VACCINE COVERAGE SURVEY

EWARN - N .SYRIA

2017/2018

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EWARN

Early Warning Alert and Response Network

The Assistance Coordination Unit (ACU) aims to strengthen the decision-making capacity of aid actors responding to the Syrian crisis. This is done through EWARN program was launched in 10th June 2013 as nonprofit national program.
EWARN discovered the polio cases in Deir ez-Zor in 2013, since then the program has started collecting epidemiological data on 13 syndromes of communicable diseases from around 500 sentinel sites. The program is the largest health program amongst all other operating programs in Northern Syria where it performs its functions through 290 members in 118 sub-districts, 38 districts in 11 governorates, and serves a population of 9,560,115 (51% of Syria total population).

REPORT OF VACCINE COVERAGE CLUSTER SURVEY
N. Syria
2017 / 2018
PREPARED BY: Early Warning Alert and Response Network

ASSISTANCE COORDINATION UNIT

ACU ASSISTANCE COORDINATION UNIT

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VACCINE COVERAGE CLUSTER SURVEY

2018 / 2017

N. SYRIA

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ABBREVIATIONS

ACU	Assistance Coordination Unit
EWARN	Early Warning and Response Network
SIG	Syrian Immunization Group
NGO	Non-Governmental Organization
WHO	World Health Organization
UNICEF	United Nations Children's Fund
BMGF	Bill & Melinda Gates Foundation
AIRI	Accelerated Implementation of Routine Immunization
MOV	Missed Opportunity of Vaccination
IPV	Inactivated Polio Vaccine
OPV	Oral Polio Vaccine
tOPV	Trivalent Oral Polio Vaccine
bOPV	Bi-valent Polio Vaccine
MMR	Measles, Mumps & Rubella
MR	Measles & Rubella

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ACKNOWLEDGMENT

This vaccination coverage survey was planned and implemented in favor of Assistance Coordination Unit (ACU). EWARN is the technical program that represents the head of core team and oversight of all phases and activities of the survey and own its results. The survey was conducted by independent volunteer staff in different governorates. Technical support was provided by independent consultant, Dr. Nasr El-tantawy; Gaziantep University represented by Dr. Seval Kul; Dr. Amany Gayed the consultant from National Information Center of Egypt who analyzed the survey data, EWARN vaccination team, Dr. Amar Al-Ani, Dr. Anas El-Ftaieh and Dr. Mohammed Salem and Dr. Turki Daher who have imparted their expertise in supporting the survey while program manager supported the planning and implementation of the survey throughout all phases as the head of survey core group. Thanks to the EWARN data management unit who provided immense help in establishing the data base of the survey and providing critical analysis to dose validity and mapping especially Eng. Mostafa Jablawi. and Eng. Qasim and Special thanks for Ms. Hiba Allwan from data team for developing the coverage maps. Thanks to all our team members especially Dr. Muhannad Radwan and Dr. Radwan Obaid who shared their observations and contributed to the finalization of this report. Also, we would like to extend our thanks and appreciation to Mr. Mamdouh Samuel for supporting the survey using BMGF funds.

Finally, we would like to express our deep appreciation for the dedication of field workers and supervisors from Qatar Red Crescent (QRC) who took the risk of working under severe security situations under airstrikes and ground fighting.

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EWARN/MANAGER

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EXECUTIVE SUMMARY

This vaccine coverage cluster survey was conducted in nine governorates representing areas outside governmental control, where EWARN, SIG and other NGOs are operating. The overall purpose of this cluster survey is to provide information on vaccine coverage of children under 5 years of age who are living in military conflict-affected areas in northern Syria and thought to be either deprived from health care services including vaccination or receiving late vaccine doses at ad hoc basis and remain susceptible to vaccine preventable diseases for long time. This information is collected to guide decision-makers of local authorities, WHO, UNICEF and all other partners included in Syrian Immunization Group and beyond. The specific objectives are to assess vaccine coverage among different age groups (12-23 and 24-59 month of age) including mothers who gave birth for children 0-11. in addition, the survey will provide information on reasons of un-vaccination and advise on gaps that need to be covered as well as help in future planning. The sampling frame was developed where each district/sub-district was considered one stratum and a sample was selected independently from each stratum. The sampling method used followed the cluster sampling approach promoted by the World Health Organization (WHO). Survey planners opted to start an advocacy plan to facilitate field work and interview families in selected houses; in addition, a pilot study was conducted where the data collection forms and some definitions were updated to cope with prevailing circumstances. Survey core group encouraged field staff to include some IDP camps as additional clusters that lie within their areas of work to investigate their pattern of utilization of immunization services compared to host communities. The survey was conducted in 2017 with extension over the first quarter of 2018 under severe security challenges due to continuous air strikes and ground military actions. In this survey, 3130 children 12-59 month of age were included in the analysis using SPSS-24, however numbers were slightly variable between age groups based on availability of reliable data.

The survey data indicates that children were vaccinated by both Damascus and SIG/NGOs almost equally except in BCG and IPV were more given by Damascus. Vaccination through SIAs predominate over vaccination in health centers except for BCG.

The cluster survey showed overall trend of low coverage for most antigens in surveyed age groups in many areas included in the survey. Vaccination coverage in eastern governorates were generally lower than other governorates. Children were shown to receive vaccines later in their ages as manifested by the extremely low coverage of valid doses* where children remain susceptible to outbreaks of vaccine preventable diseases for longer periods of time.

The survey was funded by Assistance Coordination Unit (ACU) through BMGF and technically supported by independent consultant (BMGF), Gaziantep university and an independent international researcher from National Information Center of Egypt (NIC). The results of the survey are owned by ACU where dissemination of results will be decided by competent authority.

CHALLENGES AND GAPS

Safety of research participants (data collectors, supervisors and coordinators) was considered foremost. During data collection, research planners tried their best to ensure safety of participants where they were advised to stop working during airstrikes or military ground fighting and keep in direct communication with survey core group to receive advices. These security challenges were the main reason for incomplete or absent clusters and extending the duration for completion of the survey.

No significant adverse events were apparent during family interviews in most of governorates, however, working in eastern provinces (Deir-EZzor and Raqqa) was challenging given the scary experience of war, political affiliation and competing priorities. No permit was given to extend survey in Hasakeh province.

Due to difficulties in inviting data collectors, supervisors and some coordinators for training on data collection and supervision for security reasons, some of them were trained remotely through Skype, WhatsApp group discussion and telephone consultation before and during field work. Some data were missing from questionnaires where some results were deleted while some other results couldn't be generalized.

The standard forms for data collection were amended based on pilot study results and prevailing immunization modalities including irregular SIAs and newly established routine immunization.

Probability sampling of WHO guidelines 2015 was not adopted in this survey as it depends on a recent and well-conducted census, in addition we had to ensure that sample size is sufficient to achieve reliability and precision requirements, that is why we had to use 2011 protocol. Due to difficulties of field work, some data was missing which impacted the representativeness of the sample and affected the accuracy of coverage results.

INTRODUCTION

The World Health Organization has managed to build up effective cooperation with its Member States and provided technical support in the field of vaccine-preventable diseases since 1975.

Before 2011 crisis:

Immunization program in Syria was one of the best in the EMR. Coverage rates for polio, DPT and measles were very high, endemic measles reached zero case in 2011, while maternal and neonatal tetanus was eliminated many years ago (MOH records). Vaccine services were provided through all administrative levels: central, governorate, district & health centers. Vaccination services were implemented by sufficient & well- trained staff. Out-reach/mobile strategies were implemented in EPI to reach remote areas.

Since 2011, Syria has been suffering from extremely difficult security situation due to armed conflicts where expanded program of immunization has lost most of its infrastructure and its services declined due to lack/difficult supply of vaccines, especially in areas outside governmental control (currently served by EWARN, SIG and other partners). As a result, immunization levels (DPT3) have decreased from > 80% prior to 2010 to ~ 40% in 2014; polio resurfaced in 2013 after 14 years of Syria being polio free country. On other side, recent history of vaccinating children less than 5 years of age indicates that the number and frequency of multi-antigen campaigns (Accelerated implementation of routine immunization) and polio & measles campaigns are not enough to protect against vaccine preventable diseases. (Annex 1).

In response, Syrian Immunization Group (SIG) is currently planning to re-establish/re-vitalize the routine immunization program according to a comprehensive plan in coordination with all partners. (Annex 2). This should be preceded by estimating a baseline vaccination status so that it can help understand progress and consequent impact of planned vaccination activities particularly in areas accessible and served by EWARN which covers ~ 50% of total population of Syria (Map I). In this situation, a vaccine coverage survey is useful in providing the opportunity for the health workers to understand where they are standing and enables health planners to develop necessary plans for establishing a routine immunization program in all governorates and implement supplementary immunization activities to build up satisfactory and protective immunity levels.
The most important purpose for an immunization survey is to provide information on the delivery and impact of current immunization services.
Prior to establishing routine immunization services, EWARN is planning to implement a national household cluster survey to assess the vaccination coverage in N. Syria. It has been noted that N. Syria has not exercised such survey in more than 10 years.

PURPOSE OF THE SURVEY

The overall purpose of this cluster survey is to provide information on vaccination coverage and to guide decision makers in policy planning.

Objectives of the survey:

1. **To assess vaccine coverage of different categories of children and mothers including the following:**
    - children (12 – 23mos) for all antigens included in vaccination schedule,
    - children (24 – 59mos) for all antigens included in vaccination schedule,
    - Mothers who gave birth to infants 0 – 11 months of age, for vaccination against tetanus.
2. **To identify reasons of un-vaccination in all categories.**
3. **To assess vaccine coverage among IDPs (without generalization).**
4. **To assess coverage of Syrian children with valid doses.**
5. **To identify areas for future research as appropriate or plans for improvement of identified gap.**

PLANNING PROCESS

- Development of sampling frame and selection of clusters.
- Selection of coordinators
- District Level Officers were appointed as district coordinators
- Selection of independent supervisors (from Qatar Red Crescent)
- Independent data collectors from community; Mixed teams (male and female); Female volunteers.
- Modified data collection tools.
- Conduct pilot study to update data collection tools and identify possible challenges.
- Training of interviewers and supervisors. Annex 6.
- Development of advocacy plan. Annex 7.
- Adopt WHO training material

METHODS

- Development of sampling frame and selection of clusters.
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SAMPLING

Each district/sub-district will be considered a stratum and a sample will be selected independently from each stratum. The sampling method used will be the cluster sampling approach promoted by the World Health Organization (WHO)
Districts and clusters will be randomly selected according to Probability Proportion to Size (PPS), which ascertains that the probability of a sampling unit being selected in the sample is proportional to the population size of the sampling unit. In the second stage, the selection of the required number of children will be drawn from each of the selected clusters. Sampling frame attached with cluster selection. Annex (3)

CLUSTER SELECTION

Number of clusters are selected proportional to size of population, then identified by sub-division of each district using detailed maps.

DATA COLLECTION

Adapted data collection tools: Annex 4. (a, b, c)

Data collection procedure

Selection of first house in a cluster:

The method for selecting the first house will vary according to the population density (rural versus urban areas) and whether household lists are available.

In rural areas (if household lists are available) the first house will be selected by using a table of random numbers or a calculator.

In rural areas where household lists are not available and there are more than 100 households in a cluster and it is not feasible to number them the first household will be selected by randomly choosing a direction from a central location in the cluster, and then counting the households along that directional line to the edge of the cluster area and randomly selecting one of them

In urban areas if subdivisions exist one subdivision will be selected at random to indicate the subdivision in which the initial household is located. Consequently, if a household list exists for that subdivision, the first household to visit will be selected by following the procedure described above for rural areas where household lists are available. If these lists are not available, we will follow the method described above for rural areas where household lists are not available. If, however there are no clear sub-divisions, the urban area will be divided into subunits of approximately equal population and the above described procedures will then be followed.

Selecting subsequent houses will depend on whether the houses are single-family dwellings or multi-family dwellings. For single-family dwellings the second household to visit will be the one which is nearest to the first. For multi-family dwellings one floor will be chosen at random and then the first household to visit will be randomly selected from that floor. The second household to visit will be the door nearest to the first. After visiting all the households on the floor, we will randomly choose a direction (i.e. up or down) and

visit all the households on that floor. We will then continue from floor to floor visiting the next nearest floor which had not been visited previously. After the whole building has been visited, we will go to the nearest door of the nearest building and repeat the process.

Data was collected for most of the clusters, some clusters were not implemented due to restricted movement in the field for security reasons and family consensus, some others have incomplete data. All data in complete or incomplete clusters were subjected for analysis. So, there were some changes in sample size due to family and security issues. Accordingly, results can't be generalized in all occasions and percentages are used instead. Some IDP children were added to the already planned number aiming at studying this high-risk population living in high-risk places. Table (I) show the number of children included in the survey in nine governorates of N. Syria.

RESULTS

Table 01: Number of the children enrolled in the vaccine coverage survey in nine governorates. N.Syria (2017/2018)

Governorate	Number of districts	Count of Children by Age Category		
		0-11	12-23	24-59
Deir Ezor	3	210	210	210
Al-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	188	186	189
Rural Damascus	2	210	209	210
Total	**31**	**1,572**	**1,558**	**1,567**

Table 01 shows the number of children enrolled in the vaccine coverage survey by category as well as the number of districts in each of the nine governorates of N. Syria. The survey missed only one governorate (Hasakeh), where no permit was granted by controlling forces to collect data for the survey. Quneitra was added to Dar'a governorate for ease of sampling, however, analysis was restricted to Dar'a alone during analysis at governorate level. Data from Quneitra has been included in crude coverages for each vaccine wherever available. Children who appear in the analysis are those whom researchers were able to collect data from, so there were marginal variabilities in number of children included in the analysis for different vaccines in different governorates.

The following analysis will cover tetanus toxoid vaccination of mothers who gave birth to children less than one year; the children 12-23 and 24-59 month of age. The analysis will give a hint on valid doses where children receive vaccine at proper age at vaccination as per national immunization schedule. Annex 5. In addition, there will be a short description of the pattern of vaccination among IDPs.

SECTION 01

CATEGORY 1

MOTHERS WHO GAVE BIRTH TO CHILDREN 0-11 MONTH OF AGE

A number of 1566 surveyed mothers were shown to give varying number of pregnancies Table (2). Mothers who gave birth to 5 or more pregnancies represent ~ 28% followed by those who have one or two pregnancies (~23% 21.7% respectively). Most of surveyed mothers are not protected against tetanus. More than 60% of surveyed mothers did not receive any dose of tetanus toxoid. **Table (3)**

The governorates with highest number of unvaccinated mothers are Rural Damascus (151, 71.9%), Idleb (143, 68.1%), Hama (121, 78.6%), Deir-Ezor (120, 57.4%), Aleppo (119, 56.7%) and Al-Raqqa (117, 62.2%)- **Table (4).**

Sixty-three mothers who reside in camps (high risk group) were investigated for history of TT vaccination, 41 (65%) were unvaccinated showing same trend among mothers in host community. Although number of IDP mothers is very small and result could not be generalized, nevertheless it gives an idea of similar pattern of vaccination against TT. **Table (5).**

All mothers in all provinces showed very high percentage of un-vaccination against tetanus during last pregnancy (1331, 85%); a clear indication of deterioration of health care services because of destruction of health infrastructure due to continued armed conflicts. Tables (6&7), Fig.1. The same trend is observed during last pregnancy with slight improvement of vaccination among IDP mothers which could be ascribed to more organized primary health care services inside camps. **Table (8).**

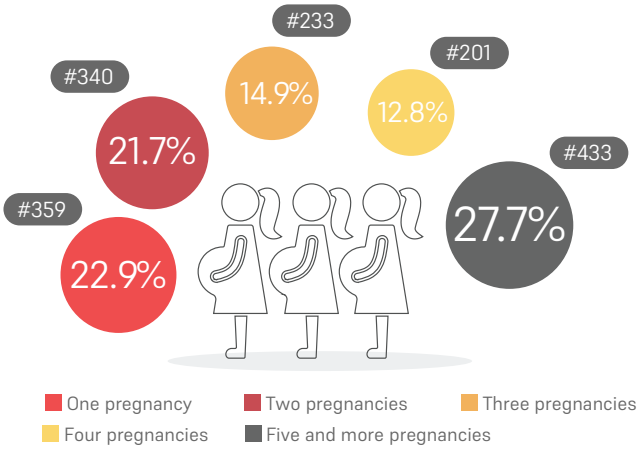
Among 625 mothers vaccinated against tetanus, 135 (21.6%) were given vaccination cards and even lower numbers (18, 48.6%) keep it. **Tables (9&10).**

The number of ante-natal follow up visits in N. Syria shows that 189 (12.4%) of mothers did not pay any ante-natal visits during their last pregnancy, that was quite high in Dara'a where 51 mothers (28.5%) did not follow up on their last pregnancy, followed by Aleppo & Idleb (38, 19% & 36, 17.1% respectively), while more mothers have completed 5 visits or more represent (615,40.2%) during last pregnancy. Again, Dar'a had the lowest number of 5 or more visits (31,17.3%) during last pregnancy, Rural Damascus recorded the highest percentage (157, 77.3%). **Table (11).**

Out of 1525 records of surveyed mothers, 643 (42.2%) did not visit health centers for other medical reasons during their last pregnancy, while 659 (43.2%) had 1-3 visits and 223 (14.6%) visited four times or more. The percentage of mothers who did not visit varies between different governorates (31%-62%); while 32%-57% of surveyed mothers visited for other medical reasons 4 times or more. Mothers in Al-Raqqa, Aleppo & Idleb were the highest in no visit. Table (12).
Evaluation of missed opportunities of vaccination was not performed due to
Out of 1558 surveyed mothers, 391 (~25%) gave birth at home and 1167 (~75%) in a health facility. Home delivery was pre-dominant in Deir Ezor (45.2%), and delivery in health centers was highest in Rural Damascus (98.6%) and Idleb (82.9%). Home deliveries are mostly assisted by Midwives (332, 85%)
Surveyed mothers reported on multiple reasons of unvaccination, most common reasons were vaccine not available (570, 36.4%); lack of awareness about importance of TT (548, 35%) and vaccination program (517, 33%).

Crude coverage of TT vaccines among surveyed mothers of children (0-11 months of age)

Table 02: Distribution of surveyed mothers according to their number of pregnancies.



Number of pregnancies	#Number	%
One pregnancy	359	22.9
Two pregnancies	340	21.7
Three pregnancies	233	14.9
Four pregnancies	201	12.8
Five and more pregnancies	433	27.7
Total	**1566**	**100**

Table 03: Crude coverage of Tetanus Toxoid among surveyed mothers of children 0-11 months of age during their reproductive age.

Number of TT doses	#Number	%
Not vaccinated	940	60.0
1 TT doses	299	19.1
2 TT doses	163	10.4
3 TT doses	76	4.9
4 TT doses	34	2.2
5 and more	54	3.4
Total	**1566**	**100**

Table 04: Crude coverage of Tetanus Toxoid among surveyed mothers of children 0-11 months of age by governorate during their reproductive age (**Total 1566**).

	Number of mothers by number of TT doses received during the reproductive period											
Governorates	Not vaccinated		1 TT doses		2 TT doses		3 TT doses		4 TT doses		5 and more	
Idleb (210)	143	68.1%	36	17.1%	19	9.0%	4	1.9%	6	2.9%	2	1.0%
Al-Reqqa (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 Ezor (209)	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 1566	940	60%	299	19.1%	163	10.4%	76	4.9%	34	2.2%	54	3.4%

Table 05: Comparison of coverage of tetanus toxoid among mothers of children 0-11 months of age residing in camps VS host community.

Camp	Number of vaccinated mothers by number of TT doses received during the reproductive age											
	Not vaccinated		1 TT doses		2 TT doses		3 TT doses		4 TT doses		5 and more	
Host com	899	59.8%	288	19.2%	156	10.4%	75	5.0%	34	2.3%	51	3.3%
IDPs	41	65.1%	11	17.5%	7	11.1%	1	1.6%	0	0.0%	3	4.3%

Table 06: Crude coverage of tetanus toxoid among mothers during their last pregnancy (**Total 1554**).

Number of TT doses	#Number of vaccinated mothers during their last pregnancy	%
Not vaccinated	1331	85.7%
1 TT doses	184	11.8%
2 TT doses	31	2%
3 TT doses	8	0.5%

Figure 01: Tetanus Toxoid among mothers of children 0-11 month of age during last pregnancy. N.Syria, 2017-2018

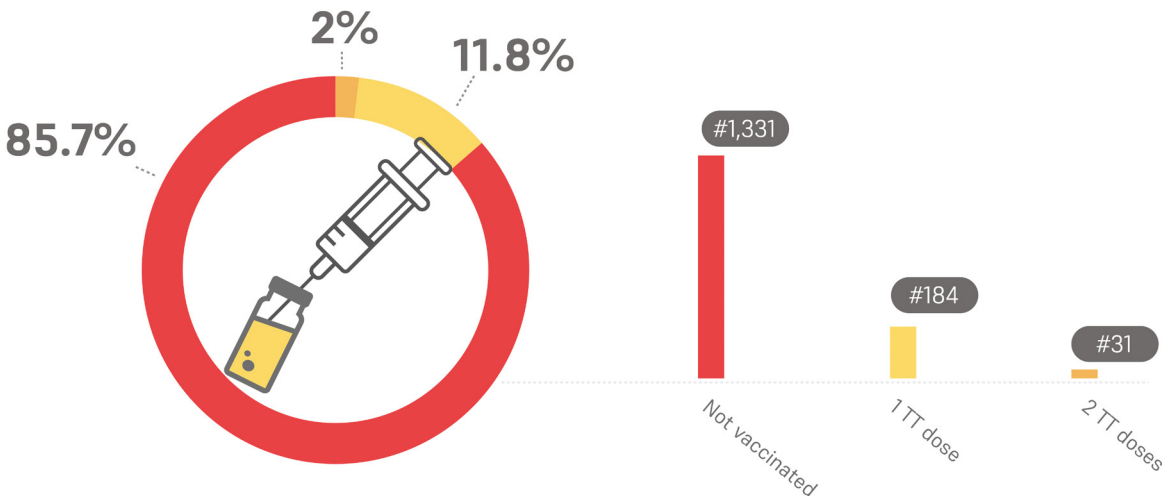


Table 07: Crude coverage of Tetanus Toxoid among surveyed mothers of children 0-11 months of age by governorate during their last pregnancy (**Total 1,554**).

Governorate	Number of vaccinated mothers by number of TT doses received during the reproductive age							
	Not vaccinated		1 TT doses		2 TT doses		3 TT doses	
Idleb (210)	199	94.8%	9	4.3%	2	0.9%	0	0.0%
Al-Raqqa (183)	161	88.0%	22	12.0%	0	0.0%	0	0.0%
Quneitra (28)	23	82.1%	4	14.3%	0	0.0%	1	3.6%
Aleppo (210)	183	87.1%	24	11.4%	1	0.5%	2	1.0%
Hama (154)	142	92.2%	12	7.8%	0	0.0%	0	0.0%
Homs (168)	146	86.9%	20	11.9%	2	1.2%	0	0.0%
Dar'a (186)	127	68.3%	52	28.0%	6	3.2%	1	0.5%
Deir Ezor (209)	154	73.7%	33	15.8%	20	9.6%	2	0.9%
R.Damascus (206)	196	95.1%	8	3.9%	0	0.0%	2	1.0%
Total 1,554	#1,331	85.6%	#184	11.8%	#31	2.0%	#8	0.5%

Table 08: tetanus toxoid vaccination among IDP mothers during last pregnancy.

Comp	Not vaccinated		1 TT doses		2 TT doses		3 TT doses	
No	1279	85.8%	175	11.7%	29	1.9%	8	0.5%
Yes	52	82.5%	9	14.3%	2	3.2%	0	0.0%

Table 09: Distribution of surveyed mothers of children 0-11 months by receiving of vaccination card (vaccinated mothers).

Governorate	# Number	(%)
Idleb (67)	11	16.4%
Al-Reqqa (71)	28	38.4%
Quneitra (9)	0	0.0%
Aleppo (91)	19	20.9%
Hama (33)	3	9.0%
Homs (94)	4	4.3%
Dar's (112)	20	17.9%
Deir Ezor (89)	37	41.6%
Rural Damascus (59)	13	22.0%
Total (625)	#135	21.6%

Table 10: Distribution of surveyed mothers of children 0-11 months according to availability of vaccination card (receiving cards).

Governorate	# Number	(%)
Idleb (11)	6	54.5%
Al-Raqqa (28)	17	60.7%
Quneitra (0)	0	0%
Aleppo (19)	6	31.6%
Hama (3)	1	33.3%
Homs (4)	1	25%
Dar'a (20)	6	30%
Deir Ezor (37)	18	48.6%
R.Damascus (13)	5	38.5%
Total (135)	#60	44.4%

Table 11: Number of follow up visits (ante-natal) during the last pregnancy by governorate.

Governorates	No follow-up		1 follow-up visit		2 follow-up visits		3 follow-up visits		4 follow-up visits		5 and more follow-up visits	
Idleb (210)	36	17.1%	13	6.2%	25	11.9%	25	11.9%	20	9.5%	91	43.3%
Al-Reqqa (185)	14	7.6%	11	5.9%	24	13.0%	34	18.4%	18	9.7%	84	45.4%
Quneitra (28)	5	17.9%	4	14.3%	4	14.3%	2	7.1%	4	14.3%	9	32.1%
Aleppo (200)	38	19.0%	15	7.5%	28	14.0%	15	7.5%	20	10.0%	84	42.0%
Hama (151)	10	6.6%	10	6.6%	24	15.9%	24	15.9%	10	6.6%	73	48.3%
Homs (165)	10	6.1%	14	8.5%	30	18.2%	47	28.5%	30	18.2%	34	20.6%
Dara'a (179)	51	28.5%	23	12.8%	25	14.0%	25	14.0%	24	13.4%	31	17.3%
DeirEzor (209)	23	11.0%	19	9.1%	23	11.0%	61	29.2%	31	14.8%	52	24.9%
R. Damascus (203)	2	1.0%	7	3.4%	9	4.4%	16	7.9%	12	5.9%	157	77.3%
Total (1530)	189	12.4%	116	7.6%	192	12.5%	249	16.3%	169	11.0%	615	40.2%

Table 12: Number of visits for other medical reasons during the last pregnancy by governorate

Governorates	No visits		1 -3 visits		4 and more	
Idleb (210)	94	44.8%	76	36.2%	40	19.0%
Al-Reqqa (177)	110	62.1%	58	32.8%	9	5.1%
Quneitra (28)	13	46.4%	10	35.7%	5	17.9%
Aleppo (203)	109	53.7%	72	35.5%	22	10.8%
Hama (149)	71	47.7%	50	33.6%	28	18.8%
Homs (164)	52	31.7%	68	41.5%	44	26.8%
Dar'a (183)	65	35.5%	101	55.2%	17	9.3%
Deir Ezor (209)	65	31.1%	121	57.9%	23	11.0%
R.Damascus (202)	64	31.7%	103	51.0%	35	17.3%
Total (1525)	#643	42.2%	#659	43.2%	#223	14.6%

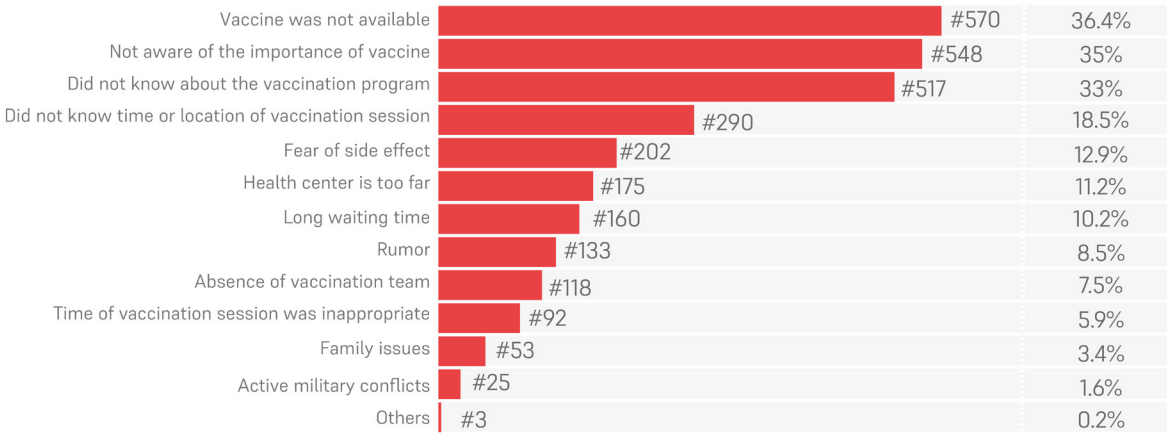
Table 13: Distribution of surveyed mothers according to the place of delivery by governorate.

Governorates	Home		Health care center	
Idleb (210)	36	16.7%	174	82.9%
Al-Reqqa (187)	79	40.0%	108	57.4%
Quneitra (28)	13	46.4%	15	53.6%
Aleppo (208)	50	23.8%	158	75.2%
Hama (154)	28	18.2%	126	81.8%
Homs (168)	39	23.2%	129	76.8%
Dar'a (189)	49	25.9%	140	74.1%
Deir Ezor (205)	95	45.2%	110	52.4%
R. Damascus (209)	2	1.0%	207	98.6%
Total (1558)	**#391**	**25.1%**	**1167**	**74.9%**

Table 14: Distribution of surveyed mothers according to the person who assisted the home delivery by governorate

Governorates	Health care personnel		Midwife		Others	
Idleb (36)	0	0.0%	32	%	4	1.9%
Al-Raqqa (79)	5	2.7%	60	31.9%	14	6.9%
Quneitra (13)	0	0.0%	13	46.4%	0	0.0%
Aleppo (50)	3	1.4%	38	18.1%	9	3.8%
Hama (28)	1	0.6%	20	13.0%	7	4.5%
Homs (39)	0	0.0%	38	22.6%	1	0.0%
Dar'a (49)	1	0.5%	42	22.2%	6	2.1%
Deir Ezor (95)	2	1.0%	88	42.0%	5	2.4%
R. Damascus (2)	0	0.0%	1	0.5%	1	0.5%
Total (391)	**12**	**3%**	**332**	**85%**	**47**	**12%**

Table 15 Reasons of un-vaccination with tetanus toxoids.

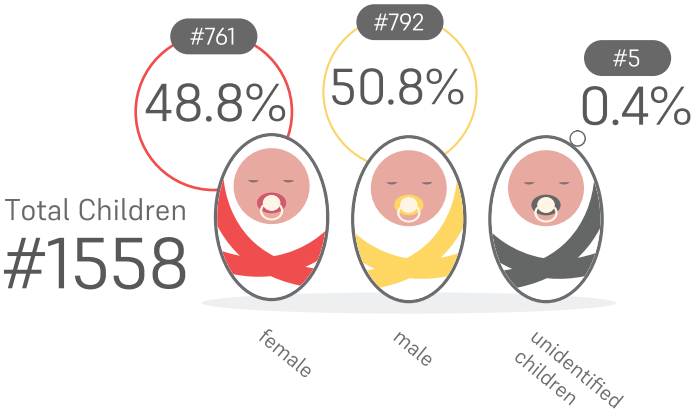


SECTION 02

CATEGORY 2

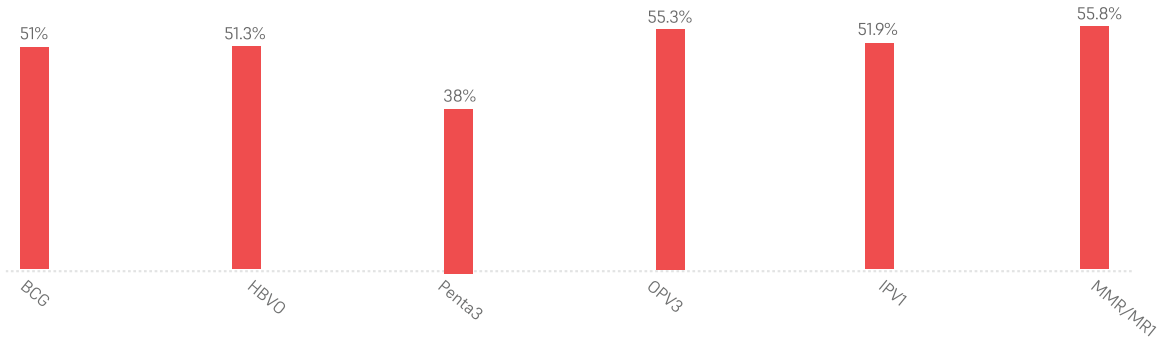
CHILDREN 12-23 MONTH OF AGE

In this age category, **1558** children were included (792 males, 50.8% and 761 females, 48.8% & 5 unidentified children). It should be emphasized again that data collection for some clusters in some governorates was not completed due to security circumstances with airstrikes and ground fighting, however a good number of children was interviewed successfully for history of vaccination. Although results of incomplete data could not be generalized in all governorates, nevertheless data was voluminous enough to give strong indications about coverage.



Age category 2 shows poor coverage in all antigens in this age group: e.g. BCG; HBV0; Penta3; OPV3; IPV1 and MMR/MR1. **Table (16) & Fig. (2).**

Figure 02: % coverage essential vaccines, children 12-23 month of age N.Syria, 2017-2018



That is understood due to disrupted service in N. Syria because of continued armed conflict. All vaccinations were given through scattered governmental EPI centers or re-established EPI centers by SIG (accessibility Maps) and partner agencies with focal concentration in Idleb. supplementary immunization activities were implemented by SIG and supposedly by Damascus, however, number of SIAs was declining year after year in eastern provinces (antigen-specific and multi-antigen accelerated implementation of routine immunization rounds).

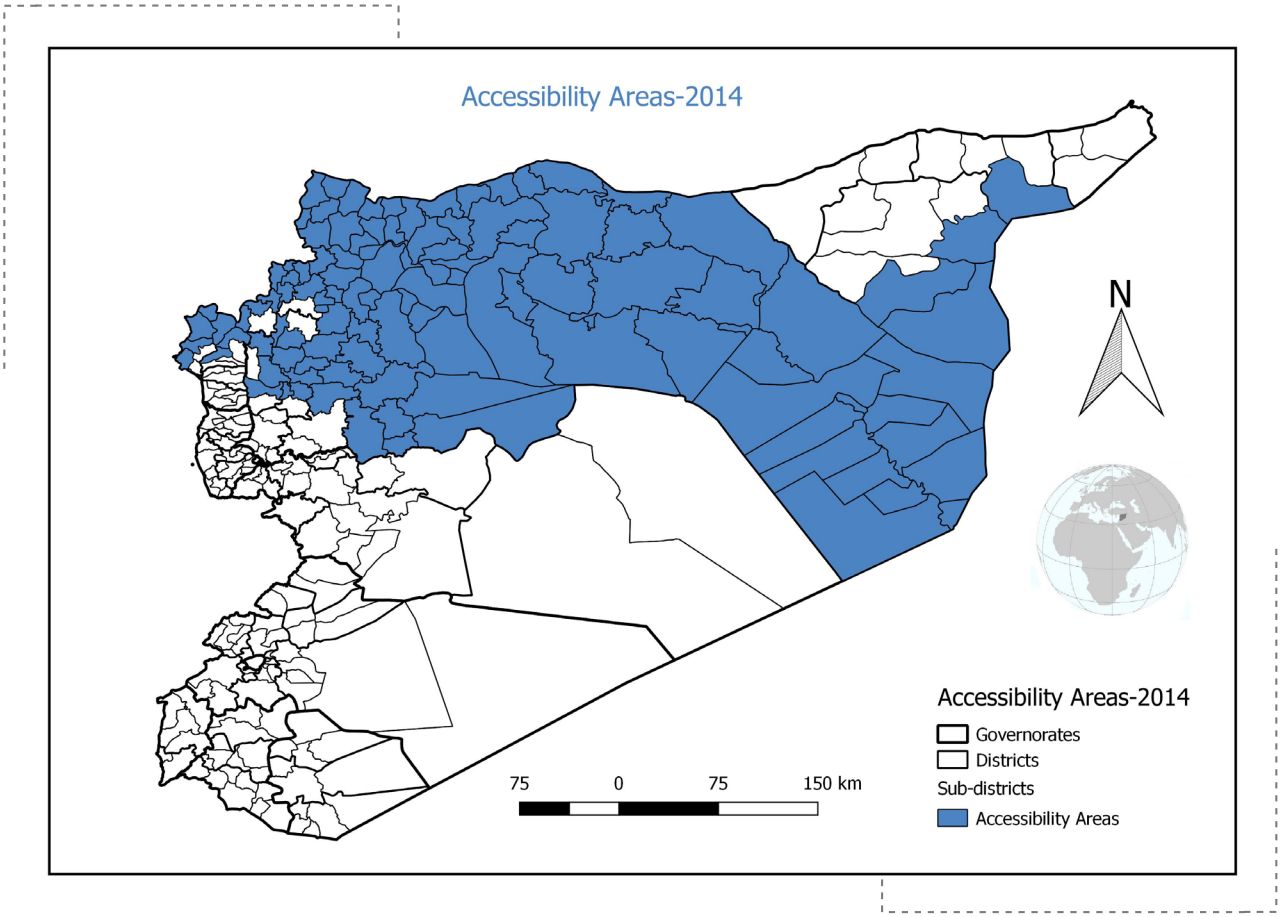
Due to security situation and the disruption of health care delivery system, accessing children for vaccination is extremely difficult in most of conflict-affected areas particularly in eastern provinces (Al-Raqqa & Deir Ezor). There are several modalities in reaching children in northern Syrian governorates. The most important vaccination activity is through SIAs. In addition, there are some limited and patchy implementation of routine immunization services through governmental EPI centers and occasional SIAs. Some important NGOs/INGOs play significant role in administering vaccines to deprived children in host communities as well as in camps e.g. MSF under the umbrella of SIG.

As shown in accessibility maps, accessibility becomes more limited in 2017 as compared to the period 2014-2016. That explains the limited geographical areas where SIG and partners were able to establish EPI centers or implement SIAs.

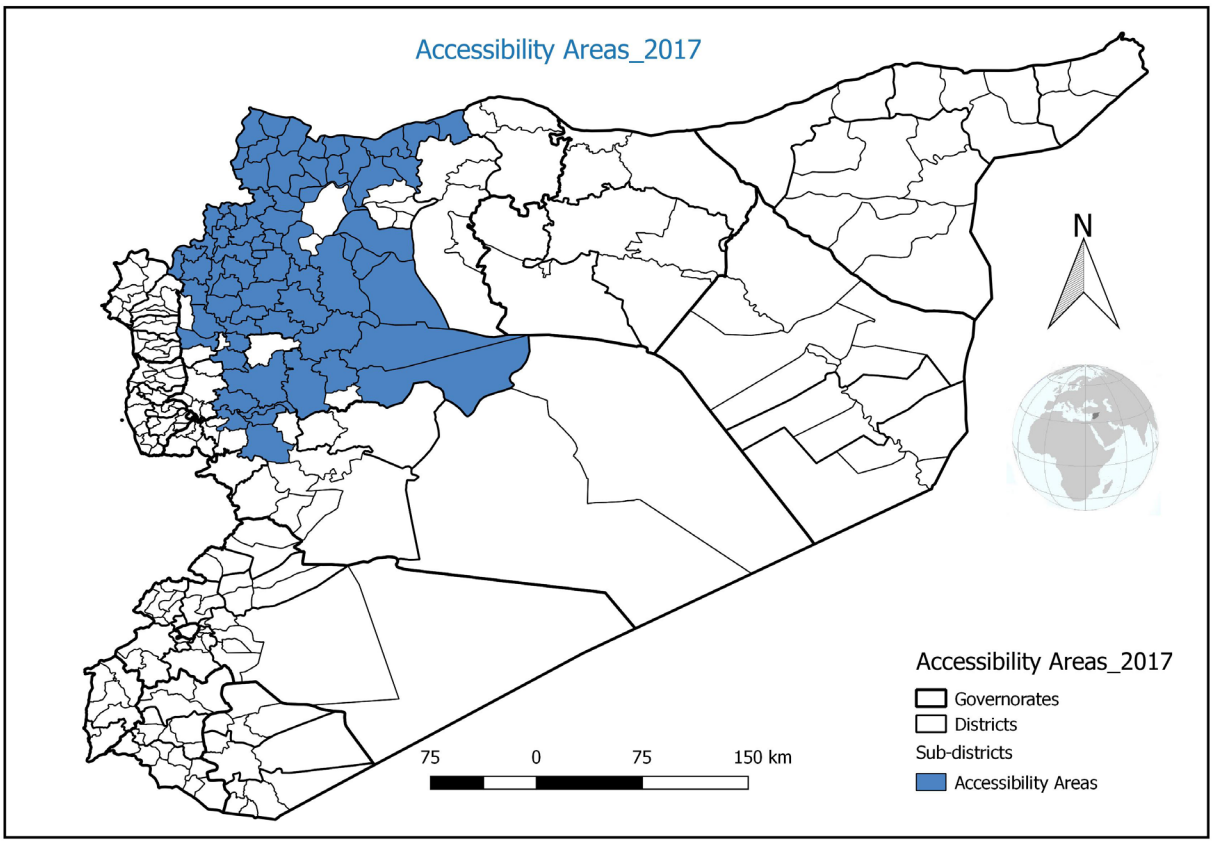
The crude vaccination coverage of children 12-23 month of age shows overall poor immunization with high drop-out rates of multi-dose vaccines especially PENTA, OPV, IPV & MMR/MR. For PENTA coverage, PENTA1, PENTA2, PENTA3 (74.7%, 57.1%, 38% respectively). **Table (18)**. For OPV coverage, OPV1, OPV3, OPV7 (83.6%, 55.3%, 9.5% respectively). **Tables (19 a., b., c., d.).** For IPV1, Dar'a and Hama had higher coverage (93%, 80.5% respectively), compared to Al-raqqa & Deir Ezor (16.6% & 19% respectively). Table (20). IDP children show lower coverage with IPV1 than host community (number of IDPs is very small as usual). % coverage with MMR/MR1, MMR/MR2 indicates almost the same pattern of all vaccines, where % coverage in Dar'a & rural Damascus were higher (66.7%, 71.3% respectively) than coverage in eastern provinces Al-raqqa & Deir Ezor (48.1%, 18.1% respectively). Vaccination of IDPs with Measles Containing Vaccine shows a slightly better utilization of vaccination services. **Table (21)**

Families reported on reasons of unvaccination, where most common reason was vaccine was not available (608, 39%), followed by lack of knowledge about the time and location of immunization session (404, 25.9%), then families don't know about the importance of vaccines (336, 21.6%). Refusal and rumors were not significant reasons of unvaccination. **Table (22).**

Map 01: Accessibility for vaccination 2014-2016



Map 02: **Accessibility for vaccination 2017**



Map 03: **Areas of recent re-established routine immunization**

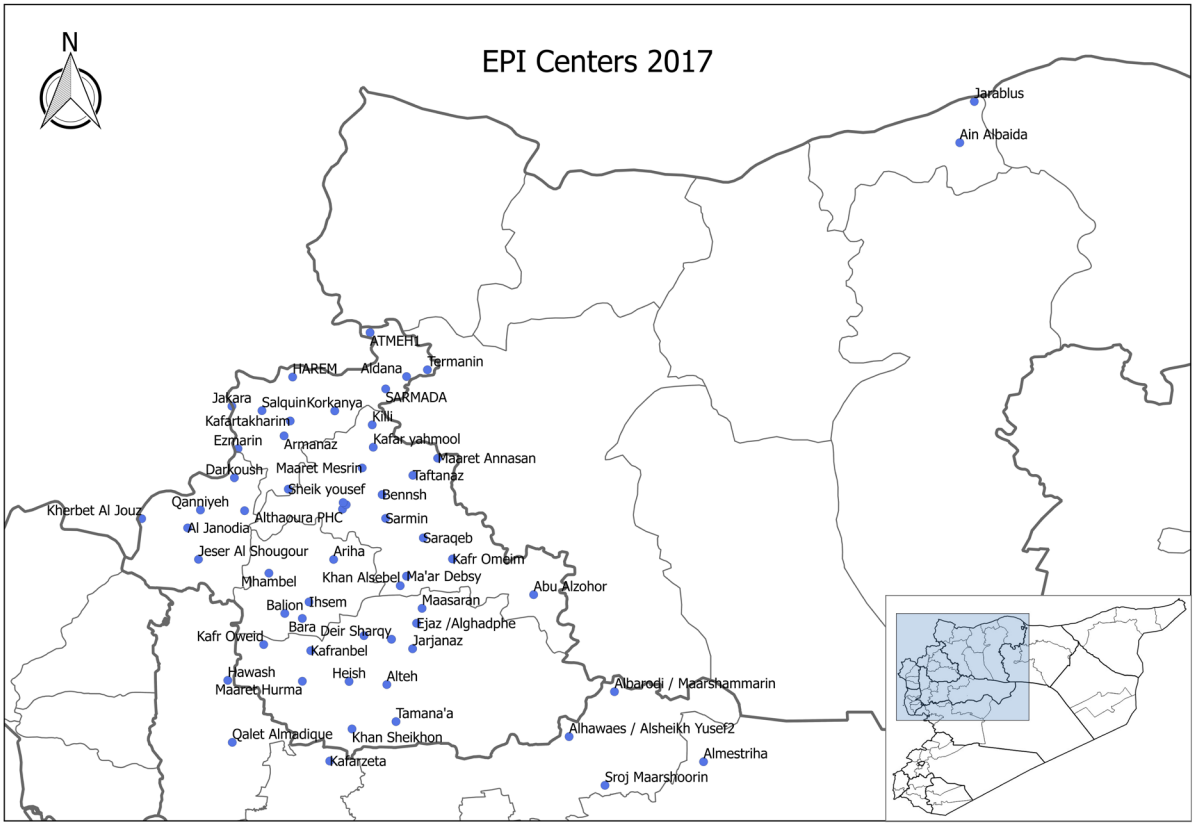


Table 16: Crude coverage of essential vaccines among children 12- 23 months.

Vaccine	# Number of vaccinated children	(%)	95% CI
BCG	795	51.0 (%)	48.4-53.5
HBV	800	51.3 (%)	58.8-53.8
Pent1	1164	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	1302	83.6 (%)	81.6-85.5
OPV2	1120	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

Table 17: Crude coverage of BCG vaccines among children 12- 23 months by governorate.

Governorates	#Number	%	95% CI	
Idleb (206)	83	40.3%	33.8%	47.1%
Al-Raqqa (187)	100	53.5%	46.3%	60.5%
Quneitra (28)	28	100.0%	.	.
Aleppo (210)	61	29.0%	23.2%	35.4%
Hama (154)	59	38.3%	30.9%	46.1%
Homs (168)	51	30.4%	23.8%	37.6%
Dar'a (186)	183	98.4%	95.8%	99.5%
DeirEzor (210)	96	45.7%	39.1%	52.5%
R.Damascus (209)	134	64.1%	57.5%	70.4%
Total (1558)	**795**	**51%**		

Governorate	#Number	%	95% CI	
No (N=1497)	758	50.6%	48.1%	53.2%
Yes (N=61)	37	60.7%	48.1%	72.2%
Total (1558)	**795**	**51%**		

Table 18: Crude coverage of Penta vaccine among children 12- 23 months by governorate **(N=1558).**

Governorate	Penta 1				Penta 2			
	#N	%	95% CI		#N	%	95% CI	
Idleb (206)	180	87.4%	82.3%	91.4%	147	71.4%	64.9%	77.2%
Al-Raqqa (187)	88	47.1%	40.0%	54.2%	47	25.1%	19.3%	31.7%
Quneitra (28)	28	100.0%	.	.	28	100.0%	.	.
Aleppo (210)	151	71.9%	65.6%	77.7%	91	43.3%	36.8%	50.1%
Hama (154)	150	97.4%	93.9%	99.1%	135	87.7%	81.8%	92.1%
Homs (168)	161	95.8%	92.0%	98.1%	133	79.2%	72.6%	84.8%
Dar'a (186)	177	95.2%	91.4%	97.6%	155	83.3%	77.5%	88.2%
Deir Ezor (210)	57	27.1%	21.5%	33.4%	42	20.0%	15.0%	25.8%
R. Damascus (209)	172	82.3%	76.7%	87.0%	112	53.6%	46.8%	60.3%
Total (1558)	**1164**	**74.7%**			**890**	**57.1%**		

IDP status	Penta 1				Penta 2			
	#N	%	95% CI		#N	%	95% CI	
No **(1497)**	1109	74.1%	71.8%	76.3%	846	56.5%	54.0%	59.0%
Yes **(61)**	55	90.2%	80.8%	95.8%	44	72.1%	60.0%	82.2%

Governorate	Penta 3				Penta booster			
	#N	%	95% CI		#N	%	95% CI	
Idleb (206)	99	48.1%	41.3%	54.9%	19	9.2%	5.8%	13.7%
Al-Raqqa (187)	20	10.7%	6.9%	15.7%	8	4.3%	2.0%	7.9%
Quneitra (28)	17	60.7%	42.3%	77.0%	8	28.6%	14.5%	46.8%
Aleppo (210)	42	20.0%	15.0%	25.8%	7	3.3%	1.5%	6.4%
Hama (154)	104	67.5%	59.9%	74.5%	6	3.9%	1.6%	7.9%
Homs (168)	72	42.9%	35.5%	50.4%	20	11.9%	7.7%	17.4%
Dar'a (186)	138	74.2%	67.6%	80.1%	80	43.0%	36.0%	50.2%
Deir Ezor (210)	24	11.4%	7.7%	16.3%	7	3.3%	1.5%	6.4%
R. Damascus (209)	76	36.4%	30.1%	43.0%	25	12.0%	8.1%	16.9%
Total (1558)	**592**	**38%**			**180**	**11.6%**		

IDP status	Penta 3				Penta booster			
	Number	%	95% CI		Number	%	95% CI	
No **(1497)**	568	37.9%	35.5%	40.4%	170	9.8%	11.4%	13.0%
Yes **(61)**	24	39.3%	27.8%	51.9%	10	8.8%	16.4%	27.1%

Table 19a: Crude coverage of OPV1-OPV3 doses among children 12- 23 months by governorates.

Governorate	OPV 1				OPV2				OPV 3			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
Idleb (206)	196	95.1	91.6	97.5	190	92.2	88.0	95.3	171	83.0	77.4	87.7
Al-reqqa (187)	105	56.1	49.0	63.1	74	39.6	32.8	46.7	35	18.7	13.6	24.8
Quneitra (28)	28	100.0	.	.	27	96.4	84.5	99.6	24	85.7	69.5	95.0
Aleppo (210)	159	75.7	69.6	81.1	123	58.6	51.8	65.1	78	37.1	30.8	43.8
Hama (154)	150	97.4	93.9	99.1	147	95.5	91.3	97.9	120	77.9	70.9	83.9
Homs (168)	166	98.8	96.2	99.8	159	94.6	90.5	97.3	143	85.1	79.2	89.9
Dar'a (186)	183	98.4	95.8	99.5	172	92.5	88.0	95.6	150	80.6	74.5	85.8
Deir Ezor (210)	146	69.5	63.1	75.5	85	40.5	34.0	47.2	69	32.9	26.8	39.4
R. Damascus (209)	169	80.9	75.1	85.8	143	68.4	61.9	74.4	71	34.0	27.8	40.6
Total **1558**	1302	83.6%			1120	71.9%			861	55.3%		

Table 19b: Crude coverage of OPV 4-7 doses among children 12-23 month of age by governorate.

Governorate	OPV 4				OPV5				OPV 6				OPV 7			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
Idleb (206)	146	70.9	64.4	76.8	108	52.4	45.6	59.2	60	29.1	23.2	35.6	27	13.1	9.0	18.2
Al-reqqa (187)	14	7.5	4.4	11.9	5	2.7	1.0	5.8	2	1.1	0.2	3.4	2	1.1	0.2	3.4
Quneitra (28)	17	60.7	42.3	77.0	7	25.0	11.9	42.9	2	7.1	1.5	21.0	1	3.6	0.4	15.5
Aleppo (210)	38	18.1	13.3	23.7	15	7.1	4.2	11.2	4	1.9	0.6	4.5	3	1.4	0.4	3.8
Hama (154)	127	82.5	75.9	87.8	95	61.7	53.9	69.1	47	30.5	23.7	38.1	29	18.8	13.3	25.6
Homs (168)	83	49.4	41.9	56.9	52	31.0	24.3	38.2	28	16.7	11.6	22.8	12	7.1	4.0	11.8
Dar'a (186)	109	58.6	51.4	65.5	80	43.0	36.0	50.2	57	30.6	24.4	37.5	49	26.3	20.4	33.0
Deir Ezor (210)	36	17.1	12.5	22.7	26	12.4	8.4	17.3	20	9.5	6.1	14.0	16	7.6	4.6	11.8
R.Damascus (209)	38	18.2	13.4	23.8	32	15.3	10.9	20.7	14	6.7	3.9	10.7	9	4.3	2.2	7.7
Total **1558**	608	39%			420	27%			234	15%			148	9.5%		

Table 19c,d: Crude coverage of OPV (1-7 doses) among IDP children 12- 23 months governorates.

IDP status	OPV 1				OPV 2				OPV 3			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
No **(1497)**	1242	83.0	81.0	84.8	1067	71.3	68.9	73.5	818	54.6	52.1	57.2
Yes **(61)**	60	98.4	92.6	99.8	53	86.9	76.8	93.6	43	70.5	58.3	80.8

IDP status	OPV 4				OPV 5				OPV 6				OPV 7			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
No **(1497)**	580	38.7	36.3	41.2	400	26.7	24.5	29.0	221	14.8	13.0	16.6	141	9.4	8.0	11.0
Yes **(61)**	28	45.9	33.8	58.4	20	32.8	22.0	45.1	13	21.3	12.5	32.8	7	11.5	5.3	21.2

Table 20a: crude IPV coverage among children 12-23 month of age by governorate (N=1558).

Governorate	IPV 1				IPV 2				IPV 3				IPV4			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
Idleb (206)	107	51.9	45.1	58.7	19	9.2	5.8	13.7	1	0.5	0.1	2.2	1	0.5	0.1	2.2
Al-reqqa (187)	31	16.6	11.8	22.4	9	4.8	2.4	8.6	1	0.5	0.1	2.5	17*	0.0	5.6	13.8
Quneitra (28)	27	96.4	84.5	99.6	28	100.0	.	.	3	10.7	3.1	25.9	2	7.1	1.5	21.0
Aleppo (210)	28	13.3	9.2	18.4	19	9.0	5.7	13.5	1	0.5	0.1	2.2	0	0.0	.	.
Hama (154)	124	80.5	73.7	86.2	10	6.5	3.4	11.2	0	0.0	.	.	0	0.0	.	.
Homs (168)	143	85.1	79.2	89.9	82	48.8	41.3	56.3	35	20.8	15.2	27.4	16	9.5	5.8	14.7
Dar'a (186)	173	93.0	88.7	96.0	151	81.2	75.1	86.3	59	31.7	25.4	38.7	19	10.2	6.5	15.2
Deir Ezor (210)	40	19.0	14.2	24.8	21	10.0	6.5	14.6	5	2.4	0.9	5.1	4	1.9	0.6	4.5
R.Damascus (209)	136	65.1	58.4	71.3	51	24.4	19.0	30.5	35	16.7	12.2	22.2	12	5.7	3.2	9.5
Total **1558**	809	51.9%			390	25%			140	9%			54	3.5%		

* = Data Error

Table 20b: crude IPV coverage among IDP children 12-23 month of age

IDP status	IPV 1				IPV 2				IPV 3				IPV4			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
No **(1497)**	784	52.4	49.8	54.9	380	25.4	23.2	27.6	139	9.3	7.9	10.8	54	3.5	3.8	5.9
Yes **(61)**	25	41.0	29.3	53.5	10	16.4	8.8	27.1	1	1.6	0.2	7.4	0	0.0	.	.

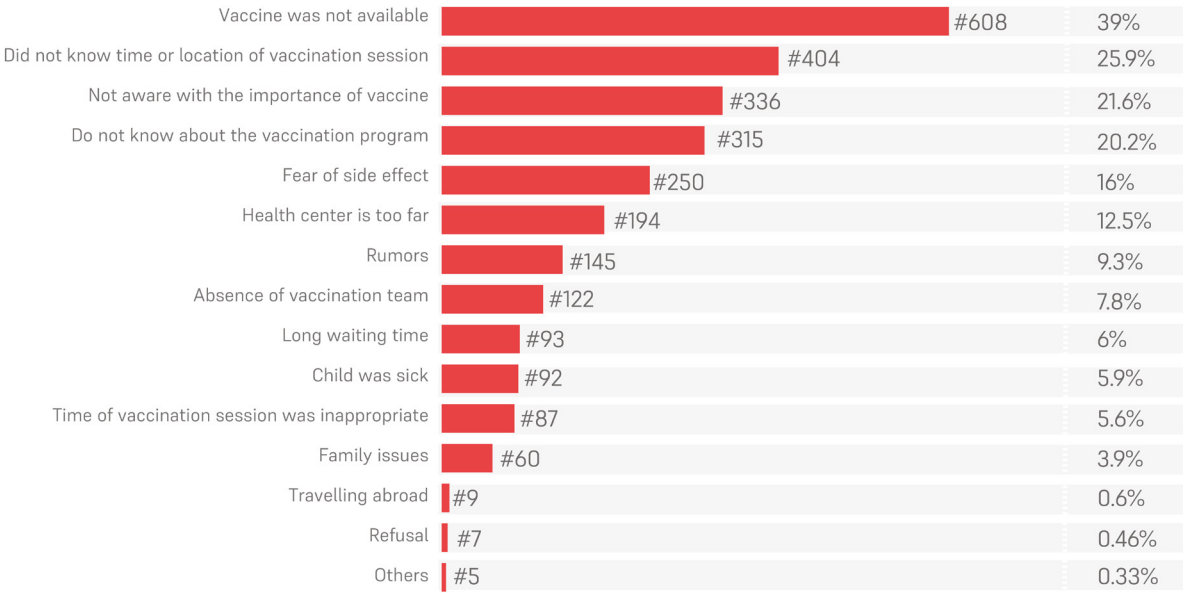
Table 21a: Crude coverage of MMR among children 12- 23 months by governorates.

Governorate	MMR 1				MMR 2			
	#N	%	95% CI		#N	%	95% CI	
Idleb (206)	154	74.8	68.5	80.3	57	27.7	21.9	34.1
Al-Raqqa (187)	90	48.1	41.0	55.3	13	7.0	4.0	11.3
Quneitra (28)	18	64.3	45.8	79.9	10	35.7	20.1	54.2
Aleppo (210)	105	50.0	43.3	56.7	27	12.9	8.8	17.9
Hama (154)	69	44.8	37.1	52.7	24	15.6	10.5	21.9
Homs (168)	122	72.6	65.5	78.9	43	25.6	19.5	32.6
Dar'a (186)	124	66.7	59.7	73.1	80	43.0	36.0	50.2
Deir Ezor (210)	38	18.1	13.3	23.7	10	4.8	2.5	8.3
R. Damascus (209)	149	71.3	64.9	77.1	55	26.3	20.7	32.6
Total (1558)	**869**	**55.8%**			**319**	**20.5%**		

Table 21b: Crude coverage of MMR among IDP children 12-23 month of age.

IDP status	MMR 1				MMR 2			
	#N	%	95% CI		#N	%	95% CI	
No **(1497)**	823	55.0	52.4	57.5	294	19.6	17.7	21.7
Yes **(61)**	46	75.4	63.6	84.9	25	41.0	29.3	53.5

Table 22: Reasons of unvaccination.



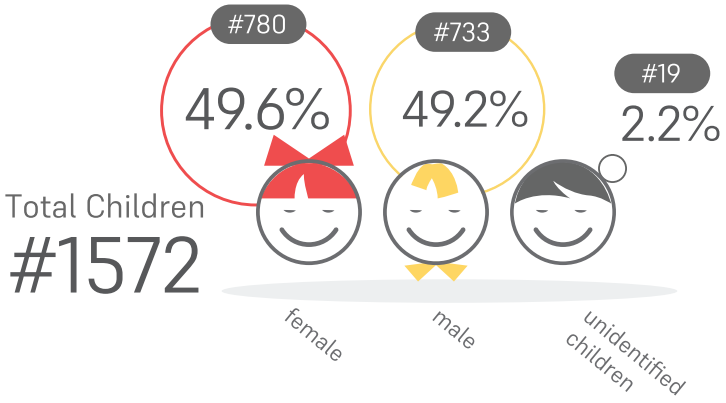
SECTION 03

CATEGORY 3

CHILDREN 24-59 MONTH OF AGE

This age category has been added to the survey based on the observations that many children in N. Syria receive their essential vaccines at later ages. Those children are supposedly remaining susceptible to vaccine preventable diseases and outbreaks which took place in 2017 & 2018 (cVDPV2; measles; pertussis). The SIG and all partners have been alerted of these threats and planed continuously for SIAs both single antigen and multi-antigen campaigns (AIRI) to compensate for poor routine immunization services. So, the intention is to study vaccine coverage of this age group who can catch up on their early vaccine doses at older ages through newly established EPI and planned SIAs. However, this report will include a new section on children who have received vaccine doses at proper age of vaccination (valid or due doses) or given later in life as over-due doses.

A total of 1572 child of category3 (773 males, 49.2% & 780 females, 49.6%, 19 unknown) were included in the survey to collect information on history of vaccinations in nine governorates. The selected clusters were covered completely in 4 governorates namely: Idleb, Aleppo, Deir Ezor and Rural Damascus, while in other governorates a range of 4-27 clusters were investigated (variable reasons mostly related to safety and security).



The crude vaccination coverage of children 24-59 month of age shows overall low to moderate levels of immunization with high drop-out rates of multi-dose vaccines especially PENTA, OPV, IPV & MMR/MR. For crude PENTA coverage, PENTA1, PENTA2, PENTA3 (77%, 61.4%, 46.3% respectively). Table (23). Crude coverage with BCG and zero dose of HBV shows variable coverages where governorates in the south and middle region exhibit high coverage possibly due to availability of vaccines and more organized governmental EPI services, while it is poor in other governorates. Table (24). For crude OPV coverage, OPV1, OPV3, OPV7 (86.3%, 67.1%, 24.6% respectively), while coverage in Dar'a and Hama was highest for OPV3 (94.7%, 92.2% respectively), Al-Raqqa and Deir Ezor showed the lowest coverage for same OPV3 dose (33.2%, 39%). The crude coverage of penta1,2,3 and booster show low levels (77%, 61%, 46.3% and 25.1% respectively) with highest coverage in Dar'a and Hama (84.6%, 68.8% respectively). **Table (25 a, b, c, d).**

The crude coverage of IPV1 in this age group was 54.6%. For IPV1, Dar'a and Homs had higher coverage (96.8%, 85.7% respectively), compared to Al-raqqa & Deir Ezor (26.3% & 30% respectively). In IPV2 again Dar'a and Homs governorates show high coverage (88.3 % & 60.1% respectively) compared to Al-raqqa & Deir Ezor (14.7%, 20.5 respectively). Table (26). Coverage with MMR/MR1, indicates higher levels % in Dar'a & Homs (85.1%, 94.6% respectively) than coverage in eastern provinces Al-raqqa & Deir Ezor (55.3%, 26.2% respectively). %coverage with MMR/MR2 show same pattern, where vaccine coverage with MMR/MR2 in Dar'a & Hama (74.5%, 74.7% respectively) while it is much lower in eastern provinces Al-Raqqa & Deir Ezor (8.4%, 14.8% respectively). Vaccination of IDPs with Measles Containing Vaccine shows a slightly better utilization of vaccination services. **Table (27).**

Families reported on reasons of unvaccination, where most common reasons were almost the same as in category2. Most common reason was vaccine was not available (526, 33.5%), followed by lack of knowledge about the time and location of immunization session (307, 19.5%), then families don't know about the importance of vaccines (292, 18.6%). Refusal and rumors were not significant reasons of unvaccination. Table (28). For all children 12-59 month of age, it was shown that both Damascus and SIG/NGO has contributed almost equally in children vaccination. Also, Campaigns (SIAs) has compensated significantly for limited EPI activities. Table (29), Fig.3.

Table 23: Crude coverage of routine vaccines among children 24-59 months (N=1572).

Vaccine	# Number of vaccinated children	(%)	95% CI	
BCG	990	63.0%	60.6%	65.3%
HBV	950	60.4%	58.0%	62.8%
Pent1	1210	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	1357	86.3%	84.6%	88.0%
OPV2	1221	77.7%	75.6%	79.7%
OPV3	1055	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	1091	69.4%	67.1%	71.6%
MMR 2	705	44.8%	42.4%	47.3%

Table 24: Crude coverage of BCG and HBV vaccines among children 24-59 months by governorate

Governorate	BCG				HBV			
	#N	%	95% CI		#N	%	95% CI	
Idleb (214)	122	57.0%	50.3%	63.5%	107	50.0%	43.3%	56.7%
Al-Raqqa (190)	104	54.7%	47.6%	61.7%	94	49.5%	42.4%	56.5%
Quneitra (28)	27	96.4%	84.5%	99.6%	28	100.0%	.	.
Aleppo (210)	83	39.5%	33.1%	46.2%	79	37.6%	31.3%	44.3%
Hama (154)	83	53.9%	46.0%	61.6%	73	47.4%	39.6%	55.3%
Homs (168)	83	49.4%	41.9%	56.9%	96	57.1%	49.6%	64.5%
Dar'a (188)	188	100.0%	.	.	187	99.5%	97.5%	99.9%
Deir Ezor (210)	120	57.1%	50.4%	63.7%	124	59.0%	52.3%	65.5%
R.Damascus (210)	180	85.7%	80.5%	89.9%	162	77.1%	71.1%	82.4%
Total **(1572)**	**990**	**63%**			**950**	**60.4%**		

Camp	BCG				HBV			
	#N	%	95% CI		#N	%	95% CI	
No (1507)	946	62.8%	60.3%	65.2%	916	60.8%	58.3%	63.2%
Yes (65)	44	67.7%	55.7%	78.1%	34	52.3%	40.3%	64.1%

Table 25a: Crude coverage of Penta vaccine among children 24-59 months by governorate.

Governorate	Penta 1				Penta 2			
	#N	%	95% CI		#N	%	95% CI	
Idleb (214)	191	89.3%	84.6%	92.9%	152	71.0%	64.7%	76.8%
Al-Raqqa (190)	100	52.6%	45.5%	59.6%	53	27.9%	21.9%	34.6%
Quneitra (28)	28	100.0%	.	.	28	100.0%	.	.
Aleppo (210)	136	64.8%	58.1%	71.0%	94	44.8%	38.1%	51.5%
Hama (154)	148	96.1%	92.1%	98.4%	129	83.8%	77.3%	88.9%
Homs (168)	161	95.8%	92.0%	98.1%	130	77.4%	70.6%	83.2%
Dar'a (188)	187	99.5%	97.5%	99.9%	175	93.1%	88.8%	96.1%
Deir Ezor (210)	86	41.0%	34.5%	47.7%	62	29.5%	23.7%	35.9%
R.Damascus (210)	173	82.4%	76.8%	87.1%	142	67.6%	61.1%	73.7%
Total **(1572)**	**1210**	**77%**			**965**	**61.4%**		

Table 25b: Crude coverage of Penta vaccine among children 24-59 months by governorate.

Governorate	Penta 3				Penta booster			
	#N	%	95% CI		#N	%	95% CI	
Idleb (214)	118	55.1%	48.4%	61.7%	47	22.0%	16.8%	27.9%
Al-Raqqa (190)	34	17.9%	13.0%	23.8%	12	6.3%	3.5%	10.4%
Quneitra (28)	22	78.6%	61.1%	90.5%	17	60.7%	42.3%	77.0%
Aleppo (210)	57	27.1%	21.5%	33.4%	29	13.8%	9.6%	19.0%
Hama (154)	106	68.8%	61.2%	75.7%	13	8.4%	4.8%	13.6%
Homs (168)	84	50.0%	42.5%	57.5%	49	29.2%	22.7%	36.4%
Dar'a (188)	159	84.6%	78.9%	89.2%	143	76.1%	69.6%	81.7%
Deir Ezor (210)	36	17.1%	12.5%	22.7%	16	7.6%	4.6%	11.8%
R.Damascus (210)	112	53.3%	46.6%	60.0%	68	32.4%	26.3%	38.9%
Total **(1572)**	**728**	**46.3%**			**394**	**25.1%**		

Camp	Penta 1				Penta 2				Penta 3				Penta Booster			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
No **(1507)**	1156	76.7	74.5	78.8	918	60.9	58.	63.4	690	45.8	43.3	48.3	373	24.8	22.6	27.0
Yes **(65)**	54	83.1	72.6	90.7	47	72.3	60.6	82.0	38	58.5	46.3	69.9	21	32.3	21.9	44.3

Table 25c: Crude coverage of OPV vaccine among children 24-59 months by governorate.

Governorate	OPV 1				OPV2				OPV 3			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
Idleb (214)	199	93.0	89.0	95.8	192	89.7	85.1	93.3	181	84.6	79.3	88.9
Al-Raqqa (190)	113	59.5	52.4	66.3	83	43.7	36.8	50.8	63	33.2	26.8	40.1
Quneitra (28)	26	92.9	79.0	98.5	28	100	.	.	26	92.9	79.0	98.5
Aleppo (210)	175	83.3	77.9	87.9	144	68.6	62.1	74.6	109	51.9	45.2	58.6
Hama (154)	151	98.1	94.9	99.4	150	97.4	93.9	99.1	142	92.2	87.2	95.7
Homs (168)	166	98.8	96.2	99.8	160	95.2	91.2	97.7	148	88.1	82.6	92.3
Dar'a (188)	188	100	.	.	183	97.3	94.3	99.0	178	94.7	90.8	97.2
Deir Ezor (210)	161	76.7	70.6	82.0	119	56.7	49.9	63.2	82	39.0	32.6	45.8
R.Dmascus (210)	178	84.8	79.4	89.1	162	77.1	71.1	82.4	126	60.0	53.3	66.5
Total (1572)	1357	86.3%			1221	77.7			1055	67.1		

Camp	OPV 1				OPV2				OPV 3			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
No **(1507)**	1293	85.8	84.0	87.5	1159	76.9	74.7	79.0	998	66.2	63.8	68.6
Yes **(65)**	64	98.5	93.0	99.8	62	95.4	88.2	98.7	57	87.7	78.1	94.0

Table 25d: Crude coverage of OPV vaccine among children 24-59 months by governorate.

Governorate	OPV 4				OPV5				OPV 6				OPV 7			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
Idleb (214)	160	74.8	68.6	80.2	136	63.6	57.0	69.8	99	46.3	39.7	53.0	80	37.4	31.1	44.0
Al-Raqqa (190)	48	25.3	19.5	31.8	35	18.4	13.4	24.4	24	12.6	8.5	17.9	25	13.2	8.9	18.5
Quneitra (28)	23	82.1	65.2	92.8	15	53.6	35.5	70.9	9	32.1	17.2	50.5	7	25.0	11.9	42.9
Aleppo (210)	57	27.1	21.5	33.4	41	19.5	14.6	25.3	32	15.2	10.9	20.6	24	11.4	7.7	16.3
Hama (154)	130	84.4	78.1	89.5	123	79.9	73.0	85.6	121	78.6	71.6	84.5	108	70.1	62.6	76.9
Homs (168)	83	49.4	41.9	56.9	65	38.7	31.6	46.2	44	26.2	20.0	33.2	31	18.5	13.2	24.8
Dar'a (188)	144	76.6	70.2	82.2	122	64.9	57.9	71.4	87	46.3	39.3	53.4	70	37.2	30.6	44.3
Deir Ezor (210)	55	26.2	20.6	32.4	36	17.1	12.5	22.7	27	12.9	8.8	17.9	23	11.0	7.3	15.7
R.Dmascus (210)	72	34.3	28.1	40.9	55	26.2	20.6	32.4	32	15.2	10.9	20.6	19	9.0	5.7	13.5
Total (1572)	772	49.1%			628	39.9 %			475	30.2%			387	24.6%		

Camp	OPV 4				OPV5				OPV 6				OPV 7			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
No **(1507)**	725	48.1	45.6	50.6	592	39.3	36.8	41.8	443	29.4	27.1	31.7	362	24.0	21.9	26.2
Yes **(65)**	47	72.3	60.6	82.0	36	55.4	43.3	67.0	32	49.2	37.3	61.2	25	38.5	27.3	50.6

Table 26: Crude coverage of IPV vaccine among children 24-59 months by governorate (N=1572)

Governorate	IPV 1				IPV 2				IPV 3				IPV4			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
Idleb (214)	99	46.3	39.7	53.0	54	25.2	19.8	31.4	10	4.7	2.4	8.1	3	1.4	0.4	3.7
Al-Raqqa (190)	50	26.3	20.4	32.9	28	14.7	10.2	20.3	17	8.9	5.5	13.6	35*	18.4	13.4	24.4
Quneitra (28)	26	92.9	79.0	98.5	27	96.4	84.5	99.6	18	64.3	45.8	79.9	13	46.4	29.1	64.5
Aleppo (210)	42	20.0	15.0	25.8	26	12.4	8.4	17.3	1	0.5	0.1	2.2	2*	1.0	0.2	3.0
Hama (154)	113	73.4	66.0	79.9	22	14.3	9.4	20.5	4	2.6	0.9	6.1	3	1.9	0.6	5.1
Homs (168)	144	85.7	79.8	90.4	101	60.1	52.6	67.3	55	32.7	26.0	40.1	39	23.2	17.3	30.0
Dar'a (188)	182	96.8	93.5	98.7	166	88.3	83.1	92.3	81	43.1	36.2	50.2	35	18.6	13.6	24.6
Deir Ezor (210)	63	30.0	24.1	36.4	43	20.5	15.4	26.3	16	7.6	4.6	11.8	15	7.1	4.2	11.2
R.Dmascus (210)	140	66.7	60.1	72.8	107	51.0	44.2	57.7	53	25.2	19.7	31.4	34	16.2	11.7	21.6
Total (1572)	**859**	**54.6%**			**574**	**36.5%**			**255**	**16.2%**			**142**	**9 %**		

* = Data Error

Camp	IPV 1				IPV 2				IPV 3				IPV4			
	#N	%	95% CI		#N	%	95% CI		#N	%	95% CI		#N	%	95% CI	
No **(1507)**	834	55.3	52.8	57.8	556	36.9	34.5	39.4	246	16.3	14.5	18.3	135	8.6	9.9	13.1
Yes **(65)**	25	38.5	27.3	50.6	18	27.7	18.0	39.4	9	13.8	7.1	23.7	7	10.8	4.9	20.0

Table 27: Crude coverage of MMR vaccine among children 24-59 months by governorate.

Governorate	MMR 1				MMR 2			
	#N	%	95% CI		#N	%	95% CI	
Idleb (214)	182	85.0	79.8	89.3	109	50.9	44.3	57.6
Al-Raqqa (190)	105	55.3	48.2	62.2	16	8.4	5.1	13.0
Quneitra (28)	23	82.1	65.2	92.8	15	53.6	35.5	70.9
Aleppo (210)	96	45.7	39.1	52.5	50	23.8	18.4	29.9
Hama (54)	141	91.6	86.4	95.2	115	74.7	67.4	81.0
Homs (168)	159	94.6	90.5	97.3	93	55.4	47.8	62.7
Dar'a (188)	160	85.1	79.5	89.6	140	74.5	67.9	80.3
Deir Ezor (210)	55	26.2	20.6	32.4	31	14.8	10.5	20.0
R.Damascus (210)	170	81.0	75.2	85.8	136	64.8	58.1	71.0
Total (1572)	**1091**	**69.4 %**			**705**	**44.8 %**		

Camp	MMR 1				MMR 2			
	#N	%	95% CI		#N	%	95% CI	
No **(1507)**	1042	69.1	66.8	71.4	668	44.3	41.8	46.8
Yes **(65)**	49	75.4	64.0	84.6	37	56.9	44.8	68.4

Table 28: Distribution of reasons of unvaccination.

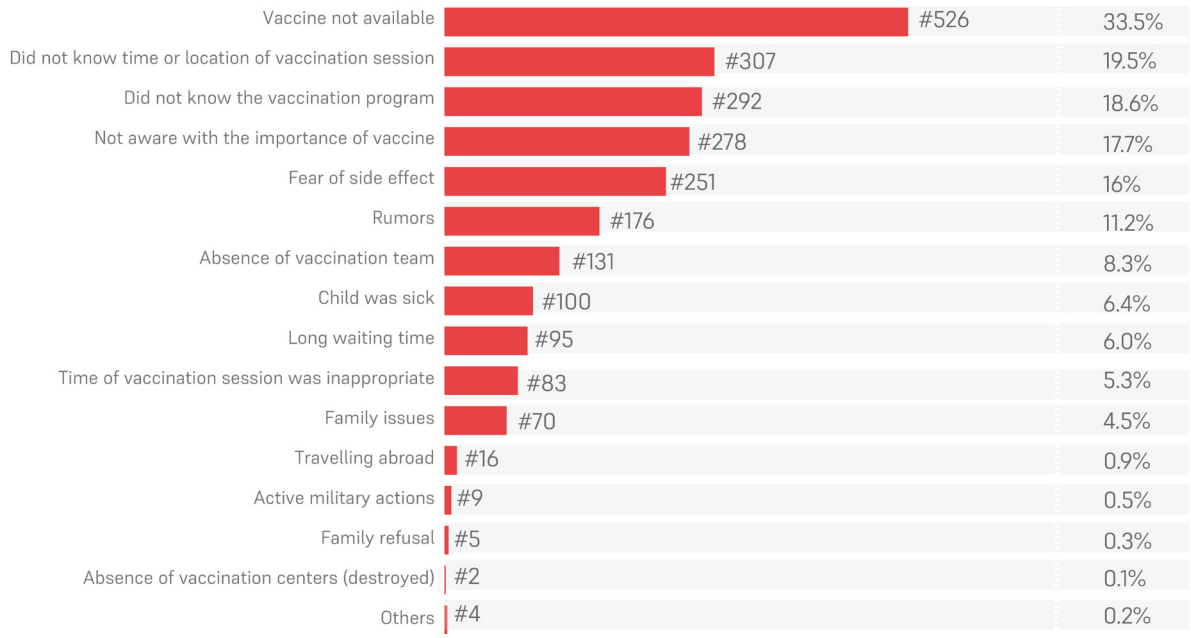
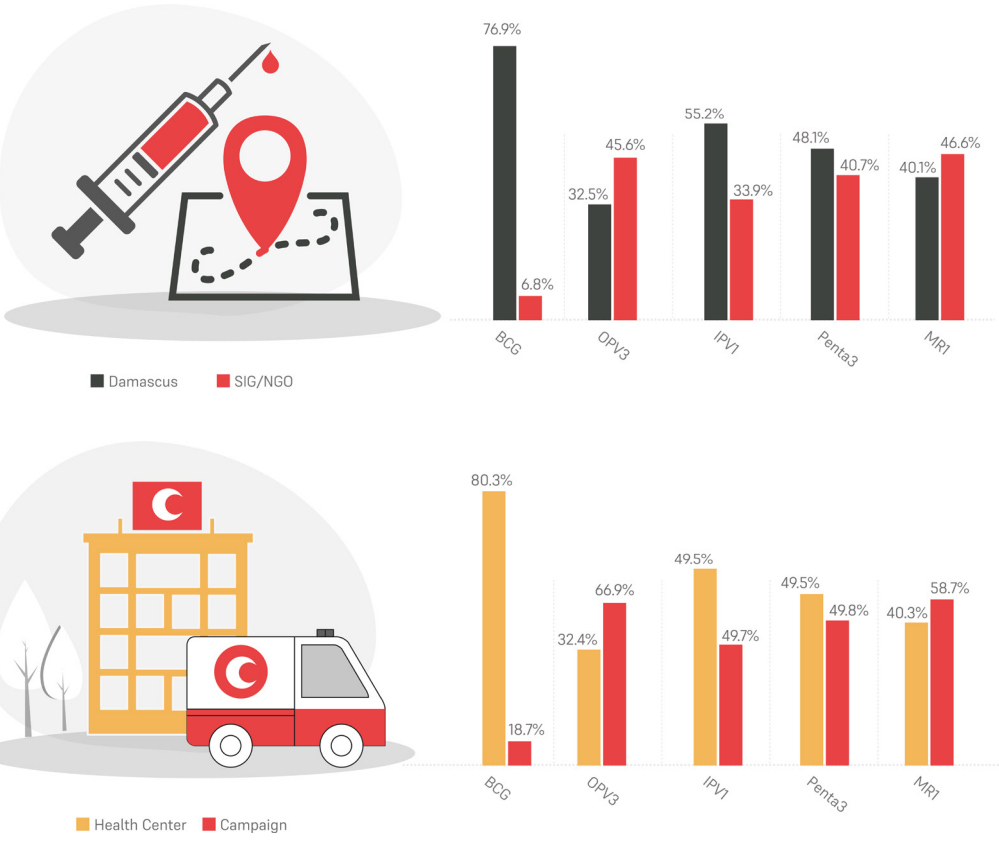


Table 29: Vaccinated children 12-59 month of age by source and place at vaccination. N.Syria. 2017-2018

Source and Place	BCG (N. vaccinated) = 1785	OPV3 (N. vaccinated) = 1916	IPV1 (N. vaccinated) = 1668	Penta3 (N. vaccinated) = 1320	MR1(N. vaccinated) = 1960
Source of vaccination					
Damascus	1373 (76.9 %)	622 (32.5 %)	920 (55.2%)	641 (48.6 %)	786 (40.1%)
SIG/NGO	122 (6.8 %)	873 (45.6 %)	566 (33.9 %)	537 (40.7 %)	913 (46.6%)
un-identified source	290 (16.3 %)	421 (21.9 %)	182(10.9 %)	142 (10.7 %)	261 (13.3 %)
Place vaccination					
Health centers	1434 (80.3 %)	622 (32.4 %)	825 (49.5 %)	653 (49.5%)	790 (40.3 %)
Campaigns	335 (18.7 %)	1281 (66.9%)	830 (49.7 %)	658 (49.8%)	1151 (58.7%)
un-identified place of vaccination	16 (1 %)	13 (0.7 %)	13 (0.8 %)	9 (0.7 %)	19 (1 %)

Figure 03: % coverage of essential vaccine doses by source & place of vaccination. N. Syria. 2017-2018



IDLEB & ALEPPO (SPECIAL FOCUS)

Idleb and Aleppo are the two most populous governorates in N. Syria. During war, Idleb has received and is still receiving most of IDPs which represents a high risk and vulnerable group. IDPs don't reside all in camps, a great proportion intermingle with host community, making it difficult to study any specific patterns of utilization of vaccination activities. Idleb is fully accessible to all immunization activities so are some parts of Aleppo.

During the period 2014-2017, there has been 25 immunization rounds where tOPV, bOPV, IPV, AIRI and MR rounds were implemented. Out of these 25 rounds, Idleb has completed 14 bOPV; 3 tOPV; 2 IPV; 3 AIRI and one MR rounds. In addition, the comprehensive plan of re-establishment of routine immunization program in N. Syria has started mostly in Idleb with fixed (in health centers) as well as outreach activities (remote areas). Analysis of coverage data in Idleb was expected to reflect high coverage with all vaccine delivered during this good number of vaccination rounds and routine immunization activities. However, coverage data shows variable levels between high, moderate and poor for Penta, IPV & MCV vaccines (Penta1, 87.4%; Penta2, 71.4%; Penta3, 48.1% & booster 9.2%). For IPV, Idleb shows poor coverage in both IPV1&2 (51.9% & 9.2% respectively). Coverage with MCV in Idleb shows moderate coverage (MR1, 85%; MR2, 50.9%). Coverage of OPV among children 12-23 month shows better coverage (OPV1, 95.1%; OPV2, 92.2%; OPV3, 83%). However, in Aleppo - where some areas are accessible in north, west and south - the coverage with OPV is moderate to poor (OPV1, 75.7%; OPV2, 58.6%; OPV3, 37.1%), also MMR1/MMR2 coverage was poor in Aleppo (45.7%, 23.8% respectively) which explains measles outbreaks in this province. Overall, in Idleb and Aleppo, IDPs show better utilization of immunization services than host community (results could not be generalized).

Due versus overdue vaccine doses (dose validity)

One of the objectives of this survey is to study whether Syrian children in northern governorates have received their vaccine doses at proper age of vaccination for timely protection against vaccine preventable diseases/outbreaks. This thought is supported by the occurrence of many outbreaks e.g. cVDPV2 outbreak in Deir Ezor; measles and pertussis outbreaks where investigation reports always indicate that lack of vaccination is the most important risk factor.

An operational definition of valid dose (dose given at due time and age of children) was suggested to fit the purpose of this analysis where "a valid dose of a specific vaccine is the dose that is given at proper age of vaccination as per the national schedule of vaccination and be still valid until one day before the next dose of same vaccine is due. For measles, MMR/MR1 will be valid until one day before MMR/MR2 is due.

Table 30 and fig.4 show clearly that vaccines were seldom given to Syrian children in N. Syria at proper age of vaccination as per national immunization schedule, yet some doses are given at later ages for children U5. The percentage of doses given at appropriate age (due age) of vaccination ranges between 1.5% for Penta3 & 19.2% in OPV3.

This situation predisposed to outbreak occurrence of measles, VDPV2 and pertussis in Northern governorates. SIG and partners have been struggling to vaccinate the children and seize every opportunity to vaccinate these vulnerable children, however the risk of development of outbreaks and resurgence of polio, measles is still there.

Table (31) reflects the low coverages in almost all governorates and districts, indicating the need for the relentless efforts that should be placed at all administrative levels in N. Syria to boost immunity of Syrian children.

Table 30: % Valid doses versus crude coverage of routine vaccines among surveyed children 12-59 months, (N=3130)

Vaccine	Number of valid doses*	% valid doses	% crude coverage
BCG	1373	43.9%	57%
PENTA1	228	7.3%	75.8%
PENTA2	90	2.9%	59.3%
PENTA3	47	1.5%	42.2%
OPV3	600	19.2%	61.2%
IPV1	224	7.2%	53.3%
MMR1	232	7.4%	62.6%
MMR2	83	2.6%	32.7%

Figure 04: % vlaid doses VS crude coverge of selected essential vaccine doses. children 12-59 month of age. N. Syria 2017-2018

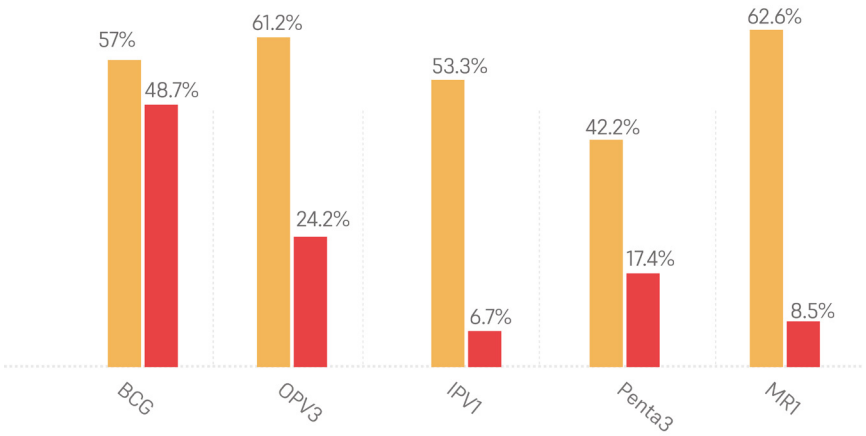
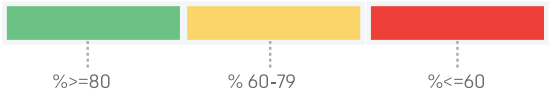


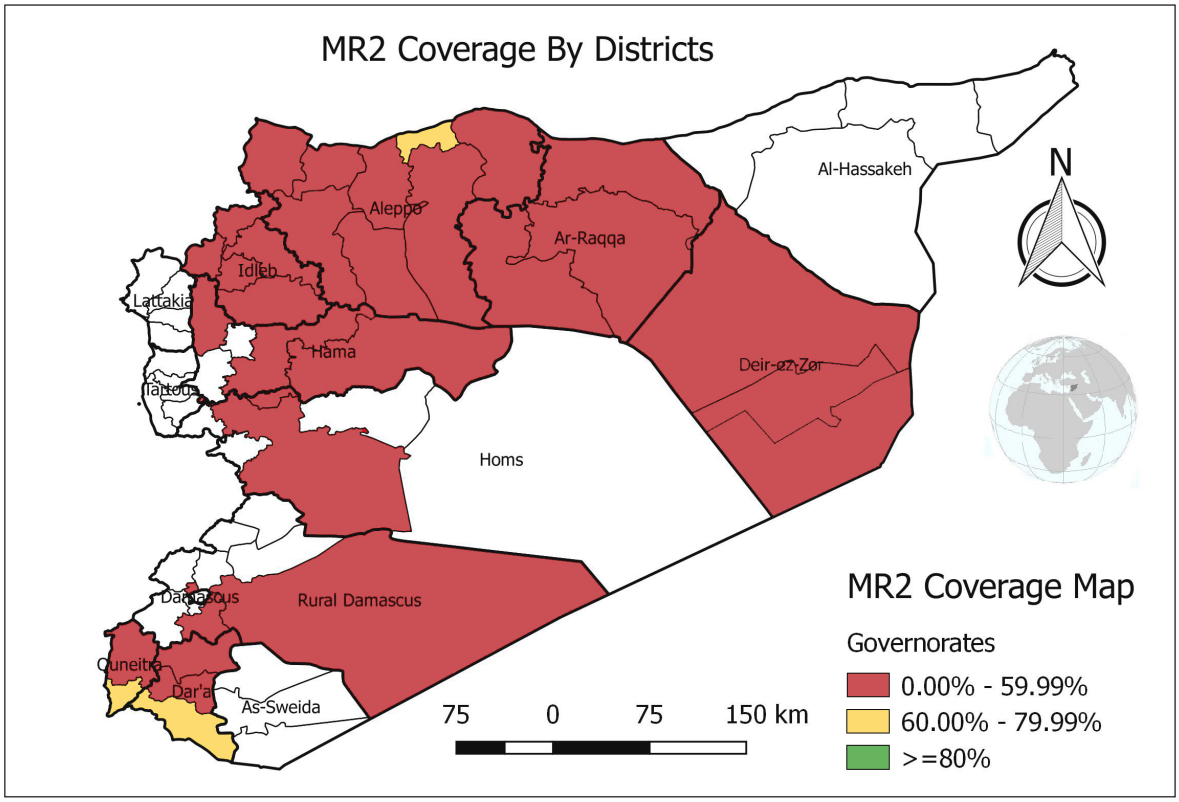
Table 31: Vaccine coverage at district level (BCG, IPV1, Penta3, OPV3, MR1) for children 12-59 month of age.

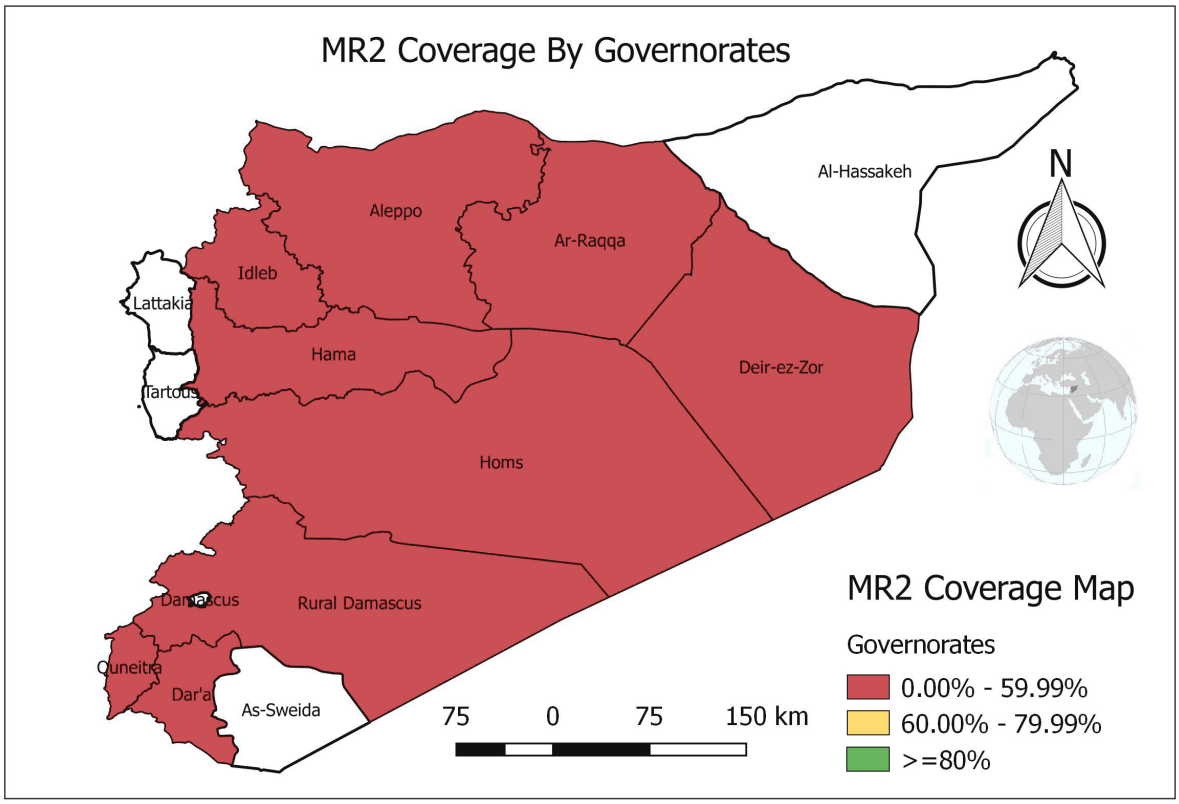
Governorate/District	BCG	IPV1	Penta3	OPV3	MR1
Idelb	48.81%	49.05%	51.67%	83.81%	80%
Ariha	78.57%	66.07%	58.93%	94.64%	87.50%
Gisr Alshoghor	71.43%	71.43%	61.90%	92.86%	83.33%
Harem	58.16%	43.88%	47.96%	83.67%	75.51%
Idleb city	57.14%	39.80%	57.14%	77.55%	77.55%
Mara'a Alnoman	14.29%	45.24%	43.65%	80.95%	80.95%
Al-Reqqa	54.11%	21.49%	14.32%	25.99%	51.7%
Al-Thawra (no data)	0%	0%	0%	0%	0%
Tel-Abyad	76.47%	18.95%	26.14%	35.95%	81.05%
Reqqa city	88.78%	53.06%	14.29%	43.88%	72.45%
Quneitra	98.21%	94.64%	68.64%	89.29%	73.21%
Faik	100%	100%	85.71%	100%	78.57%
Quneitra city	97.62%	92.86%	64.29%	85.71%	71.43%
Aleppo	34.29%	16.67%	23.57%	44.52%	47.86%
Azaz	62.50%	26.79%	35.71%	64.29%	66.07%
Al-bab	38.10%	3.57%	16.67%	40.48%	76.19%
Alsafira	7.14%	0.00%	0.00%	42.86%	35.71%
Gabal Samaan	10.00%	28.57%	32.86%	60.00%	57.14%
Jarablus	32.14%	0.00%	42.86%	75.00%	89.29%
Afrin	40.48%	40.48%	38.10%	69.05%	61.90%
Ain Al-arab	28.57%	57.14%	57.14%	35.71%	0.00%
Menbij	34.82%	6.25%	5.36%	12.50%	3.57%
Hama	46.10%	76.95%	68.18%	85.06%	68.18%
Al-sakilibia	75.51%	72.45%	57.14%	88.78%	86.73%
Al-salmia	53.57%	57.14%	50.00%	75.00%	71.43%
Hama city	24.68%	87.01%	81.82%	86.36%	55.19%
Homs	39.88%	85.42%	46.43%	86.61%	83.63%
Al-rastan	43.75%	78.13%	34.38%	82.59%	83.93%
Homs city	32.14%	100.00%	70.54%	94.64%	83.04%

Dar'a	99.20%	94.92%	79.41%	87.70%	75.94%
Azraa	97.30%	92.79%	88.29%	88.29%	87.39%
Al-sanamain	100.00%	87.50%	48.21%	69.64%	39.29%
Dar'a center	100.00%	98.07%	83.09%	92.27%	79.71%
Deir Ezor	51.43%	24.52%	14.29%	35.95%	22.14%
Bokamal	38.60%	17.54%	19.30%	19.30%	19.30%
Al-mayadeen	53.57%	29.76%	22.62%	42.86%	10.71%
Deir Ezor city	53.41%	24.37%	10.75%	37.28%	26.16%
Rural Damascus	74.94%	65.87%	44.87%	47.02%	76.13%
Doma	80.95%	55.36%	33.93%	27.98%	67.26%
Center of Rural Damascus	70.92%	72.91%	52.19%	59.76%	82.07%
Grand Total	57.03%	53.29%	42.17%	61.21%	62.62%

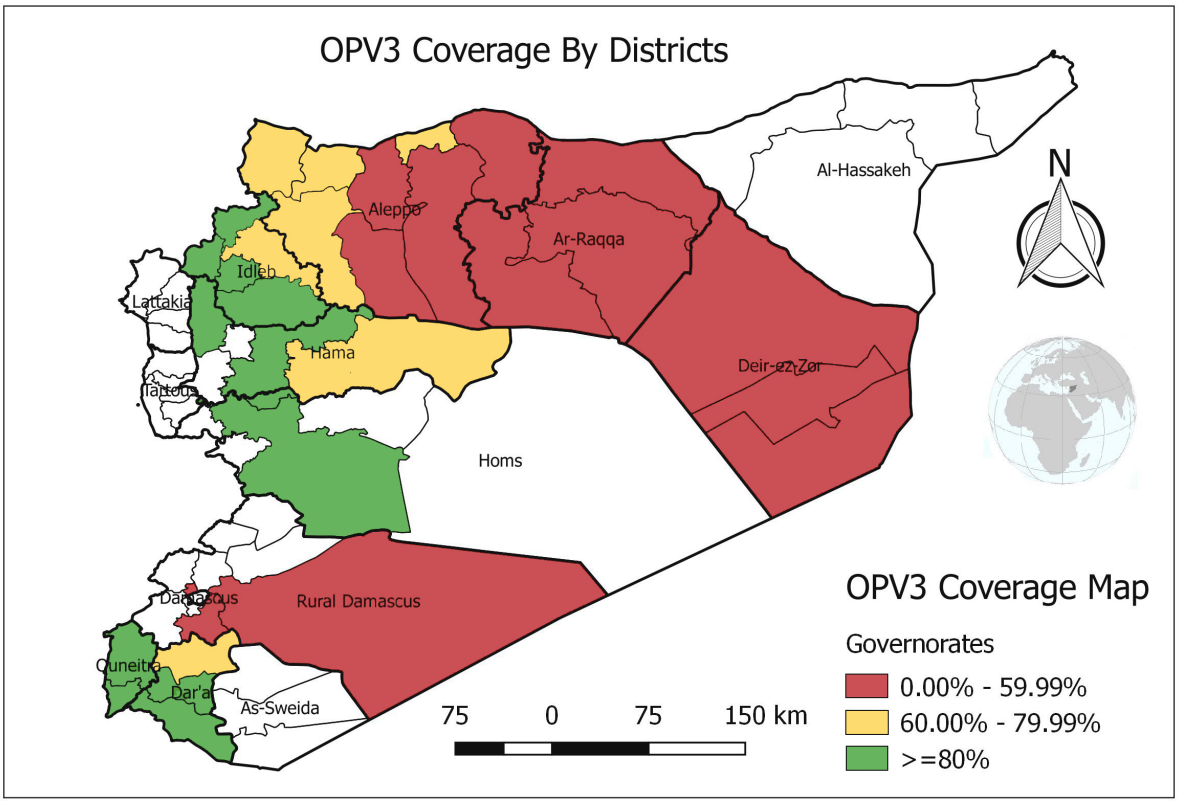


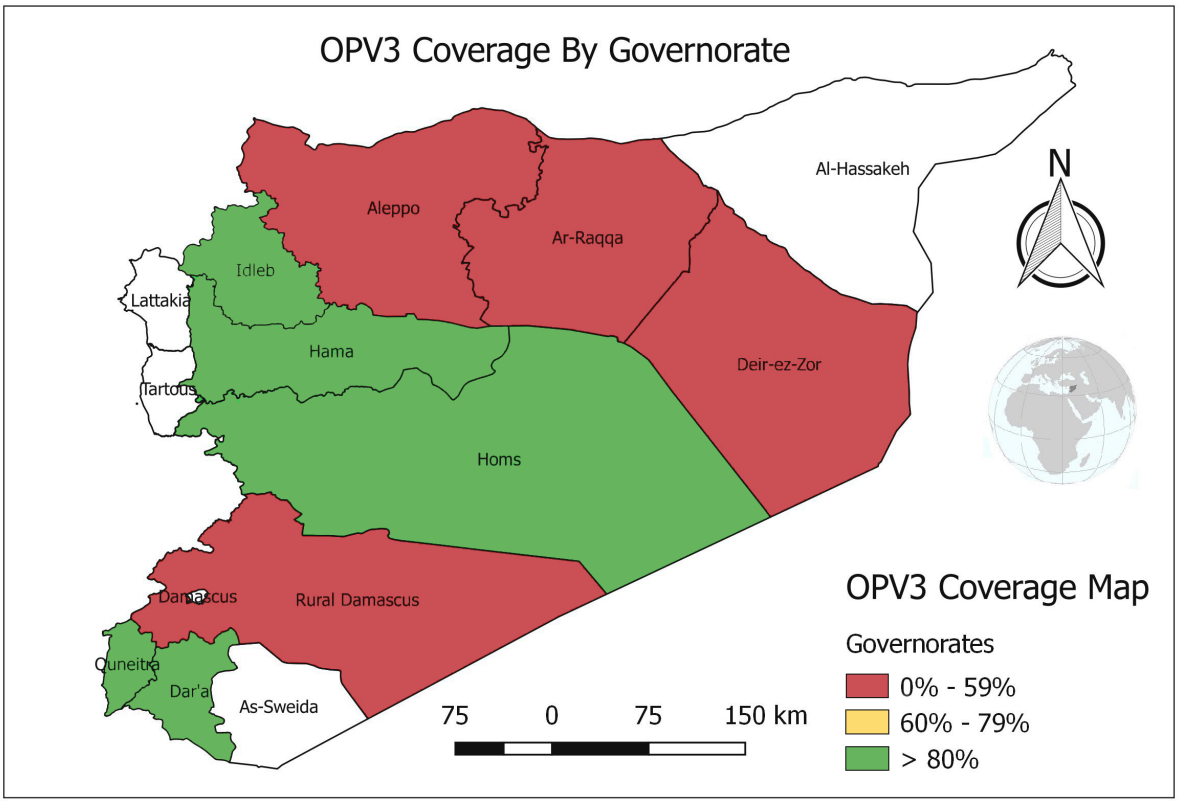
Map 04: MR2 Mapping of coverages by vaccine, governorate and district



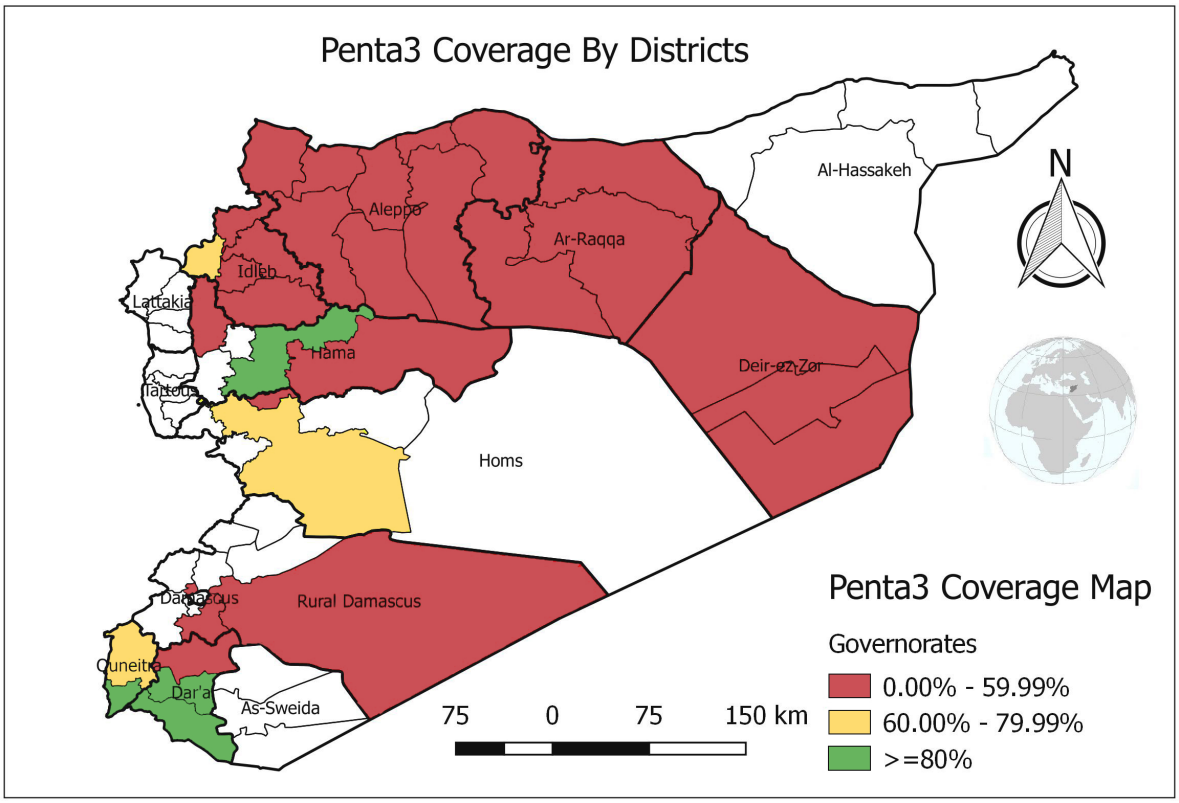


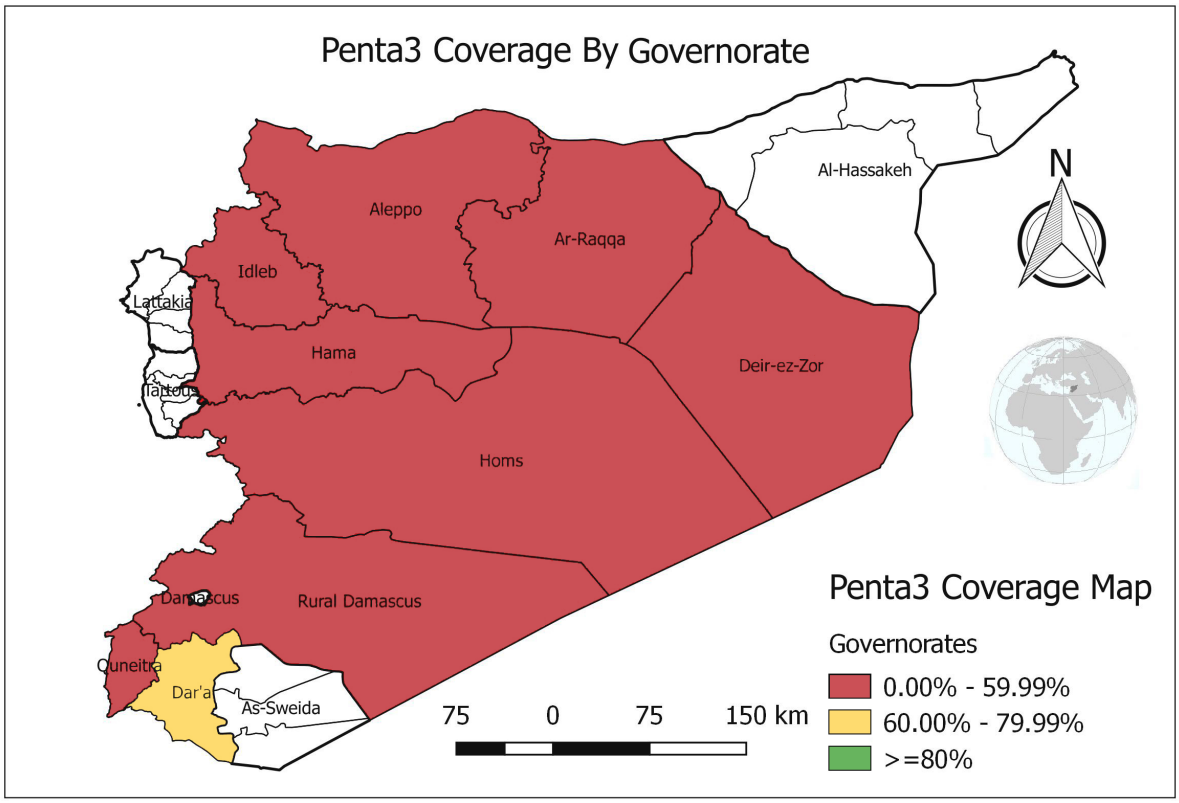
Map 05: OPV3 Mapping of coverages by vaccine, governorate and district



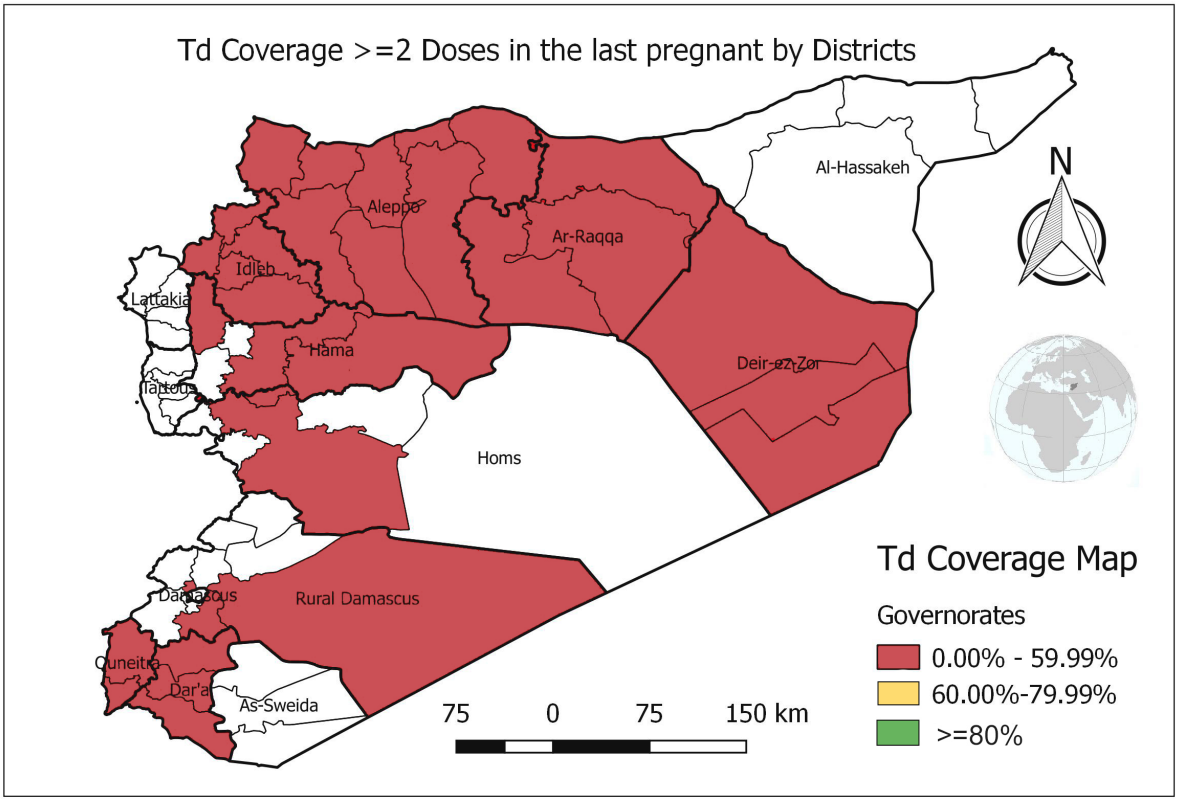


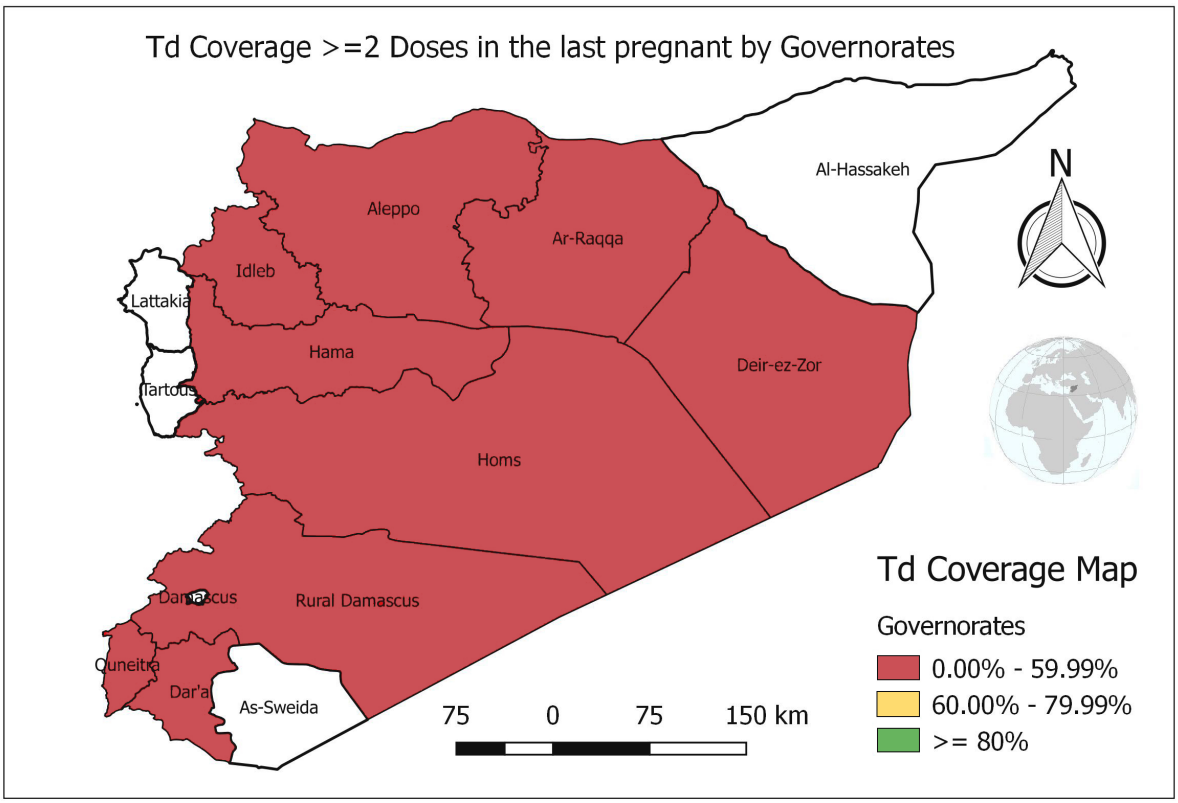
Map 06: Penta3 Mapping of coverages by vaccine, governorate and district.





Map 07: Td Mapping of doses in the last pregnant, governorate and district.





CONCLUSIONS

The overall conclusion is that vaccine coverage of children U5 in all northern Syrian governorates is mostly low with some exceptions (53.29% for IPV1; 42.17% for Penta3; 61.21% for OPV3; 62.62% for MR1). Adequate coverage in some governorates might mask low coverage in some districts. Children receive most of doses through SIAs (Fig.3) due to destruction of infrastructure of routine immunization program and inaccessibility due to security threats. very few children receive their doses at proper age of vaccination (coverage with valid doses ranges from 1.5% in Penta3 to 19.2% in OPV3).

This shows clearly that most of children get vaccinated later in their lives and remain susceptible for long time which might explain the outbreaks of VDPV in Deir Ezor and measles and pertussis in some districts of Aleppo, Rural Damascus and Deir Ezor governorates. SIG is thriving at increasing vaccine coverage in all accessible areas through SIAs and has developed the initiative of re-establishment of routine immunization program. Although SIG is triggering many SIAs, however the children who got the benefits are those in accessible areas which does not help the universal protection of all children in N. Syria. Besides, SIAs is sometimes challenged by vaccine availability, vaccine transport, adequate social mobilization and training plans as well as timely transfer of funds.

Governorates in middle and southern regions show better coverage may be due to more organized routine immunization provided governmental by EPI centers.

Most of women in child bearing age are not protected against tetanus so are their newborns. Many women missed the opportunity of vaccination during their visits to health centers for other medical reasons, it was difficult to probe into the problem of MOV. Children 12-59 month of age show that they receive vaccination from both governmental as well as SIG/NGO. Only BCG was given almost exclusively by Government, while other antigens are given predominantly through campaigns. The findings support the idea that more support should be directed to boost immunity of Syrian children in N. Syria. SIG led by WHO and UNICEF exerts huge efforts to increase both number and frequency of SIAs and further spread routine immunization services, however this report's findings give - for the first time in N. Syria - authenticated data to prove the dire need to place more efforts and funds to improve scope of vaccination and extend it further in other in-accessible areas to provide protection to Syrian children.

RECOMMENDATIONS

- SIG should develop a fund-raising unit to invite traditional and new partners and funding agencies to boost the ability of planning and implementation of more frequent campaigns and spread the umbrella of routine immunization program to new areas.
- SIG should seize every opportunity - when security tension is released - to conduct immunization activities (routine, SIAs, outreach) in all conflict- affected areas through innovative approaches to vaccinate children in inaccessible and hard to reach areas.
- It is recommended to start some advocacy meetings to raise more funds to support SIG plans.
- Continue to link surveillance findings of vaccine preventable diseases to campaign planning and implementation.
- Every effort should be made to coordinate with UNICEF & GAVI to make vaccine available in EPI centers. Unavailability of vaccines was the most common reason that families reported as a reason of unvaccination.
- Liaise with Turkish government to facilitate vaccine transport.
- Social mobilization and community participation activities should be enhanced to raise awareness about the immunization program and importance of vaccination.
- Continue the support of WHO, UNCEF and BMGF to immunization activities as the best investment of children's health.
- Building capacities including mid-level training as per WHO training material.
- Strengthening of coordination mechanisms among all partners for better delivery of immunization services.

ANNEX

Annex 01: History of campaign implementation – N. Syria. 2014 - 2017

#	Dates	Vaccine	Aleppo								Idleb	Hama	Alreqqa		Deir Ezzor	Alhasakah	Homs (Besieged)
			Western rural Aleppo	Southern rural Aleppo	Afrin	Azaz	Jarablus	Albab	Ain AlArab-Cobany	Manbej			Tell Biad	other			
1	Jan-14	bOPV	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	×
2	Jan/ Feb 2014	bOPV	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	×
3	Feb/ Mar 2014	bOPV	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	×
4	Mar/ April 2014	bOPV	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	×
5	May-14	bOPV	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	×
6	May/ Jun 2014	bOPV	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	×
7	Aug-14	bOPV	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×
8	Feb/Mar 2015	bOPV	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	×
9	Apr-15	tOPV	✓	✓	✓	✓	×	×	×	×	✓	✓	×	×	×	×	×
10	Jun-15	bOPV	✓	✓	✓	✓	×	×	×	×	✓	✓	×	×	×	×	×
11	Sep. 2015	tOPV	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	×
12	Oct.2015	bOPV	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	×	✓	✓	✓	✓
13	Apr-16	tOPV	✓	✓	✓	✓	×	×	×	×	✓	✓	×	×	×	×	×
14	Mar-16	MR	×	×	×	✓	✓	✓	×	✓	✓	×	×	✓	✓	×	×
15	May-16	bOPV MR Penta	✓	✓	✓	✓	×	✓	×	×	✓	✓	×	✓	✓	✓	✓
16	Aug-16	bOPV IPV Penta	✓	✓	✓	✓	✓	×	✓	×	✓	✓	✓	×	×	×	✓
17	Nov-16	bOPV MR Penta	✓	✓	✓	✓	✓	×	×	×	✓	✓	×	×	×	×	✓
18	Feb-17	bOPV	✓	✓	×	×	✓	×	×	×	✓	✓	×	×	×	×	✓
19	Apr-17	bOPV	✓	✓	×	×	✓	✓	×	×	✓	×	×	×	×	×	✓
20	Mar-17	bOPV MR Penta	✓	×	×	×	×	×	×	×	×	×	×	×	×	×	×
21	Jun-17	MR Penta PCV	✓	×	×	×	✓	✓	×	×	×	×	×	×	×	×	×
22	Oct. 2017	IPV	✓	✓	×	✓	✓	✓	×	×	✓	✓	×	×	×	×	×
23	Nov. 2017	bOPV	✓	✓	×	✓	✓	✓	×	×	✓	✓	×	×	×	×	✓
24	DEC. 2017	bOPV	✓	✓	×	✓	✓	✓	×	×	✓	✓	×	×	×	×	✓

Annex 02: Launched versus planned EPI centers, N. Syria. April 2018

Area	Working now	launched and stopped	To be launched in 2 weeks	Planned for 2018
Idleb	44	5	3	0
Hama	5	1	0	0
Aleppo	21	0	4	7
Homs	0	0	2	3
Total	70	6	9	10
Grand total	85			10

Annex 03: sampling frame and cluster selection. Vaccine coverage survey. N. Syria. 2017-2018

Gov	Dis	Sub- Dis	Code	Pop	Cumulative pop	Sample interval	Random number	Cluster	No.Team members	No.day	Supervisor	No.day	Dist coord	Gov.Coord
Al-Hasakeh	Al-Hasakeh	Markada	SY080003	65,156	65,156			1, 2	2	3	1	2	4	1
		Shadadah	SY080002	94,514	159,670			3, 4, 5	2	3	1	2		
		Al-Hasakeh	SY080000	214,010	373,680			7, 8, 9,10, 1	6	4	2	2		
	Al Malika	Tal Tamer	SY080001	50,755	424,435			12, 13	2	3	1	2		
		Jawadiyah	SY080301	29,430	453,865			14,	2	2	1	1		
		Al-Malikeyyeh	SY080300	79,470	533,335			15, 16,	2	3	1	2		
	Quamishli	Amuda	SY080202	45,260	578,595			17, 18	2	3	3	2		
		Qahtaniyyeh	SY080203	26,290	604,885			19,	2	2	1	1		
		Quamishli	SY080200	251,490	856,375			20, 21, 22, 23, 24, 25, 26	6	4	4	2		
	Ras Al Ain	Darbasiyah	SY080401	40,120	896,495			27, 28	2	3	1	2		
		Ras Al Ain	SY080400	69,520	966,015			29, 30	2	3	1	2		
				966,015		**32,201**	**22,420**	**0**	**30**	**33**	**17**	**20**	**3,600**	**1,000**
Deir-ez-Zor	Abu Kamal	Abu Kamal	SY090200	71,414	71,414			1	2	2	1	1	3	1
		Hajin	SY090201	96,523	167,937			2, 3	2	3	1	2		
		Jalaa-	SY090202	112,161	280,098			4, 5	2	3	1	2		
		Susat	SY090203	139,853	419,951			6, 7,	2	3	1	2		
	Al Mayadin	Al Mayadin	SY090300	99,400	519,351			8, 9	2	3	1	2		
		Ashara	SY090302	245,322	764,673			,0,11, 12, 1	2	6	2	2		
		Thiban-	SY090301	120,288	884,961			14, 15	2	3	1	2		
	Deir-ez-Zor	Basira	SY090102	200,795	1,085,756			16, 17, 18	2	3	1	2		
		Deir-ez-Zor	SY090100	100,359	1,186,115			19, 20	2	3	1	2		
		Khasham	SY090105	87,549	1,273,664			21,	2	2	1	1		
		Kisreh	SY090101	221,403	1,495,067			2, 23, 24, 2	2	6	2	2		
		Muhasan	SY090103	85,043	1,580,110			26, 27	2	3	1	2		
		Sur	SY090106	45,521	1,625,631			0	0	0	0	0		
		Tabni	SY090104	171,500	1,797,131			28, 29, 30	2	4	1	2		
				1,797,131		**59,904**	**19,111**	**0**	**26**	**44**	**15**	**24**	**1,350**	**1,000**
Raqqa	Ar-Raqqa	Ar-Raqqa	SY110100	712,306	712,306			1, 2, 3, 4, 5, 6,7, 8, 9,10,11,12 , 13,	6	4	2	2	3	1
		Karama	SY110102	120,750	833,056			14, 15, 16	2	3	1	2		
		Maadan	SY110103	88,774	921,830			17,	2	2	1	1		
		Sabka	SY110101	161,777	1,083,607			8, 19,20, 2	2	6	2	3		
	Ath-Thawrah	Al-Thawrah	SY110300	74,130	1,157,737			22,	2	2	1	1		
		Jurneyyeh	SY110302	88,774	1,246,511			23, 24,	2	3	1	2		
		Mansura	SY110301	119,014	1,365,525			25, 26	2	3	1	2		
	Tell Abiad	Tell Abiad	SY110200	95,263	1,460,788			27, 28	2	3	1	2		
		Ein Issa	SY110202	24,535	1,485,323			0	0	0	0	0		
		Suluk	SY110201	63,595	1,548,918			29, 30	2	3	1	2		
				1,548,918		**51,631**	**46,329**	**30**	**22**	**29**	**11**	**17**	**1,800**	**1,000**
Aleppo	Afrin	Afrin	SY020300	116,200	116,200			1,	2	2	1	1	8	2
		Bulbul	SY020301	16,745	132,945			2,	2	2	1	1		
		Jandairis	SY020302	43,700	176,645			0	0	0	0	0		
		Ma'btali	SY020306	26,292	202,937			3,	2	2	1	1		
		Raju	SY020303	23,670	226,607			0	0	0	0	0		
		Sharan	SY020304	18,270	244,877			0	0	0	0	0		
		Sheikh El-Hadid	SY020305	8,110	252,987			0	0	0	0	0		
	Al Bab	Al Bab	SY020200	266,350	519,337			4, 5, 6, 7,	2	6	2	3		
		Ar-Ra'ee	SY020203	7,133	526,470			0	0	0	0	0		
		A'rima	SY020206	45,136	571,606			0	0	0	0	0		
		Dayr Hafir	SY020202	46,697	618,303			8,	2	2	1	1		
		Tadaf	SY020201	48,748	667,051			9	2	2	1	1		
		sm Haram El-Ima	SY020205	7,245										
	As-Safira	As-Safira	SY020700	8,218	675,269			0	0	0	0	0		
		Banan	SY020702	32,746	708,015			0	0	0	0	0		
		Hajeb	SY020703	21,021	729,036			10	2	2	1	1		
	A'zaz	Aghtrin	SY020401	94,248	823,284			11,	2	2	1	1		
		A'zaz	SY020400	140,329	963,613			12, 13	2	3	1	2		
		Mare'	SY020403	9,261	972,874			0	0	0	0	0		
		Nabul	SY020404	9,954	982,828			0	0	0	0	0		
		Suran Aleppo	SY020405	33,712	1,016,540			0	0	0	0	0		
		Tall Refaat	SY020402	987	1,017,527			0	0	0	0	0		
	Jarablus	Ghandorah	SY020801	28,805	1,046,332			14,	2	2	1	1		
		Jarablus	SY020800	68,334	1,114,666			15	2	2	1	1		
	Jebel Saman	Atareb	SY020001	130,228	1,244,894			16	2	2	1	1		
		Daret Azza	SY020004	87,843	1,332,737			17	2	2	1	1		
		Haritan	SY020003	5,453	1,338,190			18	2	2	1	1		
		Jebel Saman	SY020000	5,005	1,343,195			0	0	0	0	0		
		Tall Ed-daman	SY020002	124,782	1,467,977			19,	2	2	1	1		
		Zarbah	SY020005	36,757	1,504,734			20	2	2	1	1		
	Menbij	Menbij	SY020500	352,590	1,857,324			21, 22, 23, 24	2	6	2	3		
		Abu Qalqal	SY020501	63,350	1,920,674			25	2	2	1	1		
		Al-Khafsa	SY020502	121,338	2,042,012			26	2	2	1	1		
		Maskana	SY020503	126,308	2,168,320			27, 28	2	3	1	2		
	Ain Al Arab	Ain al Arab	SY020600	65,562	2,233,882			29	2	2	1	1		
		Sarin	SY020602	31,115	2,264,997			30	2	2	1	1		
		Lower Shyookh	SY020601	15,981	2,280,978			0	0	0	0	0		
				2,280,978		**76,033**	**41,329**	**30**	**44**	**54**	**24**	**28**	**4,800**	**2,000**
Idleb & Lattakia	Al Ma'ra	Heish	SY070205	57,176	57,176			1	2	2	1	1	6	2
		Kafr Nobol	SY070203	106,323	163,499			2, 3	2	3	1	1		
		Khan Shaykun	SY070201	39,249	202,748			4	2	2	1	2		
		la'arrat An Nu'ma	SY070200	220,080	422,828			5, 6, 7	2	4	1	2		
		Sanjar	SY070202	72,023	494,851			8,	2	2	1	1		
		Tamanaah	SY070204	42,322	537,173			9,	2	2	1	1		
	Ariha	Ariha	SY070500	96,439	633,612			10,	2	2	1	1		
		Ehsem	SY070501	133,070	766,682			11, 12, 13	2	5	1	1		
		Mhambal	SY070502	41,839	808,521			0	0	0	0	0		
	Harim	Armanaz	SY070305	41,083	849,604			14	2	2	1	1		
		Dana	SY070301	221,942	1,071,546			15, 16, 17	2	3	1	1		
		Harim	SY070300	32,921	1,104,467			18	2	2	1	1		
		Kafr Takharim	SY070303	12,089	1,116,556			0	0	0	0	0		
		Qourqeena	SY070304	53,641	1,170,197			19	2	2	1	1		
		Salqin	SY070302	56,315	1,226,512			20	2	2	1	1		
	Idleb	Abul Thohur	SY070001	54,068	1,280,580			21	2	2	1	1		
		Bennsh	SY070002	26,026	1,306,606			0	0	0	0	0		
		Idleb	SY070000	104,944	1,411,550			22, 23	2	3	1	2		
		Maaret Tamsrin	SY070005	73,752	1,485,302			24	2	2	1	1		
		Saraqab	SY070003	143,717	1,629,019			25, 26	2	3	1	2		
		Sarmin	SY070006	12,845	1,641,864			27	2	2	1	1		
		Teftnaz	SY070004	43,085	1,684,949			0	0	0	0	0		
	Jisr-Ash- Shugur	Badama	SY070401	50,470	1,735,419			28	2	2	1	1		
		Darkosh	SY070402	45,038	1,780,457			29	2	2	1	1		
		Janudiyeh	SY070403	37,051	1,817,508			30	2	2	1	1		
		Jisr-Ash- Shugur	SY070400	45,787	1,863,295			0	0	0	0	0		
	Al-Haffa	Kansaba	SY060303	469	1,863,764			0	0	0	0	0		

				1,863,764		**62125**	**15,730**	**30**	**42**	**51**	**21**	**25**	**3600**	**2000**
Homs	**Homs**	Homs	SY040100	12,705	12,705			1, 2	2	3	1	2	3	1
		Taldu	SY040101	62,825	75,530			3,4, 5, 6, 7, 8, 9, 10	8	5	4	2		
	Ar-Rastan	Ar-Rastan	SY040400	56,777	132,307			11, 12, 13, 14, 15, 16,	6	5	3	2		
		Talbiseh	SY040401	74,956	207,263			17, 18, 19, 20,21, 22, 23, 24, 25, 26	8	5	5	2		
	Tadmor	Sokhneh	SY040501	39,550	246,813			27,28,29,30	4	3	2	2		
				246,813		**8227**	**1329**		**28**	**21**	**15**	**10**	**1800**	**1000**
Hama	**As-Salamiyeh**	As- Salamiyeh	SY050300	3,416	3,416			1	2	2	1	1	3	1
		As-Saan	SY050302	13,083	16,499			2, 3,	2	3	1	2		
		Sabourа	SY050303	266	16,765			4	2	2	1	1		
		Oqeirbat	SY050304	44,730	61,495			5, 6, 7, 8, 9, 10, 11, 12	8	5	4	2		
	As- Suqaylabiyah	Madiq Castle	SY050204	27,706	89,201			13, 14, 15, 16, 17, 18	6	5	3	2		
		Ziyara	SY050202	2,926	92,127			19	2	2	1	1		
	Hama	Hamra	SY050103	47,334	139,461			20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30	10	3	5	2		
		Suran	SY050101	350	139,811			0	0	0	0	0		
	Muhradah	Kafr Zeita	SY050501	1,505	141,316			0	0	0	0	0		
				141,316		**4,711**	**2,420**		**32**	**22**	**16**	**11**	**1,800**	**1,000**
Damascus & Rural Damascus	**Damascus**	Damascus	SY010000	105,000	105,000			1,2, 3,4, 5	2	6	2	3	5	2
	Az Zabdani	Ein Elfijeh	SY030702	65,000	170,000			6, 7,8	2	3	1	1		
	Duma	Duma	SY030200	32,850	202,850			9,	2	2	1	1		
		Harasta	SY030201	42,525	245,375			10,11,	2	3	1	2		
	Qatana	Quatana	SY030800	45,000	290,375			12,13	2	3	1	2		
	Rural Damascus	Arbin	SY030106	32,850	323,225			14, 15	2	3	1	2		
		Kafr Batna	SY030105	282,700	605,925			16, 17,18, 19,20,21, 22, 23,24, 25, 26, 27, 28, 29,	10	3	4	3		
		Kisweh	SY030101	40,000	645,925			30	2	2	1	1		
				645,925		**21,531**	**14,777**	**30**	**14**	**8**	**6**	**6**	**3,000**	**2,000**
Dar'a & Quneitra	**As Sanamayn**	As Sanamayn	SY120200	114,542	114,542			1, 2, 3, 4	2	6	2	2	4	2
	Dar'a	Ash- Shajara	SY120003	34,800	149,342			5	2	2	1	1		
		Busra Esh-Sham	SY120001	37,430	186,772			6	2	2	1	1		
		Da'el	SY120004	52,000	238,772			7,8	2	3	1	2		
		Dar'a	SY120000	174,400	413,172			9,10,11,12 , 13, 14	6	5	3	2		
		Jizeh	SY120006	32,160	445,332			15	2	2	1	1		
		Kherbet Ghazala	SY120002	26,700	472,032			16	2	2	1	1		
		Mzeireb	SY120005	109,600	581,632			17,18,19,20	2	6	2	3		
	Izra'	Hrak	SY120302	46,500	628,132			21,	2	2	1	1		
		Izra'	SY120300	56,370	684,502			22,23	2	3	1	2		
		Jasim	SY120301	58,000	742,502			24, 25	2	3	1	2		
		Nawa	SY120303	57,600	800,102			26,27	2	3	1	2		
		Tassil	SY120305	28,500	828,602			28	2	2	1	1		
	Quneitra	Al- Khashniyyeh	SY140002	20,223	848,825			29	2	2	1	1		
		Khan Arnaba	SY140001	20,107	868,932			30	2	2	1	1		
		Quneitra	SY140000	7,800	876,732			0						
				876,732		**29,224**	**20,171**	**59**	**4**	**4**	**2**	**2**	**2,400**	**2,000**

Annex 04,a: Vaccine coverage survey - Data collection form – children 12-23 month of age.

1) Date		2) Birth range	
3) Governorate		4) District	
5) sub-district		6) Cluster #	
7) Health care facility			

8) Child name		9) Date of birth		
10) Child order(1-15)		11)Sex	M [ ]	F [ ]
12) Card # (when present)				

13) Vaccine	14) Card-date	15) Verbal	16) Month	17) Not immunized	18) Source		19) Confirmation (if verbal)
					SIG / NGO	Damascus	
EPI							
BCG							
Hep B							
Penta 1							
Penta 2							
Penta 3							
Penta booster							
OPV 1							
OPV 2							
OPV 3							
OPV 4							
IPV 1							
IPV 2							
MMR/MR 1							
MMR/MR 2							
Campaigns							
OPV 1							
OPV 2							
OPV 3							
OPV 4							
OPV 5							
OPV 6							
OPV 7							
MMR/MR 1							
MMR/MR 2							
AIRI							
OPV 1							
OPV 2							
OPV 3							
IPV							
MMR/MR 1							
MMR/MR 2							
Penta 1							
Penta 2							
Penta 3							
other (PCV)							

20) Immunization status	Nil		Partial		Full	

21) Reasons for un-vaccination										
a- lack of knowledge:										
Unaware of need for immunization		Unaware of schedule of immunization		Place/ time unknown		Fear of side effect		Immune ill child		Rumors	
b-Obstacles:											
Time inconvenient		Vaccinator absent		Vaccine not available		Long waiting time		Place too far		Family problems	
c-Others:											

P.S.: verbal (as a source of data) should be reviewed in the due health office

Annex 04.b: Vaccine coverage survey - Data collection form – children 24-59 month of age

1) Date		2) Birth range	
3) Governorate		4) District	
5) sub-district		6) Cluster #	
7) Health care facility			

8) Child name		9) Date of birth		
10) Child order(1-15)		11)Sex	M [ ]	F [ ]
12) Card # (when present)				

13) Vaccine	14) Card-date	15) Verbal	16) Month	17) Not immunized	18) Source		19) Confirmation (if verbal)
					SIG / NGO	Damascus	
EPI							
BCG							
Hep B							
Penta 1							
Penta 2							
Penta 3							
Penta booster							
OPV 1							
OPV 2							
OPV 3							
OPV 4							
IPV 1							
IPV 2							
MMR/MR 1							
MMR/MR 2							
Campaigns							
OPV 1							
OPV 2							
OPV 3							
OPV 4							
OPV 5							
OPV 6							
OPV 7							
MMR/MR 1							
MMR/MR 2							
AIRI							
OPV 1							
OPV 2							
OPV 3							
IPV							
MMR/MR 1							
MMR/MR 2							
Penta 1							
Penta 2							
Penta 3							
other (PCV)							

20) Immunization status	Nil		Partial		Full	

21) Reasons for un-vaccination										
a- lack of knowledge:										
Unaware of need for immunization		Unaware of schedule of immunization		Place/ time unknown		Fear of side effect		Immune ill child		Rumors	
b-Obstacles:											
Time inconvenient		Vaccinator absent		Vaccine not available		Long waiting time		Place too far		Family problems	
c-Others:											

P.S.: verbal (as a source of data) should be reviewed in the due health office

Annex 04.c: Vaccine Coverage Survey - Data collection form – children 0-11 month of age

1-Date		2-Birth range	
3-Governorate		4- District	
5-Sub-District		6- Cluster #	
7-Health Care Facility			

8-Child name:	
9- Date of child birth:	
10- Mother name:	
11-Total number of lifetime pregnancies	
12-Card # (when present)	
13-History of TT in last pregnancy	Number of TT doses of last pregnancy: 1d[ ] 2d [ ]
	Number of TT prior to the last pregnancy:
14-Card	Available: Y [ ] N [ ]
	Ever received in the last pregnancies Y [ ] N [ ]
	If yes; Copy the date of last TT:
15-Where was the last TT received	
16-Number of antenatal care visits in the last pregnancy	
17-Number of visits to health facility in the lat pregnancy	
18-Baby delivery	Home [ ] Health care [ ]
	By whom: health staff: [ ] Midwife [ ] Other [ ]

19-Reasons for un-vaccination
19-Talley of household visited:
20-Name of Interviewer: Signature:

Annex 05: National vaccination schedule. Syria

Visit	Age of child	Type of vaccine
1	At birth	(BCG)+ (Hep B 0)
2	Start of 3rd month	(IPV1 + OPV1 + Penta1)
3	Start of 5th month	(IPV2 + OPV2 + 2Penta)
4	Start of 7th month	(Penta3 + OPV3)
5	Start of 13th month	(MMR1 +1VIT A)
6	Start of 19th month	Penta Booster + MMR2+OPV4+ 2A VIT
Vaccination at school		
1	6 years of age	Meningococcal vaccine AC + Td + OPV5
1	11 years of age	Td

- Penta vaccine contains diphtheria & tetanus toxoids & pertusis & haemophilus influenza type b & Hepatitis B.
- MMR vaccine contains measles & mumps and german measles vaccines.

Annex 06: Training plan & timetable for supervisors and interviewers.

Date/time	Topics	Speaker/trainer	Remarks
14 March 08:30 – 09:00	Registration		
09:00 – 09:30	Introduction	- Dr. Mohamed Jasem - Dr. Muhanned	
09:30 – 10:00	Rationale and objectives of vaccine coverage	- Dr. Ammar	+ Dr. Nasr
10:00 – 11:00	Role of core team; central/governorate/district coordinators	Dr. Mohammed Salem	+ Dr. Nasr
11:00 – 12:00	Role of supervisors and data collectors	Dr. Anas	+ Dr. Nasr
12:00 -13:00	Break and prayers		
13:00 – 15:00	Cluster selection and identification (Using Maps)	Dr. Nasr	+ vaccination team
15:00 – 15:30	Identification of first house and first household	Dr. Nasr	+ vaccination team
15 March 8:30 – 11:00	Data collection forms	Dr. Nasr	+ vaccination team
11:00 – 12:00	Supervisors' forms	Dr. Nasr	+ vaccination team
12:00 – 13:00	Break and prayers		
13:00 – 14:30	Exercises	Dr. Nasr	+ vaccination team
14:40 – 16:00	Discussions/questions	Team	

Training (interviewers and supervisors):

1. **Training methodology:**
    - Interactive presentations,
    - Exercises (cluster selection)
    - Role play
    - Group discussions.
2. **Trainers:**
    - Dr. Ammar
    - Dr. Mohamed Salem
    - Dr. Anas
    - Dr. Mohammad Al-saad
    - Others
    - Assisted by Dr. Nasr Eltantawy (BMGF)
3. **Training material:**
    - Data collection forms
    - Explanatory sheet for each item on Data Collection Forms
    - Fillip charts and markers

Annex 06: Advocacy plan.

During planning, it was obvious that we need to prepare the community to accept receiving field investigators and give information voluntarily. It was also conceivable that local authorities should be sensitized and approve this field work. Families gave verbal consent and did not refuse collecting data about previous history of vaccination.

In every governorate the local team was advised to map out important local authorities to meet with and get approval before field implementation (local councils; official forums; courts; police stations; local NGOs; managers of health care facilities; religious and notable persons). It was estimated that 5 advocacy meeting are planned to explain the objectives of the survey and requesting their approvals and facilitation of survey activities.

Code of ethics was emphasized and commitment to abide by general rules of confidence of data collected as per WHO guidelines on research ethics. A table of activities was circulated to each coordinator for implementation and feedback.

VACCINE COVERAGE CLUSTER SURVEY

2018 / 2017

N. SYRIA

REPORT OF VACCINE COVERAGE CLUSTER SURVEY
N. Syria
2017 / 2018
PREPARED BY: Early Warning Alert and Response Network

ASSISTANCE COORDINATION UNIT

ASSISTANCE COORDINATION UNIT

EWARN EARLY WARNING ALERT AND RESPONSE NETWORK

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Vaccine Coverag Survey

North Syria

2017/2018

24 Aug

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ASSISTANCE COORDINATION UNIT

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