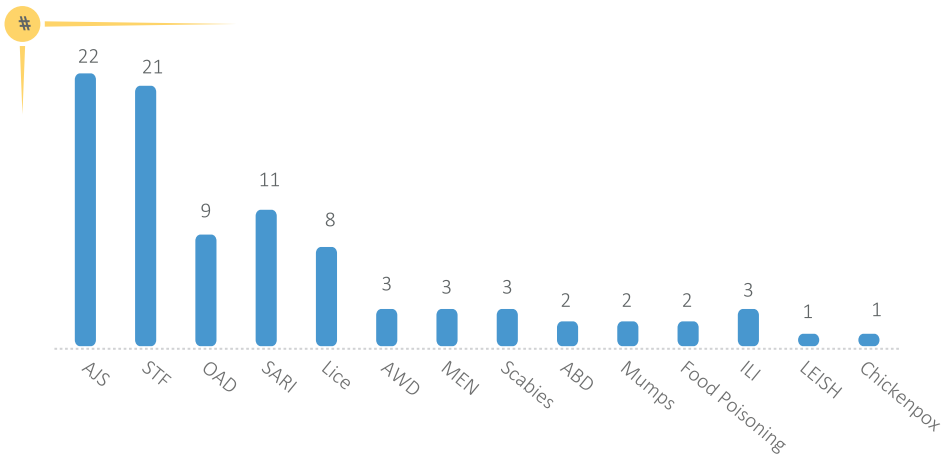


Distribution of verified alerts according to the syndrome type

Most of the verified alerts were AJS (22 alerts), then STF (21 alerts).

The waterborne disease alerts and foodborne disease alerts were 64%, whilst vaccine preventable disease alerts were 21%

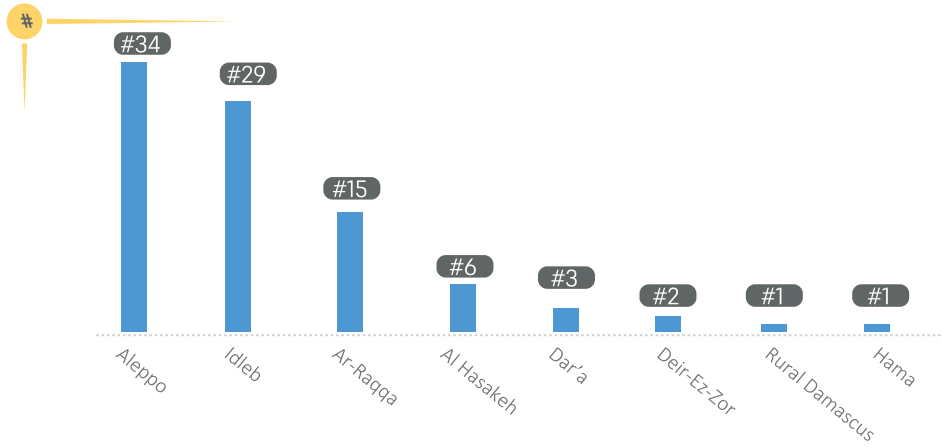
Figure 53: All alerts distribution by syndrome/ disease



Distribution of verified alerts according to the governorate

Most of the verified alerts were in Aleppo governorate with a number of 34, Idleb governorate (29 alerts), then Ar-Raqqa governorate (15 alerts).

Figure 54: All alerts distribution by governorate

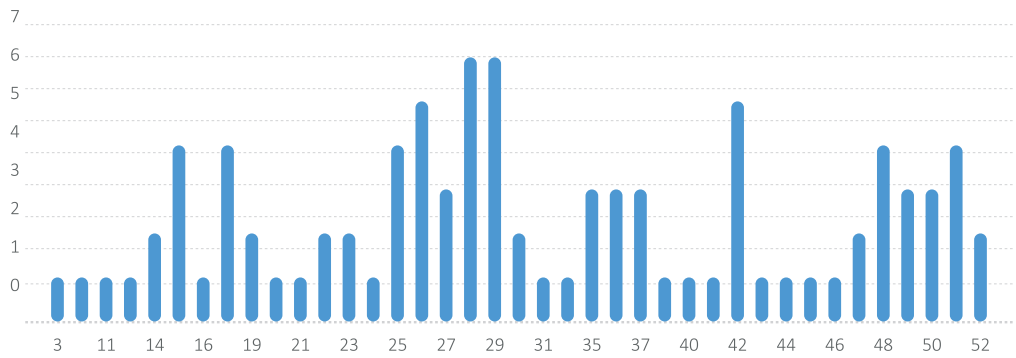


Distribution of verified alerts according to the epi-week

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.

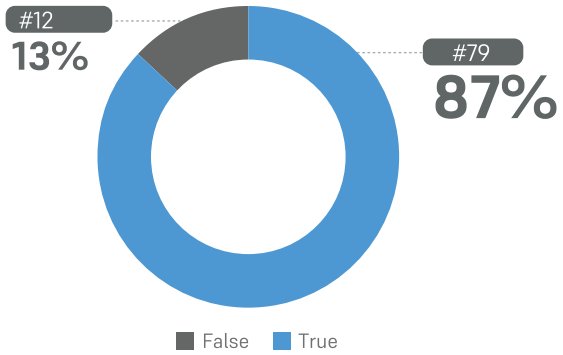
Figure 55: All alerts distribution by governorate by time



Verified alerts_Final classification

Among all verified alerts (91), the true alerts were 79 alerts (87%), whilst the false alerts were 12 alerts (13%).

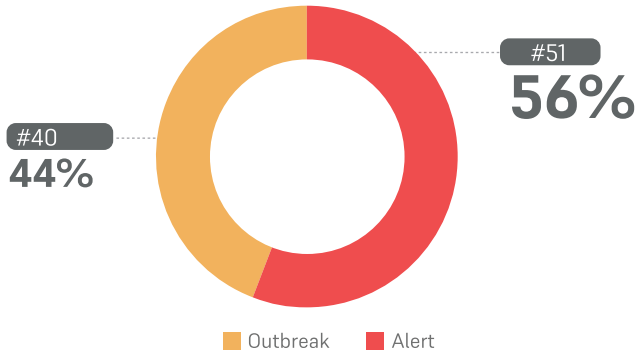
Figure 56: Verified alerts classification



Verified alerts_Outcome

After verification of all the notification alerts, there were 51 outbreaks.
The detailing of these outbreaks is in the subsequent paragraph.

Figure 57: Verified alerts outcome



Outbreaks Management

In 2018, more than 40 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 another control procedures were taken (health awareness campaigns, medications for case management, WASH procedures including hygiene promotions distribution...etc).

Table 17: The details of response missions_2018

Epi-Week	Disease / Syndrome	Governo-rate	District	Community	Lab specimen	Environ-mental Sample's	in Coordi-nation with	Actions taken
3	Lice	Rural Da-mascus	Rural Da-mascus	Arbin	-	-	Local Council - Health Directo-rate	health awareness campaigns/ supply medications
7	Acute Diarrhea	Idleb	Harim	Atma	-	Water	Ataa Founda-tion – White Hands	health awareness campaigns/ supply medications /WASH
11	Acute Bloody Diarrhea	Deir-ez-Zor	Deir-ez-Zor	Zghir Jazireh	Stool	Water		health awareness campaigns/ supply medications
14	Hepatitis A	Idleb	Harim	Armanaz	Serum	Water		health awareness campaigns/ supply medications/WASH
15	Scabies	Idleb	Harim	Aidon Camp	-	-		health awareness campaigns/ supply medications
16	Acute Diarrhea	Idleb	Harim	Aidon Camp	-	Water	Camp Man-agement	health awareness campaigns/ supply medications/WASH
19	Acute Diarrhea / Food Poisoning	Al-Hasakeh	Quamishli	Quamishli	-	-		health awareness campaigns
21	Acute Diarrhea	Idleb	Al Ma'ra	Hafsa Camp	-	-	Camp Man-agement	health awareness campaigns
25	Typhoid Fever	Idleb	Harim	Harim	Serum	Water		health awareness campaigns/ supply medications/WASH
27	Typhoid Fever	Aleppo	Al Bab	Al Bab	Serum	Water		health awareness campaigns/ WASH
28	Typhoid Fever	Aleppo	Al Bab	Bazagha	Serum	-		health awareness campaigns
28	Lice	Al-Hasakeh	Al-Ma-likeyyeh	Jawadiyah	-	-		health awareness campaigns/ supply medications
28	Acute Diarrhea	Idleb	Harim	Ataa camp	-	Water	Local Council	health awareness campaigns
29	Scabies	Idleb	Idleb	Ma'arrat Tamasrin	-	-		health awareness campaigns/ medications

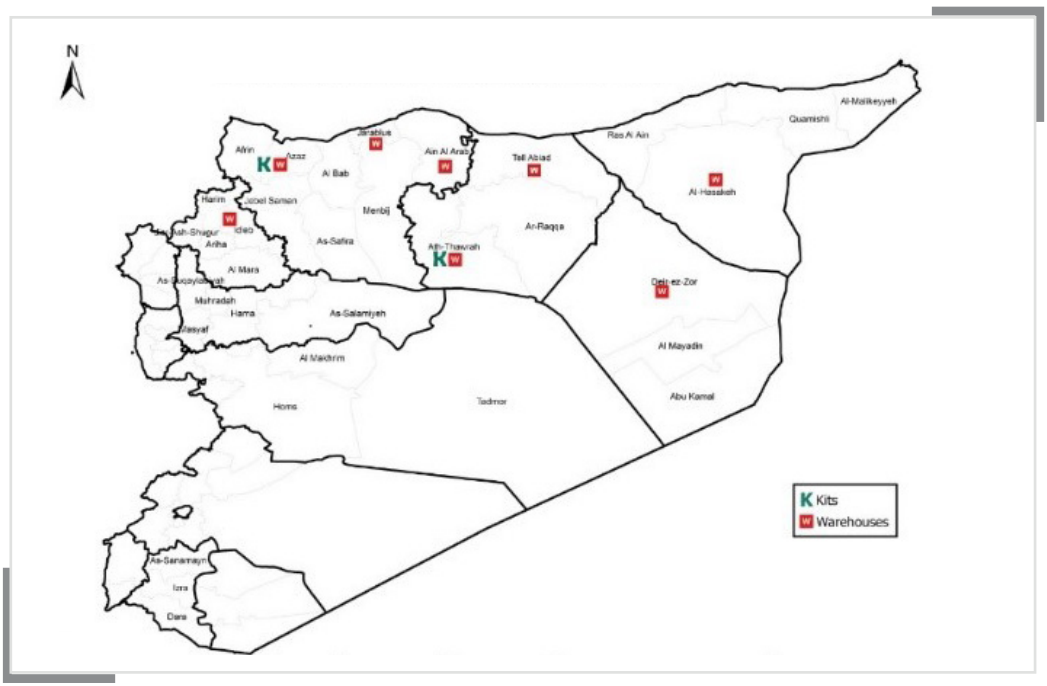
Epi-Week	Disease / Syndrome	Governo-rate	District	Community	Lab specimen	Environ-mental Sample's	in Coordi-nation with	Actions taken
30	Typhoid Fever	Idleb	Al Ma'ra	Kafrsajna	Serum	Water		health awareness campaigns
31	Meningitis	Aleppo	Jebel Saman	Banes	CSF	-		health awareness campaigns/ medications
34	Acute Diarrhea / Food Poisoning	Ar-Raqqa	Ar-Raqqa	Ar-Raqqa	-	Water		health awareness campaigns
36	Hepatitis A	Idleb	Idleb	Saraqab	Serum	Water		WASH
37	Lice	Deir-ez-Zor	Deir-ez-Zor	Abu Khashab	-	-		health awareness campaigns/ supply medications
41	Chickenpox	Ar-Raqqa	Ar-Raqqa	Kasrat Mohammed Ali	-	-		health awareness campaigns/ supply medications
42	Lice	Hama	Hama	Murak	-	-		health awareness campaigns/ supply medications
42	Hepatitis A	Aleppo	Afrin	Afrin	Serum	Water	Local Council	health awareness campaigns/ WASH
42	Hepatitis A	Aleppo	Afrin	Sharan	Serum	Water	Local Council	health awareness campaigns/ WASH
43	Lice	Idleb	Idleb	Kafr Omeim	-	-		health awareness campaigns/ supply medications
45	Lice	Idleb	Al Ma'ra	Tah	-	-		health awareness campaigns/ supply medications

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 2018 was 8 warehouses located in 5 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.
- Prepare a training center in A'zaz_ Aleppo.
- The following map shows the distribution of warehouses and cholera kits in Syria during:

Map 10: Warehouses location_2018



Rapid Response Team (RRT)

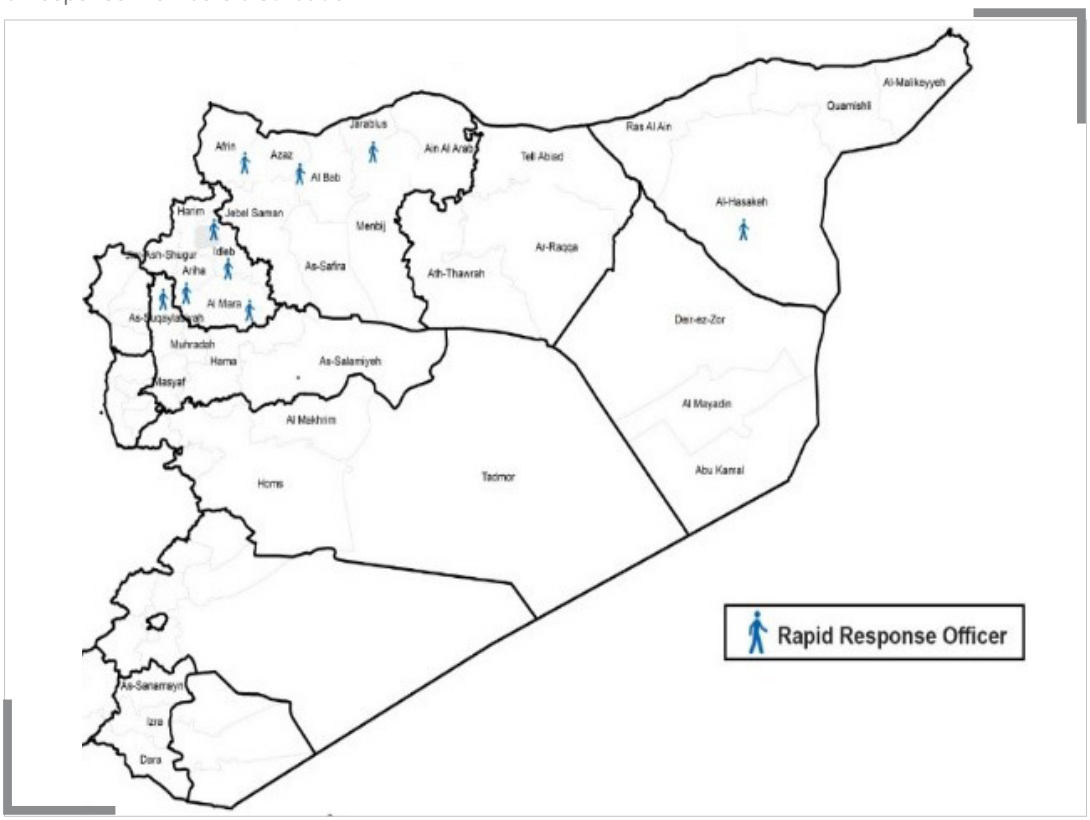
The rapid response team is defined as members of EWARN who are ready to respond to any sudden event of epidemiological nature, they are trained on case definition and alert threshold, outbreaks and control procedures, each one of them is an essential member of the OCT in a pre-defined geographical area.

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.

The following map shows the distribution of RRTs inside Syria:

Map 11: Rapid Response members distribution



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 situation
- 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.

Figure 58: Al Atareb Laboratory

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.

the roles and responsibilities of RRT:

Table 18: The available equipment at each laboratory

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
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, syrings, Disinfectants and disinfectants...etc)	Enough quantities

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 59: Al Atareb Laboratory

In addition to in this year 2018, and in cooperation with organizations:

- Performing Sero-survey for HBV, HCV and HIV in 294 health workers in Bab Al hawa hospital – Idleb, and 55 in Al Atareb hospital.
- Safety testing for the harvested blood in Atareb blood bank.
- Cooperating with private laboratories, hospitals and clinics for viral testing or confirming the findings of the tests performed in inaccurate methods.
- A proposal sent to WHO and GIZ to establish Influenza laboratory by real-Time PCR laboratory in rural Aleppo.

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 19: The available tests in each EWARN Laboratory

The available tests in each EWARN Laboratory	Estimated Time
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 (coming soon)	N/A
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 2018 Achievements

The number of different tests which performed in 2018 were 7731 analysis.

Table 20: No. of different tests performed in 2018

Disease	Test	# tests	# +ve Results	% -ve Results
Measles	Measles IgM	1622	1269	79.9
Rubella	Rubella IgM	347	5	1.4
Mumps	IgM Mumps	157	109	69.4
Acute Jaundice Syndrome	HAV IgM	451	302	67
	HEV IgM	149	0	0
Hepatitis B	HBs Ag	1396	171	12.2
	Anti HBs	361	182	50,4
	Anti HBc	294	47	16
Hepatitis C	HCV Abs	1396	105	7.5
AIDS	HIV (1&2) Abs	1396	3	0.2
Typhoid Fever	Salmonella IgM	121	78	64
	Stool culture for Salmonella	7	0	0
Watery Diarrhea	Stool culture for Vibrio cholera	3	0	5
Bloody Diarrhea	Stool culture for Shigella	14	0	0
Tuberculosis	Ziehl–Neelsen stain	9	6	66,6
Cutaneous Leishmaniasis	Microscopical diagnosis	8	6	75
Grand Total		**7731**	**2310**	**30%**

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.

Figure 60: Suspected Measles cases specimens

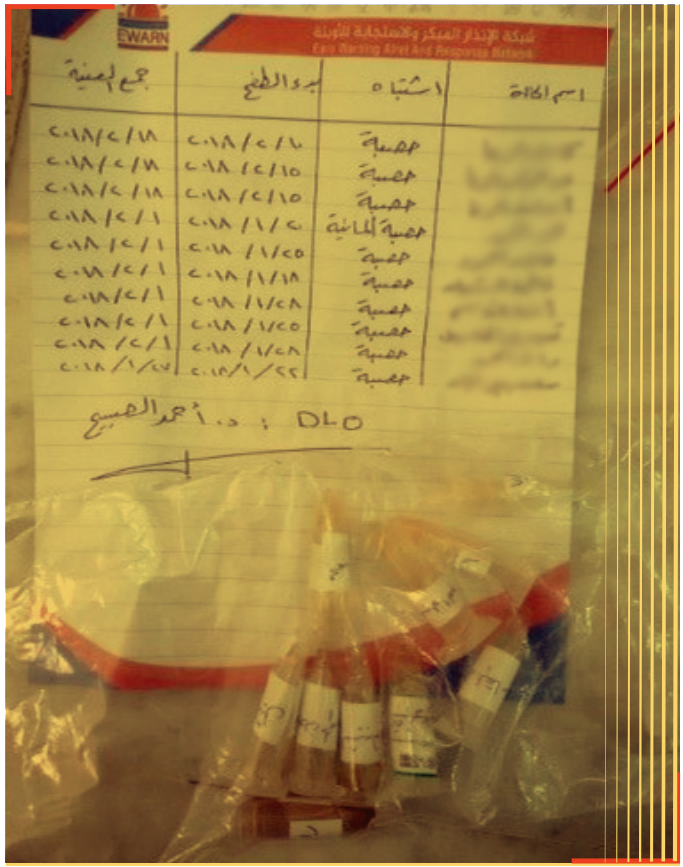


Table 21: Laboratory weekly report example_ Epi week 26

Syndromes	Pattern analysis	No. of Samples	No. of positive samples	Place of positive sample
Measles	Measles IgM	20	16	8 Al Bab, 6 Jabel Saman, 2 Harim,
Rubella	Rubella IgM	4	All suspected samples for Rubella IgM were negative	
AJS	HAV IgM	4	3	3 Idleb
Mumps	Mumps IgM	14	10	5 Al Bab, 4 Menbij, 1 Dara

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 Plans:

- 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 a part of SIG (Syrian Immunization Group) co-chaired by WHO and UNICEF, and supports it with technical staff at central and field levels.

This program has effective role in coordinating and implementing all vaccination activities (supplementary immunization activities (SIAs) and routine immunization (RI)) in all accessible areas of Syria.

Main Tasks

- Establish the central vaccination rooms in governorates and districts in coordination with local partners.
- Plan 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.
- Design and print IEC materials for social mobilization activities in coordination with UNICEF.
- Conducting TOT training for staff at central and peripheral levels according to WHO standards.
- Monitor the implementation of activities and follow up outputs.
- Prepare and publish final reports.

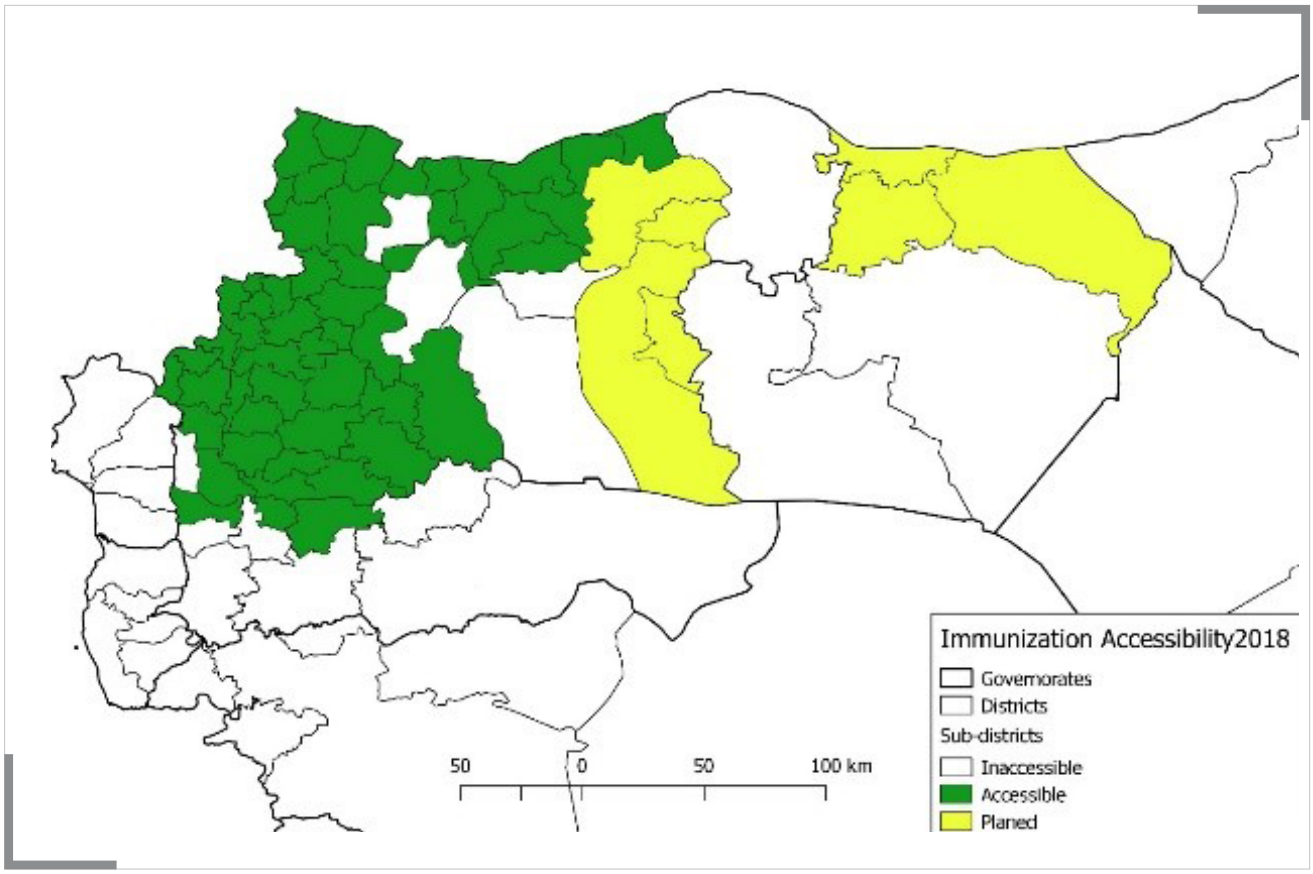
Participation with SIG in supervision on the following vaccination campaigns:

- Participate with SIG since the beginning of 2014 in planning, supervision and coordination on the following activities:
- Four rounds of polio campaign (OPV) in all accessible areas.
- Tow round of measles & rubella as a Response campaign on measles outbreak.
- Re-activating the Expanded Program Immunization (EPI) in Aleppo, Idleb and Hama governorates.

The activities that were implemented during 2018:

- Scaling up the Routine Immunization centres (RI)
- Participation in supplementary Immunization Activities (SIAs)
- Response Campaign to Polio outbreak 2017&2018
- Communication for Development (C4D)

Map 12: Immunization accessibility - North Syria map



Routine Immunization (RI) Centers

9 routine immunization centres were rehabilitated in north of Syria during 2018, to be 25 centres in total (16 in Idleb – 5 in Aleppo – 4 in Hama) supported by EWARN according to micro-plan which is detailed in the following table:

Table 22: RI Centers supported by EWARN

Governorate	District	Sub-District	Center Name	# Teams	Target 2018 / < 1 year per month	Target /2018 < 1 year per year	Launch Date
Idleb	Harim	Harim	Harim PHC	1	153	1,836	3/3/2017
Idleb	Idleb	Idleb	Al Thawrah PHC	2	176	2,112	4/3/2017
Idleb	Idleb	Idleb	Abi Zar PHC	1	127	1,524	4/3/2017
Idleb	Idleb	Maaret Tamsrin	Kafar yahmool PHC	1	79	948	4/3/2017
Idleb	Harim	Armanaz	Armanaz PHC	1	72	864	4/4/2017
Idleb	Jisr-Ash-Shugur	Janudiyeh	Al Janodia PHC	1	109	1,308	4/4/2017
Idleb	Al Ma'ra	Heish	Al Teh	1	75	900	8/4/2017
Idleb	Idleb	Saraqab	Khan Al Sebel PHC	1	136	1,632	8/4/2017
Idleb	Al Ma'ra	Tamanaah	Tamana'a	1	113	1,356	9/4/2017
Idleb	Jisr-Ash-Shugur	Badama	Kherbet Al Jouz PHC	2	206	2,472	10/4/2017
Idleb	Al Ma'ra	Ma'arrat An Nu'man	Deir Sharqy	1	92	1,104	4/10/2017
Idleb	Idleb	Idleb	Hie Al Jameaha PHC	1	122	1,464	4/10/2017
Idleb	Harim	Dana	Atmeh 2	2	144	1,728	14/2/2018
Idleb	Al Ma'ra	Kafr Nobol	Kafr Oweid PHC	1	128	1,536	18/2/2018
Idleb	Al Ma'ra	Ma'arrat An Nu'man	Tal Mennes	1	115	1,380	1/7/2018
Idleb	Idleb	Maaret Tamsrin	Maaret Mesrin PHC	1	78	936	1/9/2018
Idleb				**19**	**1,925**	**23,100**	

Governorate	District	Sub-District	Center Name	# Teams	Target 2018 / < 1 year per month	Target /2018 < 1 year per year	Launch Date
Hama	Muhradah	Kafr Zeita	Kafarzeta PHC	1	62	744	18/7/2017
Hama	As-Suqaylabiyah	Madiq Castle	Al Ghab PHC (Ha-wash)	1	93	1,116	15/8/2018
Hama	As-Suqaylabiyah	Madiq Castle	Qalet Almadique PHC	1	105	1,260	6/8/2017
Hama	As-Suqaylabiyah	Madiq Castle	Almestriha PHC	1	56	672	21/6/2017
Hama				**4**	**316**	**3,792**	

Aleppo	Jarablus	Jarablus	Jarablus PHC	2	287	3,444	19/9/2017
Aleppo	Jarablus	Jarablus	Ain Albaida PHC	1	101	1,212	19/9/2017
Aleppo	Jebel Saman	Jebel Saman	Khan Tuman PHC	1	125	1,500	26/4/2018
Aleppo	Jarablus	Ghandorah	Tal El Hajar PHC	1	55	660	1/8/2018
Aleppo	Al Bab	Ar-Ra'ee	Ar-Ra'ee PHC	1	75	900	1/11/2018
Aleppo				**6**	**643**	**7,716**	

TOTAL #29 #2,884 #34,608

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

At the beginning of 2018, and in cooperation with Homs Health Directorate and medical offices in local councils, 2 routine immunization centres were activated in the besieged northern rural of Homs (Al-Rastan and Talbisa sub-districts), before switching the control of this area one month later.

Map 13: EPI centers distribution map 2018

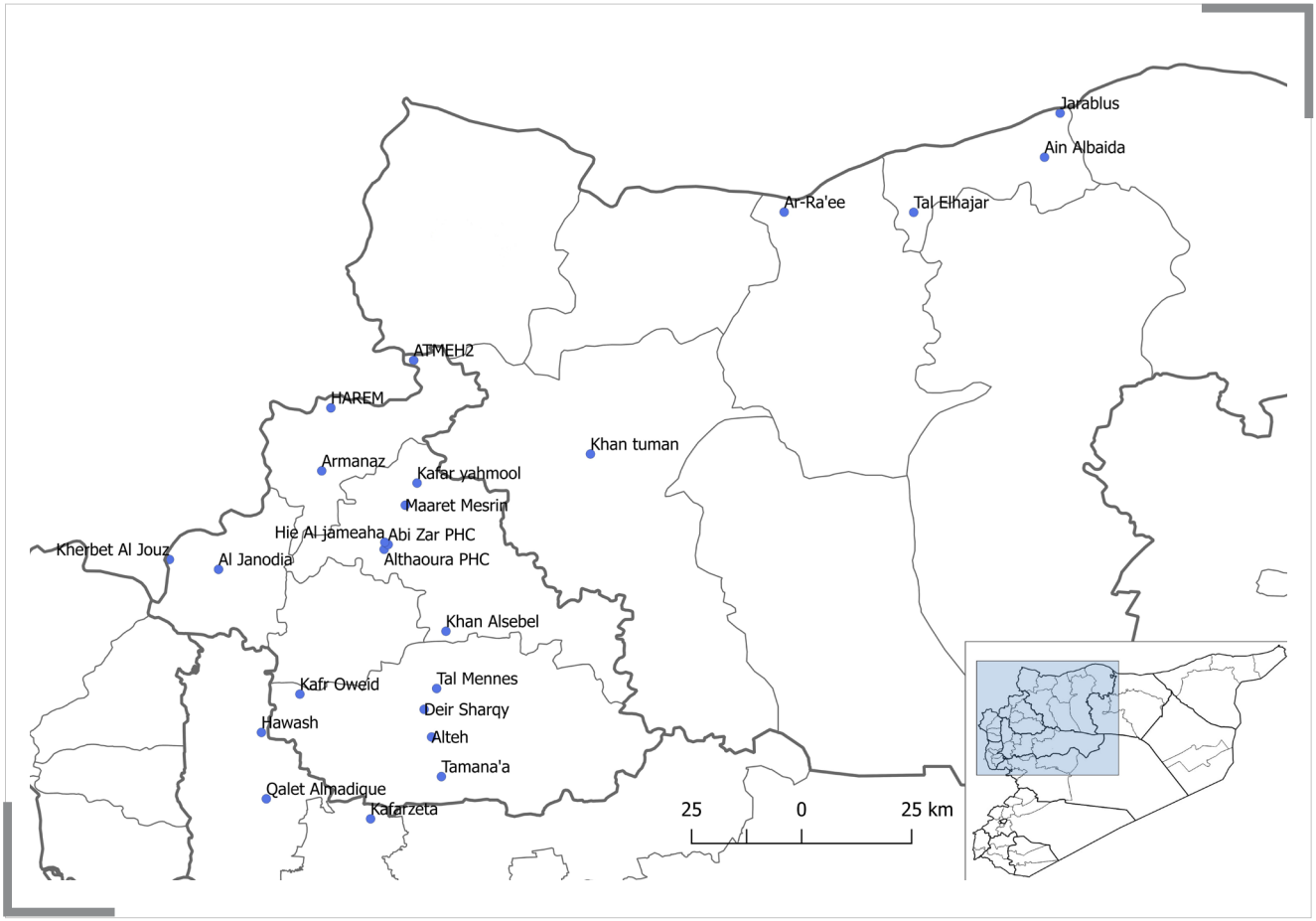


Table 23: EPI Total Coverage up to December Report - 2018

Vaccine	< [2Y] Total	Coverage	>[2Y] Total	Total Vaccinated
BCG	60,054	166%	-	60,054
Hep(B)	25,793	71%	-	25,793
Protected children	40,365	87%	-	40,365
Unprotected ch.	5,907	13%	-	5,907
OPV1	60,040	152%	2,191	62,231
OPV2	55,880	126%	3,737	59,617
OPV3	52,576	89%	6,542	59,118
OPV4	27,344	76%	21,484	48,828
IPV1	55,637	134%	655	56,292
IPV2	39,038	96%	208	39,246
Penta1	63,117	160%	2,363	65,480
Penta2	58,954	133%	3,934	62,888
Penta3	55,510	95%	6,933	62,443
Penta4	28,596	79%	22,592	51,188
MR1/MMR1	49,944	138%	7,534	57,478
MR2/MMR2	29,841	82%	19,794	49,635
Vit(A)1*	0	0%	0	0
Vit(A)2*	0	0%	0	0

*During 2018, Vit A was provided only with the vaccination campaigns

Table 24: Tetanus Vaccine Total Coverage up to December Report - 2018

Vaccine	1 Dose	2 Dose	3 Dose	4 Dose	5 Dose	Total
Pregnant	334	276	1,131	2,058	10,279	14,078
Unpregnant	532	457	1,833	2,480	10,056	15,358

SIAs (Supplemantry Immunization Activities)

EWARN team have participated in 17 vaccination campaigns (Polio & MR) during 2018, all the details of those campaigns are detailed in the table below:

Table 25: Supplementary Immunization Activities- 2018

Activity	District	Date / Month	Target	Vaccinated	Coverage
Polio Campaign round 1	Al Bab	March	63,001	58,920	94%
Polio Campaign round 2	Al Bab	May	60,360	66,575	91%
Polio Campaign round 3	Al Bab	November	66,575	68,552	103%
Polio Campaign round 4	Al Bab	December	64,314	64,225	100%
Polio Campaign round 1	Jarablus	March	28,323	27,044	95%
Polio Campaign round 2	Jarablus	May	27,704	28,335	98%
Polio Campaign round 3	Jarablus	November	28,335	28,563	101%
Polio Campaign round 4	Jarablus	December	28,335	28,317	100%
Polio Campaign round 1	Afrin	September	35,300	38,145	108%
Polio Campaign round 2	Afrin	November	39,386	49,302	125%
Polio Campaign round 3	Afrin	December	39,386	43,384	110%
Polio Campaign round 1	Northern Homs	April	37,362	37,138	99%
MR Campaign round 1	Al Bab	April	53,028	45,338	85%
MR Campaign round 2	Al Bab	November	107,320	86,491	81%
MR Campaign round 1	Jarablus	April	24,340	20,973	86%
MR Campaign round 2	Jarablus	November	45,676	36,325	80%
MR Campaign round 1	Afrin	November	98,938	87,750	89%

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

Figure 61: Polio vaccination campaign Round 3_ Interactive Dashboard

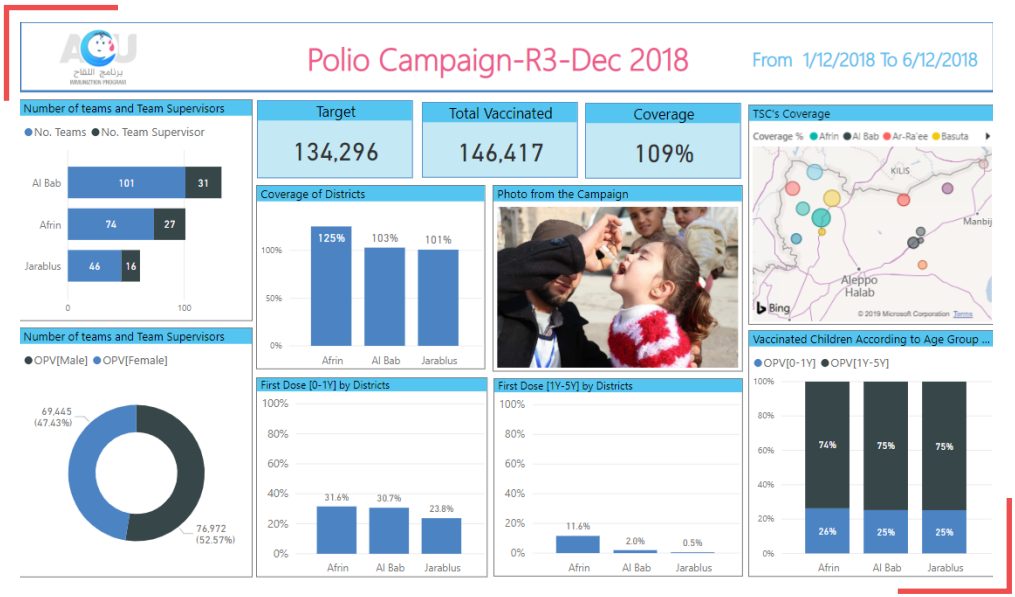


Figure 62: Polio vaccination campaign in Afrin_Final Report

Response Campaign to Polio outbreak 2017&2018

EOC was formed immediately after reporting of first case of PV2 in 6/5/2017. The EOC consists of the main partners that concern about immunization mainly SIG, WHO, UNICEF, ACU/EWARN, and QRC.

EWARN team Participates in the development of:

- cVDPV2 outbreak response plan with mOPV in both Deir ez zor and Ar-Raqqa governorates.
- Contingency plan for Idleb, Aleppo, and Hama: as the risk of continues polio transmission was elevated (due to the low herd immunity level and large displacement towards the Governorate from Deir ez zor and Ar-Raqqa governorate).

Vaccination Coverage Survey (VCS)

Vaccination coverage surveys are useful in providing the opportunity for health workers to understand where they are standing and enables the planners to develop necessary plans for establishing a routine immunization program in all governorates, and implements supplementary immunization activities (SIAs) to build up satisfactory and protective immune response.

The most important goal for this survey was to provide information on the delivery and impact of current immunization service, particularly in the accessible areas that served by EWARN (covers more than 50% of total population of Syria).

EWARN was the technical program that represent the head of core team, and oversight all phases of the survey and own its results. Qatar Red Crescent team participated in implementing the survey with EWARN team, and according to WHO protocols in all accessible areas.

Table 26: Vaccination coverage Survey/Data collection levels

Governorate	District	Sub-District	#Clusters	#Core team	|#Governorate team	No. of District	Coverage
9	38	110	271	9	10	38	284

Table 27: Number of the children enrolled in the vaccine coverage survey 2017/2018

Governorate	#Districts	# children by month / per Age Category		
		0-11	12-23	24-59
Deir ez zor	3	210	210	210
Ar-Raqqa	3	190	187	188
Idleb	5	214	206	210
Quneitra	2	28	28	28
Aleppo	8	210	210	210
Hama	3	154	154	154
Homs	2	168	168	168
Dar'a	3	189	186	188
Rural Damascus	2	210	209	210
Total	**31**	**1,572**	**1,558**	**1,576**

The data were collected in the field, then analysed by the core team in collaboration with an expert from Gaziantep University and National Information Centre of Egypt, and the final report was published in August 2018.

Table 28: Crude coverage of essential vaccines among children 12- 23 months

Vaccine	Number of vaccinated children	%Coverage	95% CI
BCG	795	51.0	48.4-53.5
HBV	800	51.3	58.8-53.8
Pent1	1,164	74.7	72.5-76.8
Penta2	890	57.1	60.3-64.7
Penta3	592	38.0	35.6-40.3
Penta booster	180	11.6	10.1-13.2
OPV1	1,302	83.6	81.6-85.5
OPV2	1,120	71.9	69.6-74.3
OPV3	861	55.3	52.8-57.6
OPV4	608	39.0	38.3-43.4
OPV5	420	27.0	24.9-29.1
OPV6	234	15.0	13.2-16.8
OPV7	148	9.5	8.0-11.0
IPV1	809	51.9	49.4-54.5
IPV2	390	25.0	22.8-27.1
IPV3	140	9.0	7.5-10.4
IPV4	71	4.6	3.6-5.6
MMR 1	869	55.8	53.3-58.5
MMR 2	319	20.5	18.4-22.6

Figure 63: % coverage of essential vaccines for children 12-23 month of age

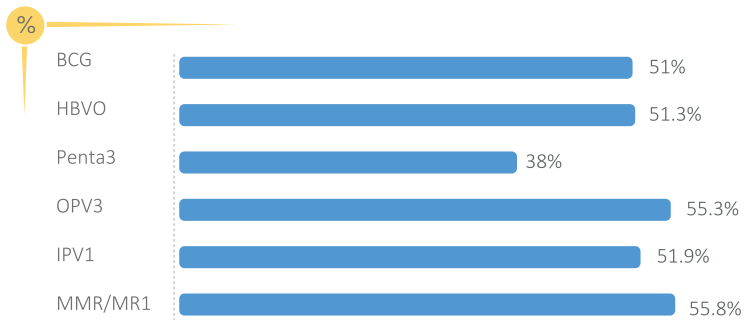


Table 29: Crude coverage of essential vaccines among children 12- 23 months

Vaccine	# Vaccinated Children	%Coverage	95% CI	
BCG	990	63.0%	60.6%	65.3%
HBV	950	60.4%	58.0%	62.8%
Pent1	1,210	77.0%	74.8%	79.0%
Penta2	965	61.4%	59.0%	63.8%
Penta3	728	46.3%	43.9%	48.8%
Penta booster	394	25.1%	23.0%	27.3%
OPV1	1,357	86.3%	84.6%	88.0%
OPV2	1,221	77.7%	75.6%	79.7%
OPV3	1,055	67.1%	64.8%	69.4%
OPV4	772	49.1%	46.6%	51.6%
OPV5	628	39.9%	37.5%	42.4%
OPV6	475	30.2%	28.0%	32.5%
OPV7	387	24.6%	22.5%	26.8%
IPV1	859	54.6%	52.2%	57.1%
IPV2	574	36.5%	34.2%	38.9%
IPV3	255	16.2%	14.5%	18.1%
IPV4	179	11.4%	9.9%	13.0%
MMR 1	1,091	69.4%	67.1%	71.6%
MMR2	705	44.8%	42.4%	47.3%

Table 30: Crude coverage of Tetanus Toxoid among surveyed mothers of children 0-11 months of age by governorate during their reproductive age (N=1566)

Governorates	# Number of mothers by number of TT doses received during the reproductive period											
	Not vaccinated (%)		1 TT doses (%)		2 TT doses (%)		3 TT doses (%)		4 TT doses (%)		5 TT doses (%)	
Idleb (210)	143	68.1%	36	17.1%	19	9.0%	4	1.9%	6	2.9%	2	1.0
Ar-Raqqa (188)	117	62.2%	36	19.1	19	10.1%	5	2.7%	3	1.6%	8	4.3
Quneitra (28)	19	67.9%	5	17.9%	2	7.1%	2	7.1%	0	0.0%	0	0.0
Aleppo (210)	119	56.7%	48	22.9%	29	13.8%	6	2.9%	2	1.0%	6	2.9
Hama (154)	121	78.6%	21	13.6%	6	3.9%	2	1.3%	2	1.3%	2	1.2
Homs (168)	73	43.5%	56	33.3%	23	13.7%	11	6.5%	1	0.6%	4	2.4
Dar'a (189)	77	40.7%	46	24.3%	26	13.8%	15	7.9%	12	6.3%	13	6.9
Deir ez zor (210)	120	57.4%	17	8.1%	26	12.4%	23	11.0%	5	2.4%	18	8.7
Rural Damascus (210)	151	71.9%	34	16.2%	13	6.2%	8	3.8%	3	1.4%	1	0.5
Total	**940**	**60%**	**299**	**19.1%**	**163**	**10.4%**	**76**	**4.9%**	**34**	**2.2%**	**54**	**3.4%**

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
- Educational activities in schools.
- Distribution IEC materials with key messages

Figure 64: Social Mobilization Activities

Challenges:

- The continues displacement from conflict zones.
- The security situation: due to aerial bombardment and clashes, which led to the suspension of some vaccination activities and departure of number of the qualified vaccinators.
- Logistics aspect: inability to deliver vaccines into eastern region, as well as the limitations for EWARN Central Team to pass through the Syrian-Turkish borders to Syria for training and monitoring.

Future Plans:

- Three OPV campaigns (250 %) in Aleppo (including Al Bab, Jarablus and Afrin districts) - Idleb – Hama, in order to improve immunity levels in the community.
- Implement MR campaign according to epidemiological situation.
- Scaling up the number of routine immunization centres (6 centres at least) according to gaps in the SIG plan to cover all accessible areas.
- Conduct training for teams and supervisors in the 1st quarter of 2018 (Basic), and in 3rd quarter 2018 (refresh).
- Conducting monthly supervisory visits by the central team to EPI centres, to evaluate their performance and improve the level of the field team.
- Develop comprehensive C4D plan to improve social mobilization activities for both RI and campaigns.

WASH (WATER, SANITATION AND HYGIENE)

Introduction

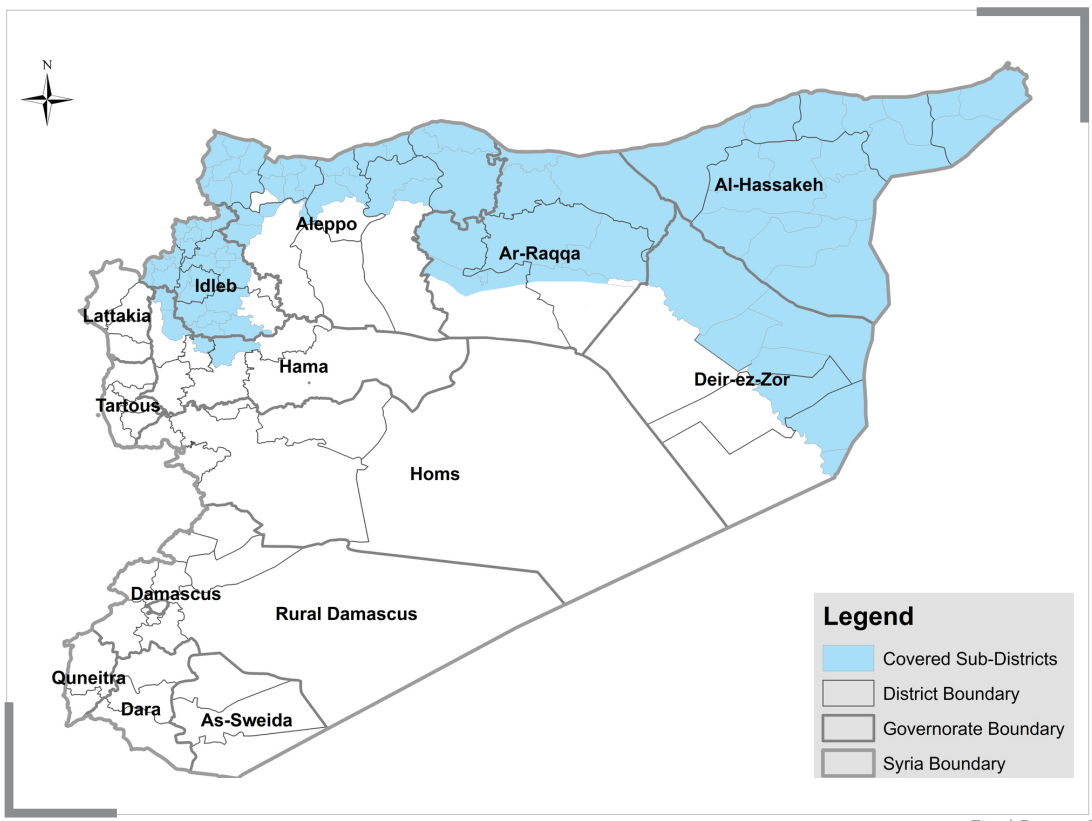
WASH team was established in June 2013. The program focused on the training of staff working inside Syria within the sector of drinking water quality. Training courses were conducted on how to do chemical and biological analyzes of water using portable analysis devices inside Syria.

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.

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:

Map 14: WASH coverage map Dec_2018



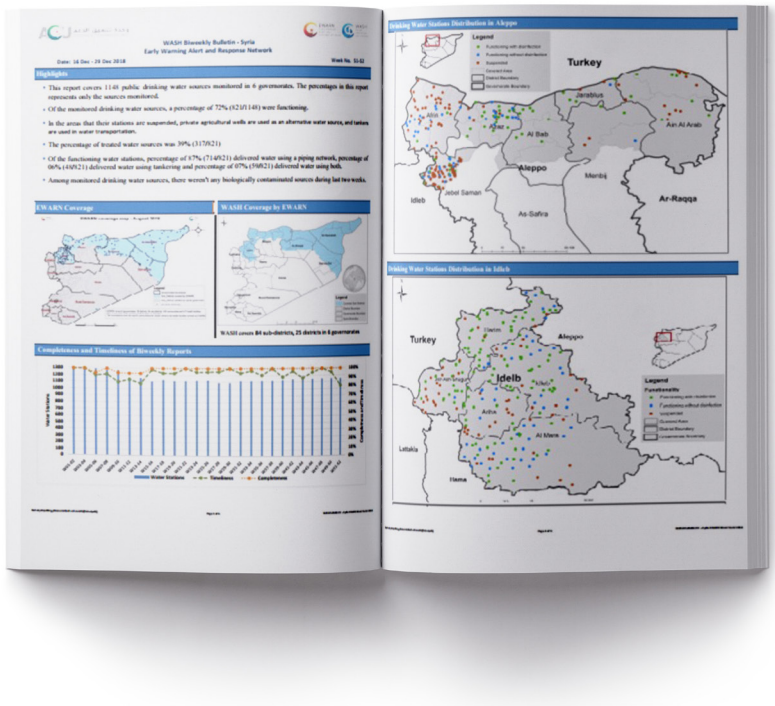
Monitoring of drinking water sources:

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 2018 per month 1100 water stations in 6 provinces, 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 65: 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.

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

Figure 66: 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 mixing of wastewater with drinking water was discovered some areas as detailed in Table 30.

Table 31: Mission of testing water transporter to homes

Governorate	District	Location
Idleb	Harim	Farouqiyeh camp
Aleppo	Al Bab	Diouf Al Sharqiyeh Camp
Idleb	Harim	Ata'a camp
Deir ez zor	Al-Kasra	Al-Kasra
Ar-Raqqa	Ar-Raqqa	Ar-Raqqa city
Aleppo	Al Bab	Al Bab

Local councils were directed to replace the damaged part of the sewage network and the local councils were provided with a quantity of calcium hypochlorite to sterilize drinking water after doing the maintenance.

Participation in WBDs Response Missions

Table 32: The details of WASH missions in health sectors_2018

Mission	Governorate	District	Location
OAD Investigation	Idleb	Harim	Al-Farouqiyeh camp
OAD Investigation	Aleppo	Al Bab	Diouf Alsharqiyeh camp
OAD Investigation	Aleppo	Al Bab	Ata'a camp
OAD Investigation	Aleppo	A'zaz	Sijjo Camp
OAD Investigation	Aleppo	A'zaz	Kal Jabreen village
OAD Investigation	Idleb	Harim	Quneitra camp
OAD Investigation	Ar-Raqqa	Ar-Raqqa	Ar Raqqa
ABD Investigation	Ar-Raqqa	Ar-Raqqa	Al Hamrat
ABD Investigation	Deir ez zor	Deir ez zor	Al Kasra
AJS Investigation	Aleppo	Al Bab	Al Bab city
AJS Investigation	Aleppo	Afrin	Afrin City
AJS Investigation	Idleb	Harim	Armanaz city
AJS Investigation	Idleb	Idleb	Saraqib city
STF Investigation	Aleppo	Jebel Saman	Haritan city
STF Investigation	Idleb	Harim	Harim city -
STF Investigation	Aleppo	Jebel Saman	Daret Azza city
STF Investigation	Al Hasaka	Al Hasaka	Al-Hool camp
STF Investigation	Idleb	Ma'rat Al-Nu'man	Kafr Sajneh village
Leishmaniasis Investigation	Idleb	Harim	Marzaf village

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

During the response missions, aqua tablets are distributed for the household to reduce the cases of water-borne diseases due to the random water sources used by people.

Training and Capacity-Building

WASH Program is conducting training and raising the capacity of the public health workers. During 2018, many training courses were implemented.

Table 33: The details of WASH training activities for NGOs_2018

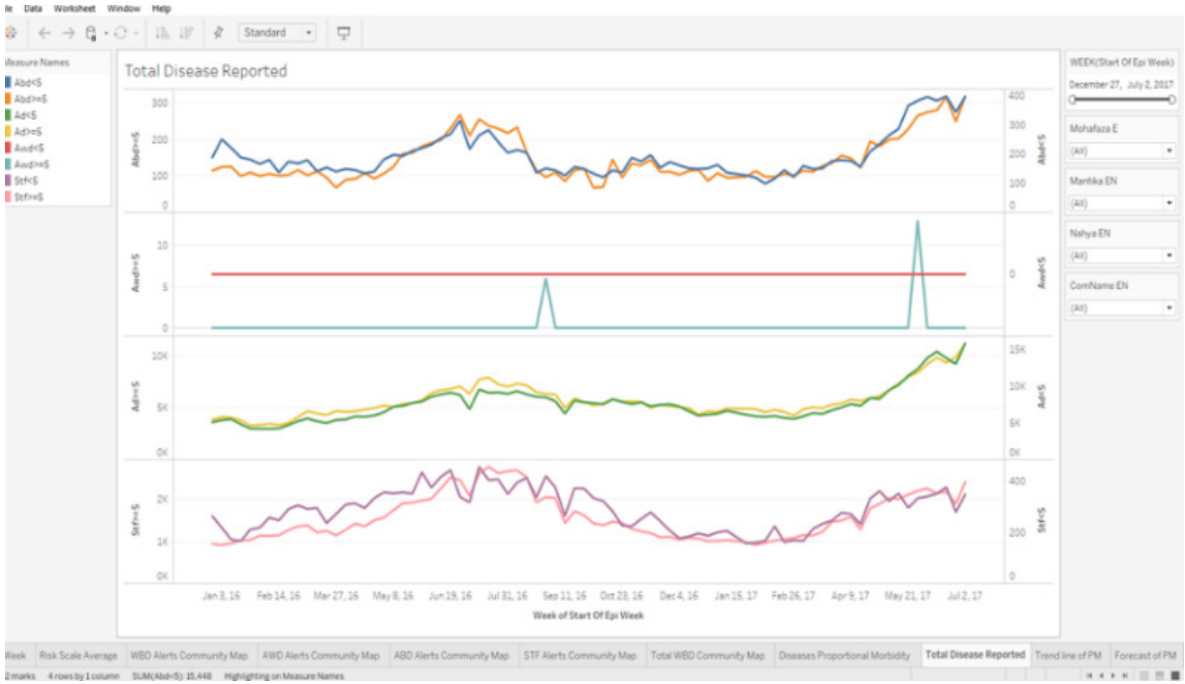
No. of trainees	Targeted participants	Training
Water quality	17 NGOs	60
Water quality	40 Local councils	75
WASH Assessment	WASH officers	24
Public health	CLOs	3

Figure 67: NGOs training in Al Ma'ra_Sep 2018

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 68: WBDs 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 34: The details of WASH missions in WASH sector _2018

Location	District	Governorate	Mission
Repair of water network	Idleb	Harim	Farouqiyeh camp
Maintenance of the 1st water station	Hama	Muhradah	Kafr Zeita
Maintenance of the 2nd water station	Hama	Muhradah	Kafr Zeita
Maintenance of water station	Hama	As Suqaylabi yah	Kafr Nbouda
Maintenance of water station	Idleb	Ariha	Mahambel
Maintenance of water station	Hama	Muhradah	Latmana
Maintenance of water station	Hama	As Suqaylabi yah	Qulidine
Maintenance of sewage network	Hama	Muhradah	Kafr Zeita
Implementation of a solid waste management campaign	Idleb	Al Ma'ra	Al Bara
Implementation of a solid waste management campaign	Rural Damascus	Rural Damascus	Arbeen
Implementation of solid waste management campaign	Aleppo	Jebel Saman	Al-Atareb
Implementation of solid waste management campaign	Hama	Hama	Mork city
WASH assessment	Aleppo	Al Bab	Kabbasin Schools
WASH assessment	Aleppo	A'zaz	Sijjo camp
WASH assessment	Ar-Raqqa	Ar-Raqqa	Abu Qubayh Camp
WASH assessment	Idleb	Harim	One Nation Camp
WASH assessment	Idleb	Jisr Ash-Shugur	Al-Sadqa Camp

Figure 69: Maintenance of water network in Kafr Zeita_Jan 2018

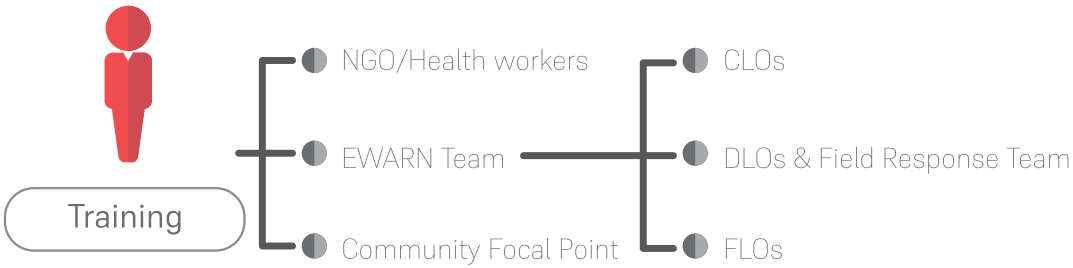
Figure 70: WASH assessment in Abu Qubayh_ Apr 2018

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.

During 2018, the total number of the trainees that were trained by EWARN was 2550.

Figure 71: Training categories in EWARN



The donors for Training's Activities during 2018 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).

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).

Figure 72: NGOs training in Al Ma'ra_Sep 2018

AFP and Measles Surveillance:

398 participants were trained from different organization.

The topics were:

- AFP surveillance review & updates.
- Measles surveillance review & updates.
- Case definition and alert threshold review.

Table 35: AFP & Measles Surveillance Training / Health workers in NW_2018

Name of NGOs	Participants Area	Training place	#Participants	Doctor	Nurses	Others	Date
QRC	Aleppo-Idleb	Idleb	32	15	0	17	2nd & 3rd Dec
IDA	Aleppo	Jarablus	44	9	15	20	4th Oct
IDA	Aleppo	A'zaz	27	11	6	20	10th Oct
Syria Relief	Idleb	Idleb	17	8	4	5	22nd Oct
SEMA	Aleppo-Idleb-Hama	Idleb	86	7	36	43	23rd to 25th Oct
SAMS	Aleppo-Idleb	Idleb	60	15	16	29	15th to 17th Oct
UOSSM	Aleppo-Idleb	Harim	22	20	0	2	30th Jun &
3rd Jul	Idleb	Idleb	17	8	4	5	22nd Oct
Relief International	Aleppo-Idleb-Hama	Harim	80	35	4	41	24th & 25th Jun
Medicines De Mond	Idleb	Harim	30	9	16	5	1st & 2nd Oct

EWARS-in-a-box398

318 participants were trained from different organization.

The topics where:

- Creating and submitting weekly Zero report online through EWARS
- Management of alerts using EWARS App on mobile phones

Table 36: EWARS-in-a-box Training / Health workers in NW_2018

Governorate	District	Training place	No. of participants	Date
Idleb	Idleb	Idleb	33	1/8
Idleb	Harim	Bab Al-Hawa	30	5/8
Idleb	Jisr-Ash- Shugur	Badama	18	30/7
Idleb	Al Ma'ra	Idleb	21	2/8
Idleb	Harim	Bab Al-Hawa	20	6/8
Idleb	Al Ma'ra	Idleb	11	3/8
Idleb	Harim	Bab Al-Hawa	43	7/8
Hama	As Suqaylabiyah	Idleb	13	4/8
Aleppo	Jebel Saman	Idleb	10	9/8
Aleppo	Jebel Saman	Daret Azza	36	8/8
Aleppo	A'zaz	A'zaz	27	2/8
Aleppo	Al Bab	Al Bab	32	3/8
Aleppo	Afrin	Afrin	14	1/8

Influenza Surveillance

389 participants were trained from different organization.

The topics were:

- The ABCs of Influenza and the Current Global Novel Influenza Situation Update
- Epidemiologic case investigation of human infections with influenza A (HxNy)
- Assessment, Diagnosis & Management of Patients
- Infection control in health care settings
- Use of non-pharmaceutical intervention
- Sample Collection, Transport & Virus Sharing

Table 37: Influenza Surveillance Training / Health workers in NW_2018

Governorate	District	Training place	No. of participants	Date
Idleb	Idleb	Idleb	31	25& 26/11
Idleb	Harim	Bab Al-Hawa	27	28/11
Idleb	Jisr-Ash- Shugur	Badama	18	29/11
Idleb	Al Ma'ra	Idleb	36	19&20/11
Idleb	Harim	Bab Al-Hawa	40	24 &25/11
Idleb	Al Ma'ra	Idleb	40	21&22/11
Idleb	Harim	Bab Al-Hawa	49	24 to 26/11
Hama	As Suqaylabi yah	Idleb	15	18/11
Aleppo	Jebel Saman	Idleb	12	18/11
Aleppo	Jebel Saman	Daret Azza	47	27 to 30/11
Aleppo	A'zaz	A'zaz	27	30/11
Aleppo	Al Bab	Al Bab	32	22/11
Aleppo	Afrin	Afrin	24	30/11

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).

328 participants were trained from different organization though 2 trainings (21 sessions).

Table 38: The details of Health Workers Training in NE_2018

Topics	Facilitators	No. of participants	No. of Sessions	Training Place	Date
Case definition AFP Surveillance Measles Surveillance	DLOs	132	11	Syria	6/5 to 10/6
Case definition AFP surveillance VDPV Event and VDPV outbreak	DLOs	196	10	Syria	12 to 28 /10

Figure 73: NGOs Training _ Al Hasskeh

EWARN TEAM TRAININGS

Central Level Team

Table 39: The details of Central Level Team Training / Gaziantep University _2018

Goal	Topics	Facilitator	#Participants	Date	Place
To provide with the basic knowledge of bio-statistics	• Evidence Based Medicine and Introduction to Statistics • Entering data into SPSS package • Study Design in Medical Research • Statistical Significance: P value and CI • Categorical data analysis: Chi-square test, OR and RR coefficients • Statistical tests for numerical data: Parametric and non-parametric tests • Checking Normality of data • Assessing relationship between two numerical • Variables: Pearson and Spearman Rank Correlations • Comparison of 2 independent groups for numerical data: Student t and Mann Whitney U tests • Comparison of 2 dependent groups for numerical data: Paired sample t and Willcoxon tests • Comparison of more than 2 independent groups for numerical data: ANOVA and Wallis test	Dr. Seval Kul	21	26 hours 4/1 to 22/2	Gaziantep University
To provide a deep understanding of the research and articles Understanding of methodology and experimental design.	• Sampling methods • Sample size determination for prevalence studies • The Power of a test-Power analysis • Meta-Analysis • Introduction to Regression Analysis • Simple Linear Regression Analysis • Multiple Linear Regression Analysis • Simple Logistic Regression Analysis • Multiple Logistic Regression Analysis	Dr. Seval Kul	7	26 hours 15/3 to 24/4	Gaziantep University

Table 40: The details of Central Level Team Training _2018

Title	Goal	Topics	Facilitator	#Participants	Date
EWARS-in-a-box	To increase the capacity about EWARS-in-a-box	• Introduction to Emergency Response • Introduction to EWARS • Reporting to EWARS online/ on the phone • Editing, deleting, tracking reports • M& E Auditor • Alert logs and alert management • Creating forms and locations • Publishing epidemiological bulletins • Custom analysis, data exports and imports • Operational aspects of EWARS • Health Centre orientation planning	WHO Consultants	21 CLOs 7 DLOs 2 RRTs 1 lab physician	29/1 to 2/2
Influenza	To sharp team skills about AFP, Measles & Rubella Surveillance To increase team capacity in management of Supplemental Immunization Activities and Routine Immunization	• The ABCs of Influenza and the Current Global Novel Influenza • Role of Indicator and Event-Based Surveillance in Pandemic Early Warning • Epidemiologic case investigation of human infections with influenza A(HxNy) • Assessment, Diagnosis & Management of Patients • Infection control in health care settings • Use of non-pharmaceutical intervention • Sample Collection, Transport & Virus Sharing • Overview of Laboratory Diagnostics • Emergency Risk Communications	WHO Consultants	22 CLOs 11 DLOs 2 RRTs 1 lab physician	7 & 8 /7
STOP	Influenza	• Current Polio Eradication Status • Overview of AFP Surveillance • Clinical aspects of AFP • Implementing AFP Surveillance • AFP Surveillance Indicators • How to Properly Collect Stool • Measles & Rubella Surveillance • Measles & Rubella Surveillance • Overview of Supplemental Immunization Activities (SIAs) • Introduction to Communications • How to conduct a situational analysis • Problem Analysis • Communicating Difficult Messages, Feedback & Recommendations • Orientation to Routine Immunization • RI Cold Chain Logistics and Vaccine Handling • Supporting RI Services and SIAs in STOP	CDC & WHO &BMG consultants	22 CLOs 11 DLOs 2 RRTs 1 lab physician	9 to 13/7
PMD Pro	To raise team capacity about project Management	• General PM Background • Project Life Cycle • Identification & Design • Concept Note • Project Proposal • Project Initiation • Project Planning • Project Implementation • Project Monitoring, Evaluation and Control • Project transition	Mohammad Mazen Housseiny & Ahmed Abdulwahed	28	27/11 to 7/12

Figure 74: : CLOs Training _ Gaziantep University

Figure 75: CLOs Training _ EWARS-in-a-box

District Level Team

Only two quarterly meetings were conducted for DLOs during 2018 (in February and July), due to the borderline's constrains.

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

Figure 76: DLOs Training _ 1st Quarterly Meeting

Figure 77: DLOs Training _ 2nd Quarterly Meeting

Table 41: The details of District Level Team Trainings _2018

Topics	Facilitator	#Participants	Place	Date
• Mortality surveillance. • AEFI of vaccination campaigns and routine vaccination centers. • VPD Case definitions reviewing. • Measles surveillance update. • AFP Surveillance indicators review. • Active surveillance & ODK. • Primary Immunodeficiency Disease (PIDD). • Vaccine induced immunity. • Acute Respiratory Illness (ARI) surveillance review. • Immunization Activates 2017 – 2018. • Cold Chain. • Fridge-Tag Activating. • Fridge-Tag (SOPs+ Forms.	CLOs /BMGF consultant	7 DLOs 2 RRTs 1 lab physician	Turkey	5 to 7 /2
• AFP Surveillance Indicators review. • OBRA mission: Briefing and recommendations. • Sabin-Like 2 Detection. • AFP Investigation forms updates. • Case definition reviewing of vaccine preventable diseases. • Measles update and measles mortality. • AEFI update. • Refreshment on EWARS mobile application. • Hands-on learning on EWARS App and Q&A.	CLOs /BMGF consultant	11 DLOs 2 RRTs 1 lab physician	Turkey	4 to 6 /7

Field Level Team

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

Table 42: The details of Field Level Team Trainings _2018

Topics	Facilitator	Trainees No.	Sessions No.	Place	Date
• Case definition • AFP surveillance • Measles Surveillance	DLOs	184	24	Syria	5 to 14/4
• Creating and submitting weekly EWARS reports online • Management of alerts online using the phone	DLOs	103	13	Idleb, Hama and some districts of Aleppo (Afrin, A'zaz, Al Bab, Jebel Saman, Jarablus)	3/7 to 9/8
• The ABCs of Influenza and the Current Global Novel Influenza Situation Update • Epidemiologic case investigation of human infections with influenza A(HxNy) • Assessment, Diagnosis & Management of Patients • Infection control in health care settings. • Use of non-pharmaceutical intervention. • Sample Collection	DLOs	107	13	Idleb, Hama and some districts of Aleppo (Afrin, A'zaz, Al Bab, Jebel Saman, Jarablus)	18 to 30 /11
• AFP surveillance • Epidemiology for Disease Control in Emergencies • Field Epidemiology Protocols	DLOs	185	24	Syria	23/11 to 2/12

Figure 78: 1st FLOs Training _ Idleb

Figure 79: 2nd FLOs Training _ Deir ez zor

COMMUNITY FOCAL POINTS TRAINING

Table 43: The details of Community Focal Points Trainings _2018

Goal	Topics	Facilitator	#Participants	Date	Place
To increase the capacity of community focal points about community base surveillance	• Case Definition • AFP surveillance • Identify the role of Community focal points	DLOs & FLOs	337	Syria	30/8 to 10/9

ADVOCACY IN SYRIA

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 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 44: The details of Advocacy activities in Syria _2018

Targeted NGO / Partner	Goal	#Participants	Related activities	Place	Date
The health workers in HFs that supported by Turkish Health Directorates	• Introduce EWARN, and case definition • Strengthening relationship	51	Introducing EWARN and case definition, Reporting mechanism Cooperation mechanisms	Aleppo_ A'zaz	10 & 17 /11
The health workers in HFS that supported by Turkish Health Directorates	• Introduce EWARN, case definition • Strengthening the coordination level	28	Introducing EWARN and case definition, Reporting mechanism Cooperation mechanisms	Aleppo_ Al Bab	20/11

Challenges

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

2019 Plan

- 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 four 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 of 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

2015

- The data team consisted of 3 members.
- MS Excel was used instead of MS Word in creating data collection forms.
- Information for Action (IFA) software, provided by WHO, was utilized to manage the data of Acute Flaccid Paralysis surveillance.
- Usage of GIS software in producing maps.
- Disseminate products through uploading them on the ACU's website

2016

- The data team increased and reached to 5 members.
- Automated functionalities and bulletins were developed to better monitor health events and outbreaks.
- Focus on strengthening the electronic filing system at the central level.
- Assign codes to reporting sites as identifiers to ease track reports and implement linkage among data sources.
- Generate interactive maps using ArcGIS online.
- Develop a MS Access system to store and manage the data of implemented vaccine campaigns.

2017

- The data team expanded to be 7 members.
- Utilize ODK as a data collection tool for active surveillance, routine immunization, and nutrition surveillance.
- Emergency Nutrition Assessment (ENA) software was used for nutrition surveillance.
- Generate interactive data visualizations using Tableau.
- Find innovative approaches to raise alerts based on historical data and moving averages.
- Vaccine coverage survey was conducted across 9 governorates of Syria.
- Plans were sorted to deploy EWARS-in-a-box system to monitor alerts and to help control outbreaks in timely manner.
- Training and plans were implemented to utilize Epi Info.
- Trainings of SPSS software to be conducted and utilized it in scientific researches.
- EWARN data staff mentored and trained the WASH cluster members on data management and GIS.

STRUCTURE

Different functionalities and tools are developed by the data team members to support the teamwork. The team provides the required support in all EWARN scopes. One data specialist is designated to manage data

- Manage the data of AFP surveillance.
- Manage the data of Vaccine-Preventable diseases.
- Manage the data of syndromic weekly reporting and active surveillance.
- Manage the routine immunization and the lab data
- Support the nutrition surveillance
- Support the alerts management and WASH activities.
- Support the vaccine campaigns and manage the respective data.

IMPLEMENTATION

Different functionalities and tools are developed by the data team members to support the teamwork. The team provides the required support in all EWARN scopes. One data specialist is designated to manage data.

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.

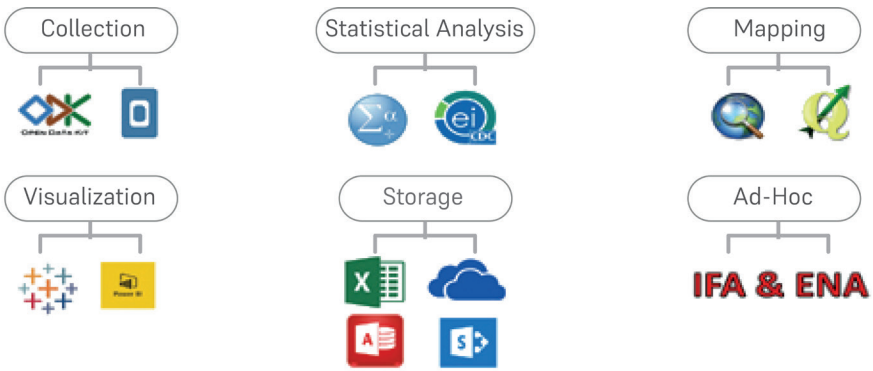
Epi Info is used to enrich health events and outbreaks studies with statistics, and to provide evidences while determining aetiologies.

MS Power BI and Tableau are used to help us visualize and better understand data. in order to easily track surveillance updates.

Special-function applications are used to achieve certain purposes. Firstly, information for action (IFA) is a software developed by WHO EMRO, to manage the AFP surveillance data. The second application is emergency nutrition assessment (ENA) is developed by CDC and used to implement SMART survey.

In terms of generating maps, ArcGIS and QGIS are used to store, analyse and visualize data through shape files and maps.

Figure 80: Tools and software



Information for Action (IFA)

This system is adopted in WHO, EMRO and it's built based on MS Excel, EpiData Entry, and EpiData Analysis software. The system provides two main forms, the first one is used to record the investigation data related to the AFP index case, whilst the second is used to record the data related to the contacts of the AFP index.

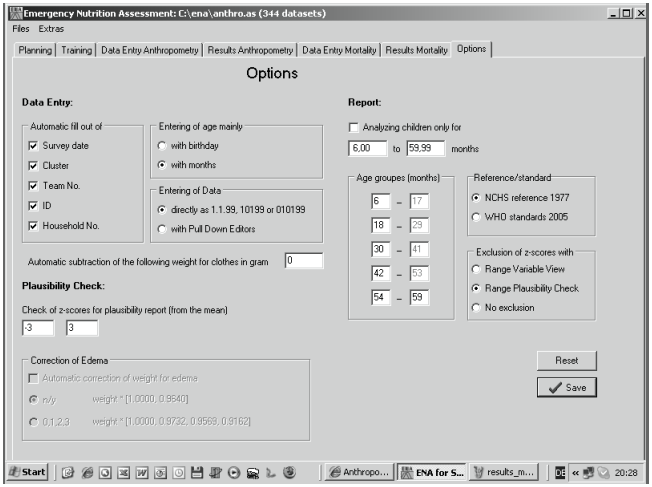
The system displays the AFP indicators and variables using MS Excel, with ability to create customized dashboards and summaries.
It also provides data sharing through a set of shareable files called *.rec files which include the up-to-date data associated with the AFP index cases and contacts. Hence, the AFP data is easily shared on a weekly basis with WHO office.

Figure 81: 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.

Figure 82: ENA's main window



Data Flow

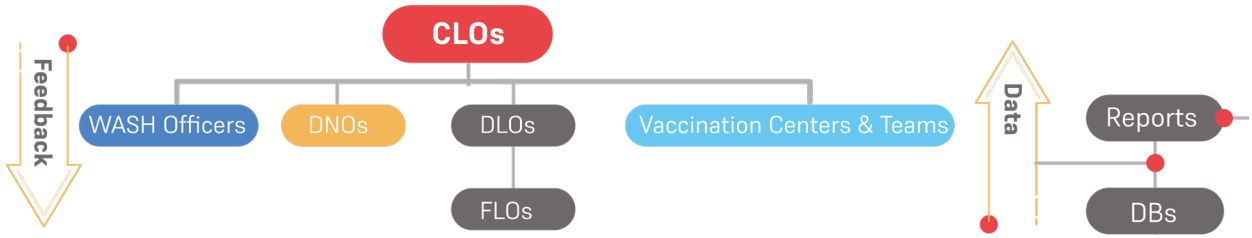
Several means are used to transfer data and exchange information, the official mean of receiving reports is email. WhatsApp, Skype, and phone calls are used to communicate back and forth with the field staff, to provide guidance and to discuss health events in details.

There are two approaches of receiving data. firstly, the reports are submitted by field level officers to district level officers, who in turn submit reports to the central level on a specific interval (weekly, semi-monthly, and monthly). Secondly, the reports are submitted immediately after a health event occurs, this type of reporting doesn't require the reporter to wait until the end of a prespecified duration to report.

The central team communicates with the field staff, and share feedback when needed.

The data is stored in databases and might be reused in further analyses and researches. It may be shared with partners based on a sharing policy.

Figure 83: Data flow



Data Component

Case-based and zero report forms are designed at the central level according to WHO standards to be used in data collection. During outbreaks, once an alert is verified, the cases are generally captured in a line-listing form. Afterwards, data is refined and manipulated at the central level.

In terms of data presentation, summarization tools, dashboards are developed to help make data-driven decisions.

Bulletins are developed and disseminated to the public, partners and stakeholders.

Case-based Surveillance

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

It involves immediate notification, and a series of further actions, such as verification, investigation, classification, and follow-up.

The related data is intended to support the unique identification and characterization of persons newly diagnosed and tracking them over time.

Different forms are developed to capture information about case-investigation, follow-up, and contacts tracing.

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

Figure 84: Measles investigation form

استمارة تقصي حالة اشتباه الحصبة والحصبة الألمانية

1- Reporting site Information بيانات مركز الإبلاغ **EPID # الرقم الوبائي**

Health Facility (HF) المركز الصحي | Health Facility type نوع المركزالصحي

Governorate المحافظة: Aleppo | District المنطقة: Menbij | Subdistrict الناحية: Menbij

HF Address عنوان المركز الصحي: منبج -شارع السندس - مقابل الجامع العلائي

Detection date تاريخ الاكتشاف: 28/Feb/2017 | Notification date تاريخ الإبلاغ: 28/Feb/2017 | Inves. Date تاريخ التقصي: 28/Feb/2017

Initial clinical diagnosis التشخيص السريري المبدئي: ☑Clinical measles حصبة | ☐Clinical rubella حصبة ألمانية | ☐Others أخرى | ☐Unknown غير معروف

2- Personal information & immunization status البيانات الشخصية والحالة التلقيحية

Patient Name اسم المريض: [redacted] | Father name اسم الأب: [redacted] | mother name اسم الأم: [redacted]

Birth date تاريخ الميلاد: 1/Sep/2016 | Age (Months) العمر (بالأشهر): 6 | Sex الجنس: MALE ذكر

Job المهنة: لا يعمل | Marital Status الحالة الاجتماعية: SINGLE عازب

Residency Place مكان الإقامة: [redacted]

Governorate المحافظة: Aleppo | District المنطقة: Menbij | Subdistrict الناحية: Menbij

IDP or Resident نازح أم مقيم؟: RESIDENT مقيم | If IDP OR nomad, from where? إذا كان نازح/بدوء من أين؟ | And since when (m) منذ متى بالأشهر؟

In Case of Rubella, Is case pregnant? في حالة الحصبة الألمانية هل الحالة حامل ؟ | If yes gestation age weeks? اذا نعم كم العمر الحملي بالاسابيع ؟

Measles (MR/MMR) Vaccination status الحالة التلقيحية للحصبة: NO | No. of doses عدد الجرعات: 0 | Last Vaccination Date تاريخ آخر لقاح

Source of vaccination status | **If not vaccinated what is the cause**

Active Surveillance

A strategy to actively collect information by visiting AFP reporting sites and detect missed cases. Active surveillance serves other functions as well (sensitization of staff, on the job training etc.). Additional to weekly zero reports sent by the same health facility.

The DLOs are requested to conduct field visits to review the registers of the prespecified sentinel sites.

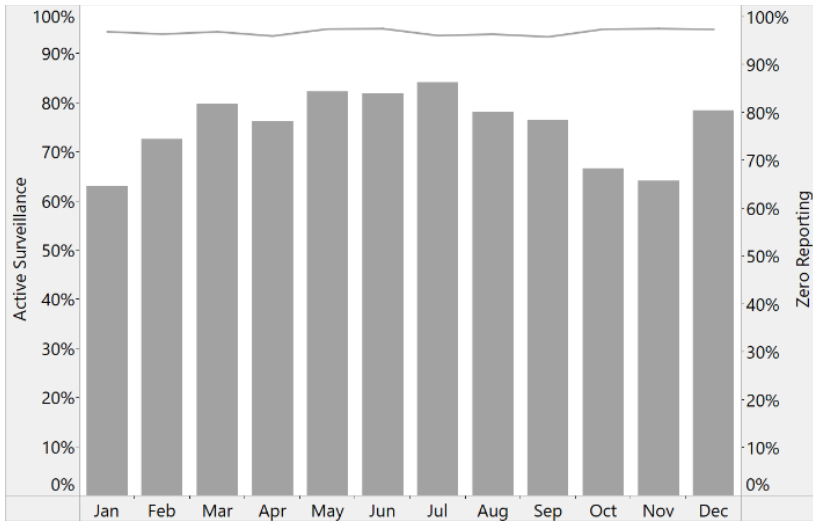
The sites are prioritized according to certain criteria and the visits are conducted on weekly, biweekly, or monthly basis.

On a monthly basis, the active surveillance visits completeness is mapped out against the completeness of passive surveillance.

At the beginning of 2017, collecting the active surveillance data using electronic forms on mobile phones was piloted. In fact, the results were under expectations due to different factors. One of the main reasons, there was no in-office training.

In 2018, a concrete plan to apply e-surveillance on active surveillance was done based on the lessons learned from 2017. In 2018, EWARN shifted to use ODK in terms of collecting active surveillance data.

Figure 85: Active surveillance vs zero report 2018



Zero Report

The sentinel sites submit reports to the central level at a specified interval (weekly, semi-monthly or monthly).

The paramount 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. Firstly, the timeliness which indicates that reports are received within an expected date on agreed interval. Secondly, the completeness, which means that reports are received at any time beyond the expected date.

The data team compiles data into consolidated databases after cleaning and processing. They also manage the data based on identification codes given to reporting sites.

The ZR databases are considered the main sources for drawing the image about the health context.

Figure 86: Zero report form of the syndromic data

Weekly Zero Report From
استمارة التقرير الأسبوعي الصفرى

Basic Information معلومات أساسية					
Epi Week الأسبوع الوبائي		Month الشهر			
Governorate المحافظة		District المنطقة		Subdistrict الناحية	
Community قرية / بلدة / حي		Select village/town/neighborhood if it were not in the drop-down menu حدد قرية / بلدة / حي اذا لم تكن في القائمة			
Health Center Name اسم المرفق الصحي		Catchment Population عدد السكان المستفيدين			
Report Period From/فترة الإبلاغ من		Report Period To/فترة الإبلاغ الى			
Name of reporter اسم المبلغ		Job title المسمى الوظيفي			
Date Received by DLO* تاريخ التسليم إلى منسق المنطقة		Entered to system by DLO on تاريخ ادخال المعلومات من قبل منسق المنطقة			

Reporting of cases الحالات المبلغة								
DISEASE المرض	Code رمز	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 الشغيلات)	ABD	5					0	0
Acute watery diarrhea (suspected cholera) الإسهال المائي الحاد(الاشتباه الكوليرا)	AWD	1					0	0
Acute jaundice syndrome متلازمة اليرقان الحاد	AJS	5					0	0
Severe Acute Respiratory Illness المرض التنفسي الحاد الوخيم	SARI	5					0	0
Acute flaccid paralysis (suspected poliomyelitis) الشلل الرخو الحاد (التهاب سنجابية النخاع)	AFP	1					0	0
Suspected Measles الاشتباه بمرض الحصبة	MEA	1					0	0
Suspected Meningitis الاشتباه بمرض التهاب السحايا	MEN	5					0	0
Unusual cluster of health events حالات أخرى - مجموعة عنقودية من الأحداث الصحية غير العادية	UCE	1					0	0
Unexplained death حالات أخرى - حالات وفاة غير مفسرة	UXD	1					0	0
Suspected Typhoid Fever الحمى التيفية	STF	5					0	0
Fever of Unknown Origin حمى غير مفسرة	FUO	5					0	0
Cutaneuos Leishmaniasis الليشمانيا الجلدية	LEISH	50					0	0
Acute diarrhea اسهال حاد	AD	-					-	0
Influenza Like Illness	ILI	-					-	0

Bulletins

The EWARN produces 5 regular and 1 ad-hoc bulletins that present the health and WASH situation. The products are developed in both Arabic and English language. Throughout 2018, the Turkish versions were produced as well. The bulletin ordinarily includes narrative writing and visual designs presenting the recent updates of a specific domain.

The regular products are as follows:

- Weekly Epi bulletin: shows updates about 13 syndromes.
- Weekly bulletin of acute flaccid paralysis (AFP): shows the distribution of cases, the performance indicators of AFP surveillance and the immunity status of the investigated AFP cases.
- Semi-monthly WASH bulletin: shows updates on more than 13 hundred water stations covering their functionality and chlorination.
- Monthly nutrition bulletin: exhibits the nutritional situation over the major districts in Northern Syria. The data is collected from nearly 107 HFs.
- Monthly routine immunization report: shows information related to the EPI centres, the vaccinated children, consumed and transferred stocks.
- Ad-hoc reports of vaccination campaigns are produced after a campaign being conducted. These reports describe the performance of vaccination activities through showing target and missed children, which are utilized in planning for future campaigns.

Bulletins are stored and shared with the public and partners.

Figure 87: : Epi bulletin - week 43 of 2018

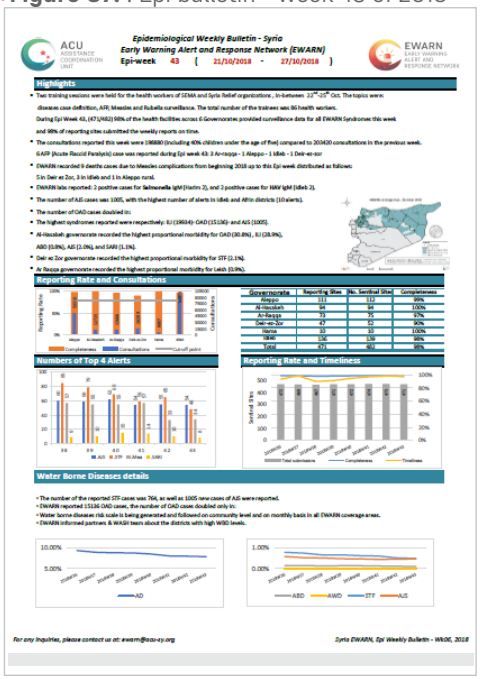
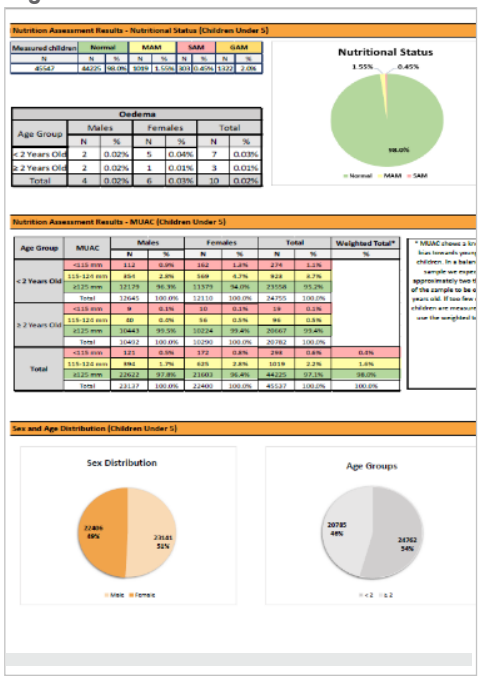


Figure 88: Nutrition bulletin - Nov 2017



Alert Management

Through 2017, a new approach of raising alerts was developed through utilizing the previous year data and moving average of the current year. An alert is raised if two criteria are met:

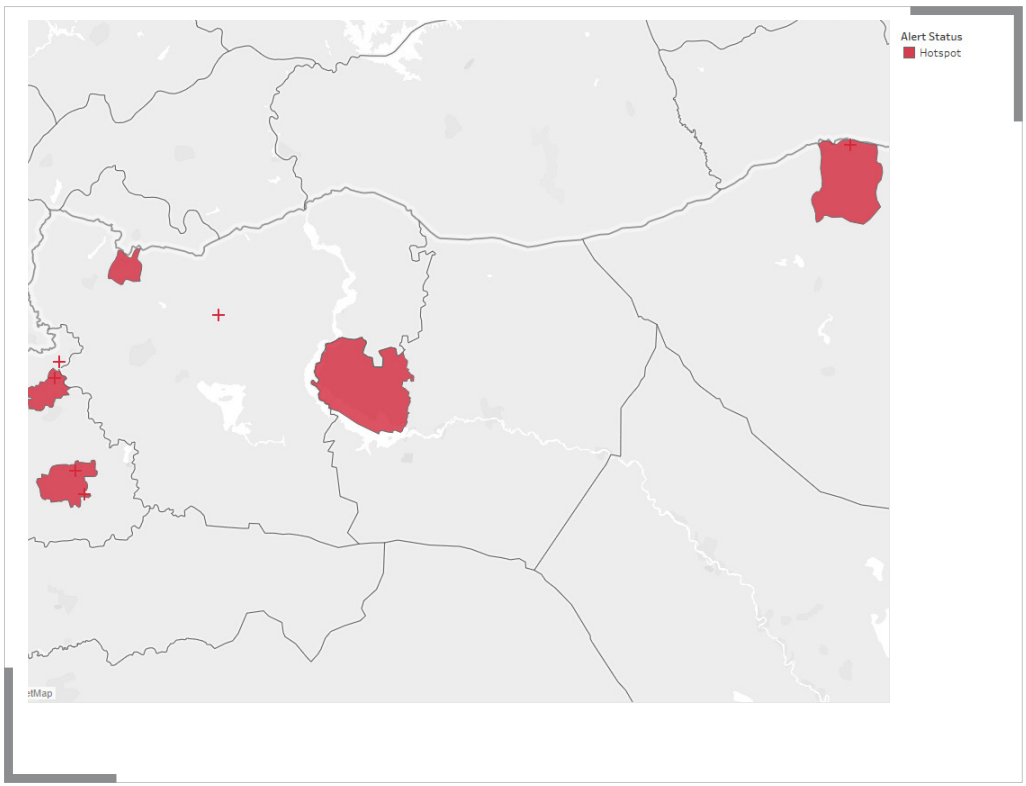
- During a week, If the cases number is greater than doubling of the average of cases reported over the former 3 weeks of the current year.
- The cases number is greater than the cases reported during the counterpart week of last year.

Alerts are often reviewed at the sub-district and the community level, and eventually the sentinel sites. This approach provides a better way of detecting alerts; however, it sometimes raises a numerous number of alerts. Thus, an assistive approach of raising alerts was developed.

2018, the historical data of past years was utilized in raising alerts. Through calculating the Mean of all cases reported during a week, the two former and the two following weeks for the current and the two prior years.

The standard deviation of the Mean is planned to be used. Where If the cases number of in a specific week is between Mean+-STD then the no alert is raised; otherwise, an alert is triggered and needs further actions.

Map 15: Alerts at a sub-district and a community level



Line List

If an area is experiencing an outbreak, a daily line listing from the associated health facilities must be sent to the central level. The line list of cases is crossed-checked with the lab results when available. Afterwards, the line-list is analyzed to address the etiology and exposures of an outbreak.

Table 45: Line list of ABD case control study 2018

No	Patient	Gender	Age	Community	Network	River	Tankering	Bottle	Chlorination	ClorineSource	ChlcorineMethod
1	Yes	Female	7	Lower Safira	No	No	Yes	No	No		
2	Yes	Male	4	Lower Safira	No	No	Yes	No	No		
3	Yes	Female	11	Lower Safira	No	No	Yes	No	No		
4	Yes	Male	5	Lower Safira	No	No	Yes	No	No		
5	Yes	Male	36	Lower Safira	No	No	Yes	No	No		
6	No	Female	48	Lower Safira	No	No	Yes	No	No		
7	Yes	Female	60	Lower Safira	No	No	Yes	No	No		
8	No	Female	18	Lower Safira	No	No	Yes	No	Yes	Household	Chlorine
9	No	Male	8	Lower Safira	No	No	Yes	No	Yes	Household	Chlorine
10	Yes	Female	60	Lower Safira	No	No	Yes	No	No		
11	Yes	Female	60	Lower Safira	No	No	Yes	No	No		
12	Yes	Male	112	Lower Safira	No	No	Yes	No	No		
13	Yes	Male	96	Lower Safira	No	No	Yes	No	No		
14	Yes	Female	115	Lower Safira	No	No	Yes	No	No		
15	No	Female	6	Lower Safira	No	No	Yes	No	No		
16	No	Female	60	Lower Safira	No	No	Yes	No	Yes	Household	Chlorine
17	Yes	Male	24	Lower Safira	No	No	Yes	No	No		
18	Yes	Female	5	Lower Safira	No	No	Yes	No	No		
19	Yes	Female	4	Lower Safira	No	No	Yes	No	No		
20	Yes	Male	84	Lower Safira	No	No	Yes	No	No		
21	No	Female	96	Lower Safira	No	No	Yes	No	No		
22	Yes	Male	7	Lower Safira	No	No	Yes	No	No		
23	Yes	Female	72	Lower Safira	No	No	Yes	No	No		
24	No	Female	24	Lower Safira	No	No	Yes	No	Yes	Household	Chlorine
25	No	Male	3	Lower Safira	No	No	Yes	No	No		

Survey

During 2017, a vaccine coverage cluster survey was conducted, and the data team played an essential role in designing the templates, training teams, conducting the analysis, and generating the final report. The survey final report was published during 2018. In 2018, a study was implemented concerning the prevalence of hepatitis B surface antigen (HBS Ag) and hepatitis B surface antibodies (HBS Ab) and hepatitis C virus antibodies among the staff of Bab El Hawa Hospital, located in Idleb governorate. The data team was of great help in implementation of data collection, manipulation and analysis of the study.

Data Visualization

Data is reshaped in many ways to fit into graphs, maps, tables, and dynamic texts. Those multiple components are placed in different layouts to create bulletins, dashboards, summaries, and ad-hoc reports.

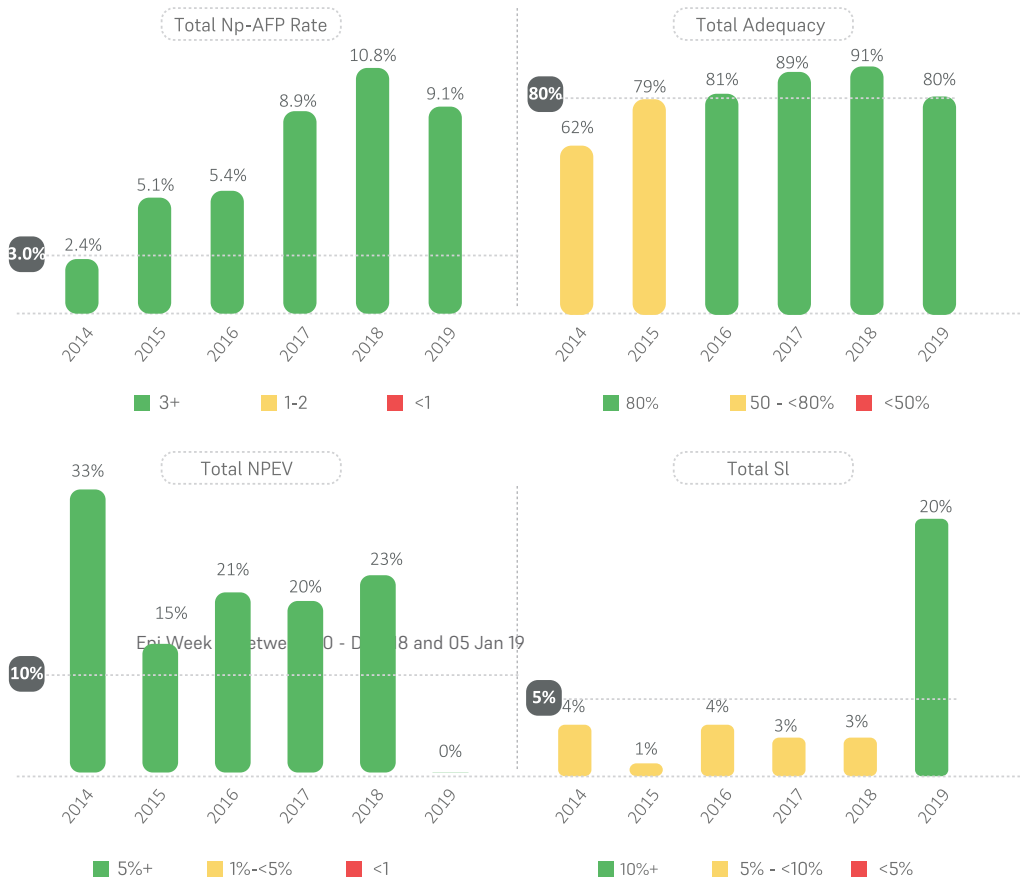
MS Excel is ordinarily used to create visualizations in EWARN. ArcGIS and QGIS are used to present data through maps and geo files.

2018, Power BI and Tableau were used to generate dashboards and regular bulletins. They provide better understanding of data, through conducting analyses on lower levels quickly. Such tools helped monitor health events accurately and timely.

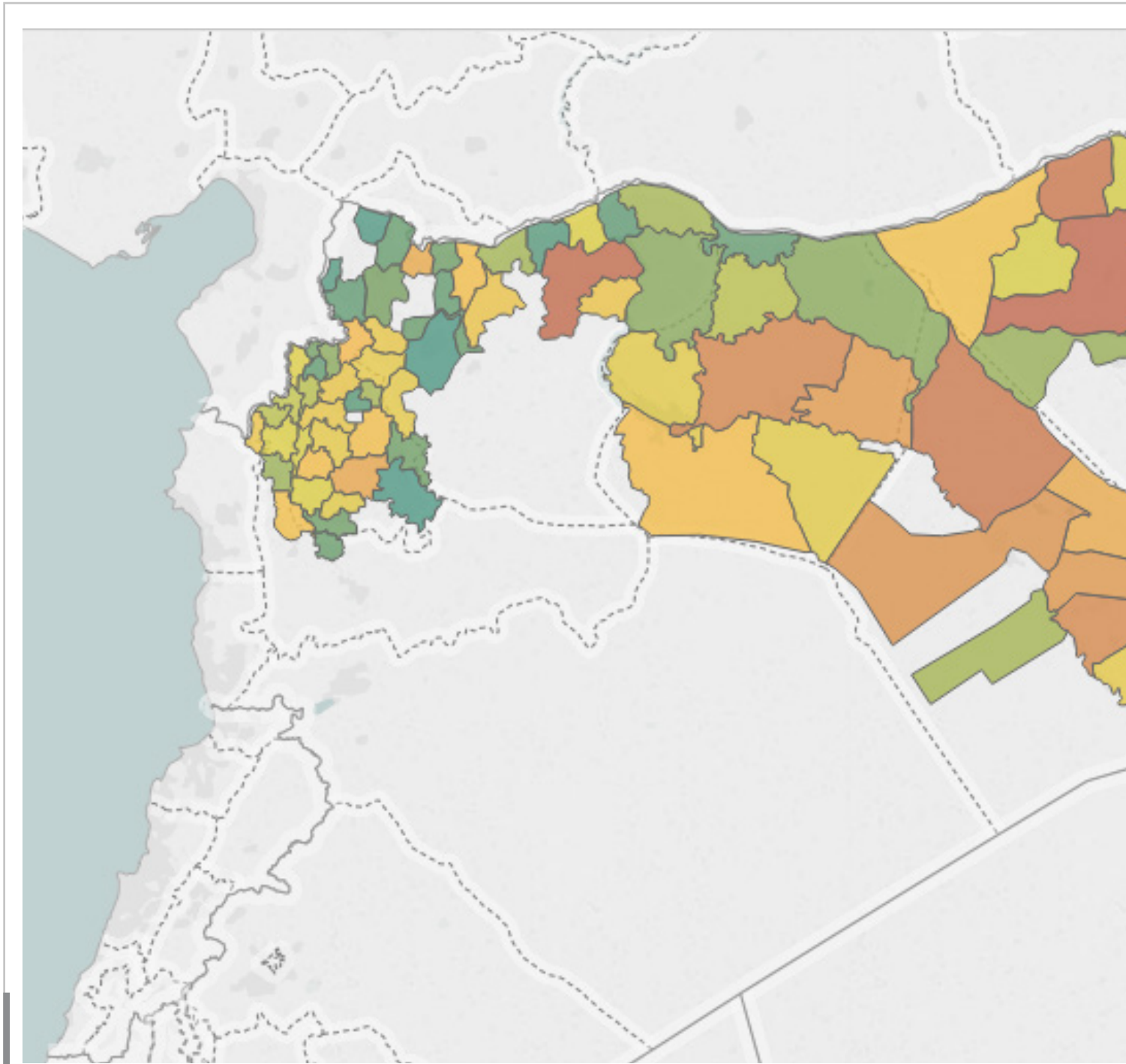
The list below shows some examples of tools developed for different purposes:

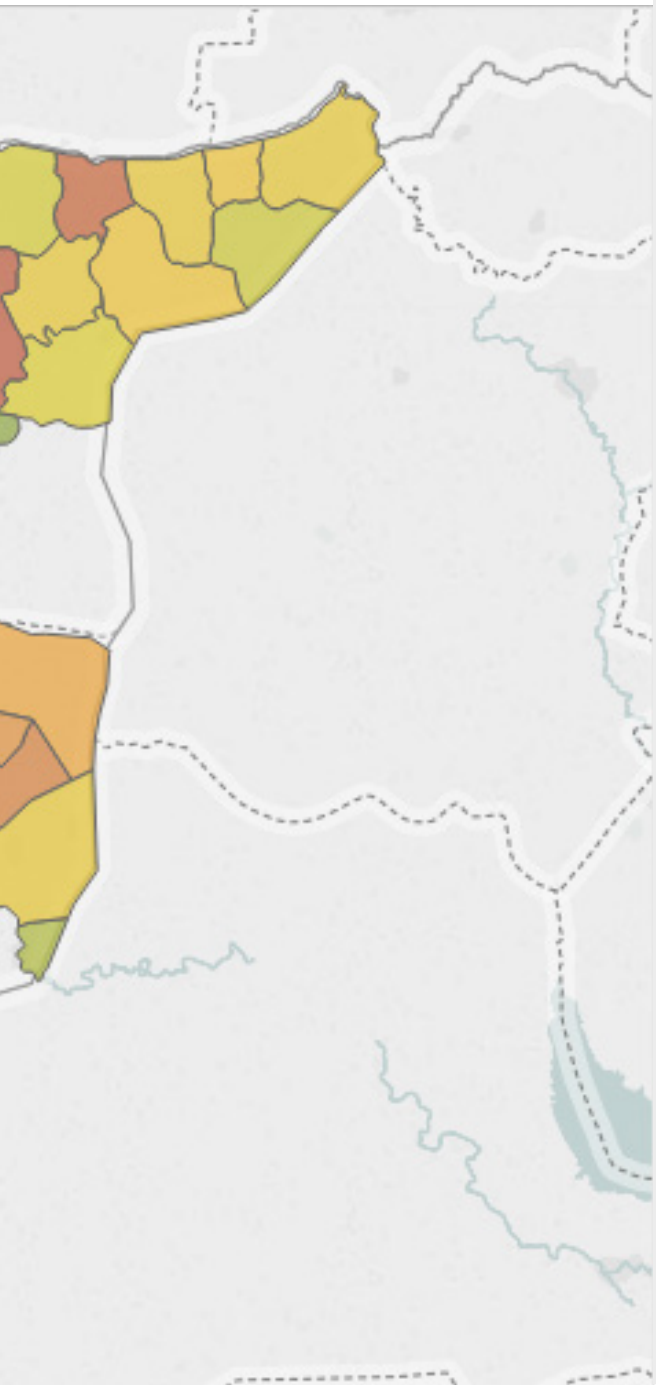
- Weekly AFP surveillance updates dashboard: used to monitor the AFP surveillance on the national and subnational levels.
- Monthly WBD surveillance dashboard: used to share updates on water-borne diseases with the WASH Cluster. It helps shows the hot risk areas need responses.
- Semi-monthly Epi dashboard: used to share the updates on the surveyed syndromes with the Health Cluster.
- Nutrition surveillance dashboard: shows the nutritional situation, and links the situation with the diarrheal diseases.
- Campaign monitoring dashboard: helps the SIG (Syrian immunization group) evaluate the vaccination teams and plan to target missed children.
- The monthly coverage map: shows the areas covered by EWARN.
- The accessibility map: illustrates the accessibility by which areas are accessible, partially accessible, or inaccessible.

Figure 89: Key indicators of AFP surveillance



Map 16: WBD hotspot communities throughout the 3 past years





25-Nov-2018 29-Dec-2018

Governorates of Syria

The red colored ploygons are considered hotspot areas.

The sub-district is addressed as hotspot as the followings increase:

1. Number of WBD cases
2. The incidence rate of WBD
3. The proportional morbidity of WBD.

Note: The presented cases are suspected not confirmed.

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.

Therefore, EWARN started utilizing ODK as a tool for data collection, afterwards, Epi Info was used for implementing outbreak analysis. Eventually, EWARS-in-a-box was used as a system to manage zero reporting and to manage alerts and outbreaks.

Figure 90: Active Surveillance ODK form

Open Data Kit (ODK)

ODK collection tool was utilized to develop forms to collect data on the active surveillance, routine immunization, and nutritional surveillance.
Smartphones are delivered to DLOs and FLOs, to be utilized in data submission timely and effectively.
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.

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 ABD outbreak

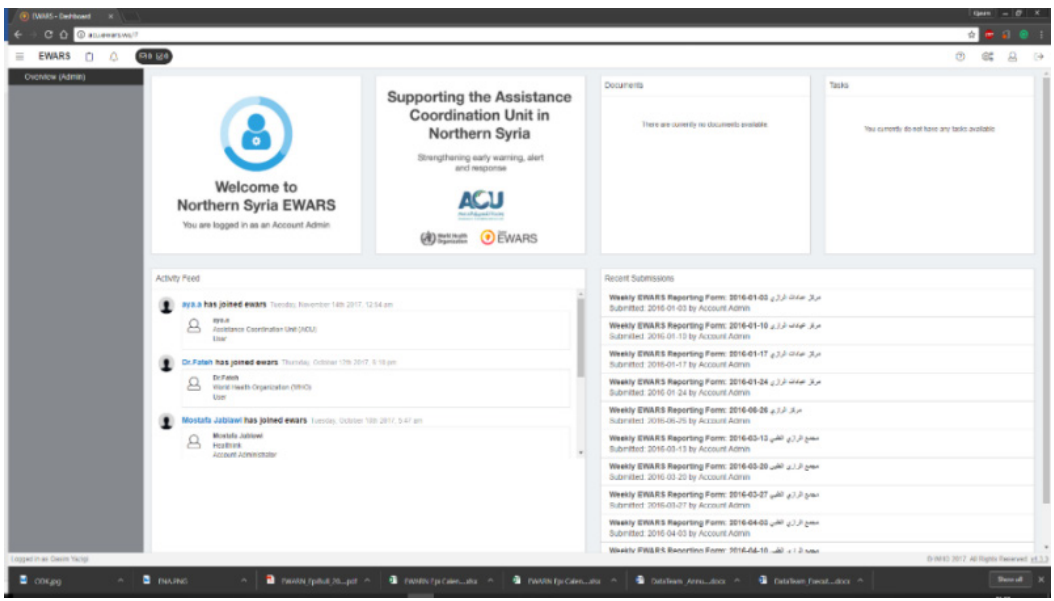
EWARS-in-a-box

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



At the beginning of 2018, a training at the central and district-officer levels was provided by WHO, it explained the importance of this system, and how it can be implemented in accordance with the Syrian context.

It has been decided to use this tool to collect the zero, the event-based, and the lab reports. Besides, it will be utilized in alert management and implementing response tasks.

Figure 93: Active Surveillance ODK form

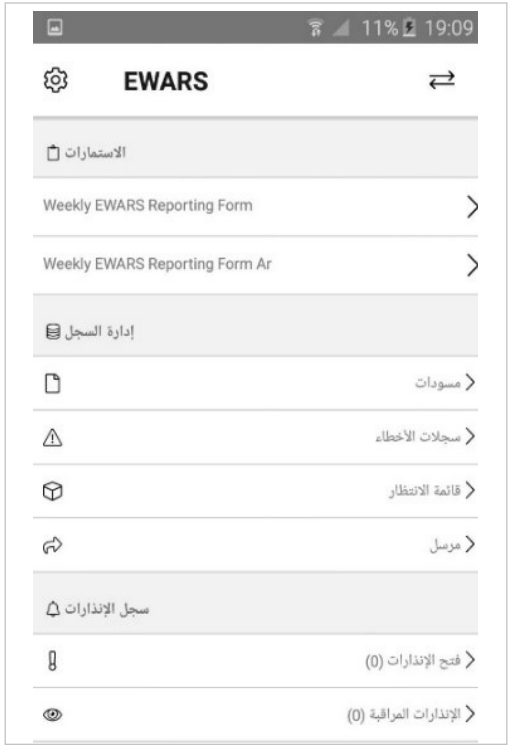
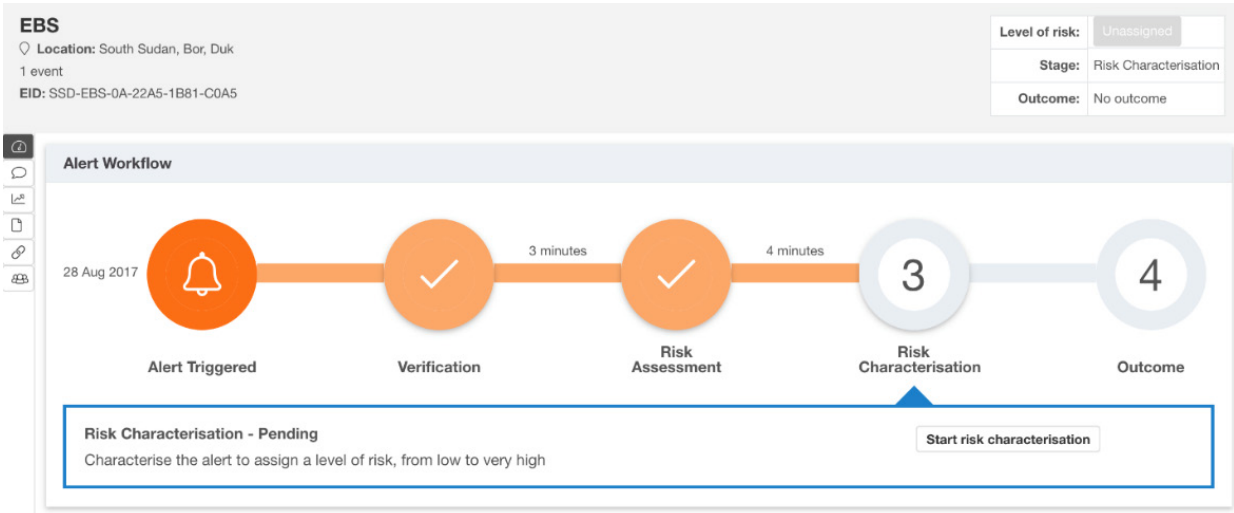


Figure 94: Alert management phases



A lot of discussions were conducted to decide on what level data is to be collected, the HF or the FLO level. Eventually, it was decided that the zero reports will be collected by the HF, whereas the alerts will be notified through FLOs or DLOs.
Smartphones were delivered to nearly 225 sentinel sites located in Aleppo, Idleb, and Hama.
August 2018, a field visit was done to train the field staff to use mobile version of the system. All sentinel sites' staff and EWARN staff were trained to report zero reports and event-based reports.
At the end of 2018, an advanced training covering technical details was conducted. Where demands were requested to add changes or customizations to fit with the EWARN.
A plan was set to shift to establish EWARS-in-a-box in Eastern Syria by the second half of 2019.

DATA ARCHIVING AND BACKUP

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

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

- Raise alerts at the sentinel site level was challenging without using EWARS-in-a-box.
- Lack of on-site field training led to adopt online training as an alternative which may lead monologue learning and eventually demotivate the team.
- Adding or removing sentinel sites from the health map can cause late reporting in some areas.
- There was no one complete solution to implement data collection, analysis and presentation, that made the team looks for different tools to cope with the requirements.
- Some of the non-data specialized staff found SharePoint difficult to use, yet such tool is required and needs to be advocated.

RECOMMENDATION

- Data sharing policy needs to be reviewed and amended in order to wisely select the parties who make a remarkable impact; because being open to every single party lays a heavy burden on the whole team.
- Acquire clearances from the Turkish authorities, so the data team can conduct face-to-face training inside Syria.
- Seek certified and accredited training and courses regarding data science and analytics, in order to sharpen the skills of data team.
- Build strong trust bounds with all partners and working group clusters and for the sake of knowledge exchange.
- Network with other management teams across local and international organizations to share experiences and ideas and to improve in-house knowledge.

Future Plans

- The rollout of EWARS-in-a-box all over Northern Syria.
- Import the historical data to EWARS-in-a-box.
- Establish Power BI and Tableau to generate dashboards of other scopes when needed.
- Epi Info to be employed increasingly in outbreak response as a tool to provide the needed statistics.
- 8 data field officers to be recruited, one for each covered governorate, in order to provide technical support and help in implementing EWARS-in-a-box.
- Conduct advanced data-related training to build the capacity of the data team at the central and field levels.
- Utilize programming scripting tools such as R scrip and Python in data analysis and visualization.
- Utilize SPSS in the coming researches of EWARN in regard with the bio-statistical analysis of data.
- Raise awareness for the importance of SharePoint and OneDrive for sharing and securing data.

SECTION 06

COORDINATION WITH WHO, CLUSTERS & OTHER PARTNERS

Regular meeting with the WHO, EOC and SIG team continued in 2018 to review the updates and develop strategic plans:

- Weekly meetings to review AFP surveillance indicators and notify of any vaccination related issues (such as zero OPV doses (Response took place for 7 cases with zero OPV doses from north-west Syria where SIG have access to conduct the vaccination activities and 3 AFP cases with less than optimal vaccination status (less than 4 OPV doses) form A'zaz district, to inform the planners of the vaccination activities and pointing out to all communities that have less than optimal vaccination coverage in the conducted area coverage survey.
- 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 in Deir-ez-Zor and feedback from the field staff to reflect the actual situation on the ground.
- Assisting in developing the contingency plan to address the possible scenarios of cVDPV spread to previously uninfected areas, this activity continued in 2018 in order to maintain the highest levels of coordination.
- 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 in order to notify the suspected AFP cases. In the first campaign in Afrin district/ Aleppo governorate; more than 90 suspected AFP case were notified by the vaccination team. However, all of them turned out to be excluded cases. In other campaigns such as the one conducted in December, couple of cases that were already under investigation were notified to the surveillance team.
- Regular reviews and sessions with WHO and UNICEF in order 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 in order to promote health benefits and rapid responses.

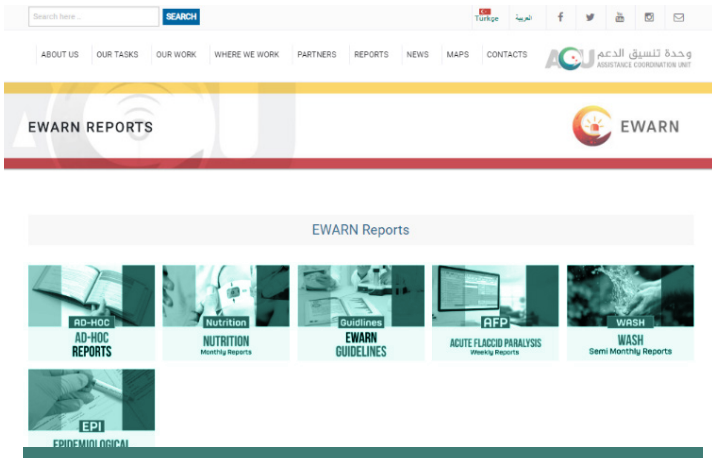
SECTION 07
MEDIA ASPECTS IN EWARN

Since 2015, and 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

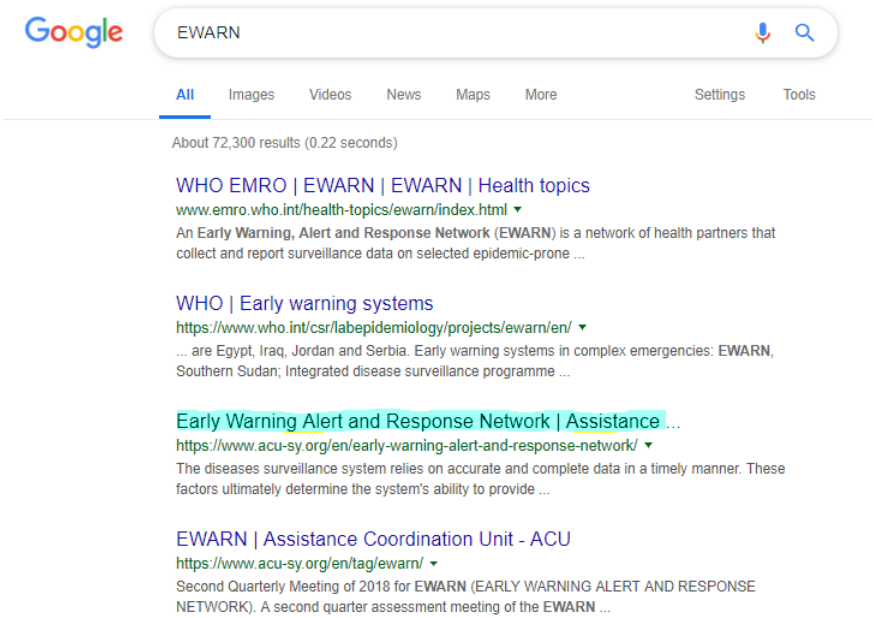
Working on improving the EWARN page on the ACU website[2] is ongoing , all the related materials are available for downloading. All materials are generated and uploaded in both Arabic and English, in addition to Turkish for the frequent issued reports.

Figure 95: EWARN Page on ACU



The search results for EWARN on Google search engine comes in the third position.

Figure 96: EWARN position on Google



[2] http://www.acu-sy.org/en/early-warning-alert-and-response-network

IECS MATERIALS

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.

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

Figure 97: Wall clocks that were disseminated to reporting sites by EWARN

Figure 98: 2019 Calendar

Table 64: The details of Community Focal Points Trainings _2018

Brochures					
EWARN definition	Measles awareness	Lice awareness	Typhoid fever awareness	Pertussis awareness	Rabies 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

Guidelines					
AFP surveillance	Measles and Rubella surveillance	Laboratory Surveillance	AEFI Surveillance	EWARN guidelines – English version	EWARN guidelines – Arabic version

Others					
2019 Calendar & notebook	Wall Clocks	Pens and bags	Mugs	Prescription for clinician	USB Memories

Figure 99: IEC materials samples


EWARN
إن مجرد غسيل اليدين
يمكن أن يخفض الوفيات
الناجمة عن الإسهال
بمقدار النصف تقريباً


EWARN
حارب الإنفلونزا
احم نفسك عند التعامل
مع الحالات المشتبهة بالإنفلونزا
تأكد من غسل يديك
بالماء والصابون بإستمرار
مع ضرورة تجفيف اليدين.
استخدم قناع واقي
للفم والأنف.
تأكد من لبس مريلة جراحية
عند اللزوم.
إستخدم قفازات واقية لليدين
أما القناع عالي الكفاءة
يمكن استخدامه حتى 8 ساعات
عند الانتهاء من الفحص
تخلص من القفازات المستخدمة.
احم نفسك وزملائك والمرضى
من الإصابة بالإنفلونزا
امنع إزدحام المرضى في غرف الإنتظار
أو على أبواب تقديم الخدمات.
تأكد من التهوية الجيدة
للمنشأة الصحية.
وزع أقنعة أو غطاء للفم والأنف
على المرضى عند اللزوم.
افصل بين المرضى بمسافة كافية
(متر واحد).
تأكد من تطبيق معايير التحكم
في العدوى والنظافة العامة للمنشأة
الصحية بإستخدام المطهرات بإستمرار.
حث المرضى ومرافقيهم على غسل
اليدين بإستمرار بالماء والصابون.


EWARN
تطهير مياه الشرب
في حالات الطوارئ
قم بتصفية الماء العكر
أو متغير اللون باستخدام
قطعة قماش نظيفة
اغل الماء جيداً لقتل الكائنات
الدقيقة المسببة للأمراض
وليصبح صالحاً للشرب
لتحسين طعم الماء المغلي قم
بصبه من إناء لآخر أكثر من مره
أو أضف ملعقة ملح صغيرة لكل لتر
من الماء المغلي
في حال عدم إمكانية غلي الماء
إمكانك إضافة بعض المواد
الكيميائية مثل الكلور أو اليود
يمكنك استخدام فيض الكلور
المنزلي عديم الرائحة للتطهير
الماء.
استخدم صبغة اليود لتطهير
الماء المصفى والساكن


EWARN
قمل الرأس
الأعراض والعلاج


EWARN
إجراءات الحقن الآمن
تحت السنتين
الحقن
انتبه! عند الأطفال الأصغر
من عشر سنوات
تجنب الحقن العضلي
في العضلة الأليوية
الموقع الأنسب لحقن العضلية
هو الوجه الأمامي الجانبي للفخذ
في حال حدوث ارتطاء
أو ضعف بطرف أو أكثر
أو عدم القدرة على المشي
لدى طفل عمره أقل من 15 سنة
يجب الإسراع بمراجعة أقرب
مركز صحي أو الاتصال بمنسق الترصد
في منطقتك
رأس إبرة واحد
إبرة حقن واحدة
تستخدم لمرة واحدة
صفر انتانات
DLO :
Mobile :

VIDEOS (PRODUCING – PHOTOS)

Table 47: The main activities which have been covered in 2018:

Report about EWARN on Orient TV	https://youtu.be/xyt3nfHF71g
The first Polio Campaign in Afrin	https://youtu.be/RHPFT6Q4SXM
Measles Vaccination Campaign in Afrin	https://www.youtube.com/watch?v=BJ3-FiTc_I0
Measles video	https://www.facebook.com/ACUSyria/videos/1941755885944917/
World Hepatitis Day video	https://www.facebook.com/ACUSyria/videos/833327806872112/

Awareness session in Trende Camp_ Afrin- Syria 2018

For Better Health

EWARN
EARLY WARNING
ALERT AND
RESPONSE NETWORK

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EWARN

EARLY WARNING
ALERT AND
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