

**End of Outbreak Assessment**  
**(Assessment six months after the last detection of WPV)**  
**Iraq**  
**January 2014**

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**Introduction:**

The humanitarian consequences of violence in Iraq have been catastrophic leaving some 5.2 million people in urgent need of humanitarian assistance. As of December 2014, more than 2.2 million Iraqis are internally displaced (half of them children), 1.5 million host community members are vulnerable, and 1.7 million people in need of humanitarian assistance remain inaccessible in areas under the control of armed groups. Ongoing conflict and violence, including targeting of minorities, continue to trigger new and secondary displacements. IDP movements remain highly fluid, with the vast majority dispersed across thousands of locations across the country. In addition to IDPs, Iraq continues to host over 210,000 Syrian refugees, primarily in the north of the country, out of which 64 per cent are women and children with specific protection needs<sup>1</sup>.

Almost all social services have been affected by the crisis. Immunization services were among the mostly affected services. The coverage rate of OPV3 remain less than 80% nationally and less than 50% in 11% of districts. The EPI statistics showed that 257300 children were not vaccinated by OPV3 in 2014. On 11 March 2014 Iraq confirmed the first polio case since 2000 in a 6-months old, unvaccinated child who had onset of paralysis on 10 February 2014. Genetic sequencing indicates the virus is most closely related to virus detected in December 2013 in Hasakeh, Syrian Arab Republic. The second confirmed polio case was reported from the same governorate in April 2014. This case was the last WPV1 (a 34-months old, unvaccinated child) in 2014. Genetic sequencing indicates the virus is most closely related to virus detected in February 2014 in Baghdad-Resafa governorate.

Both cases are from slums surrounding Baghdad on its eastern side where hundreds of thousands migrants; mainly young adults living in extended families in previous army barracks or any empty space including Baghdad garbage dumping area. Most of these migrants are mobile manual workers. Like 1999 outbreak the reservoir of WPV seems to be the slums surrounding Baghdad which has no or negligible access to immunization and other health services. Following confirmation of the first polio case; Iraq conducted 3 NIDs (March; April and May) and 3 Mop Ups in districts where polio cases were reported or travelled to. These SIAs were completed before the current deterioration in security. Another 3 SNIDs were conducted in June; August and November. November Mop Up was restricted to 124 slum areas in Baghdad where reach or quality of all previous SIAs were of doubtful quality according to IM or MoH supervisors reports. 2 NIDs rounds were conducted in September and October. Access to children in all Iraq districts continued to improve over time. The proportion of inaccessible districts shrunk between August September and October SIAs from 6% in August; to 2% in September. In October only 1% of districts were not accessible.

Visible improvement in the weekly reported AFP cases is noted in the 4<sup>th</sup> quarter of 2014. This was a direct result of intensification of communication with all DoHs and advocacy meetings/training in September and October; Ninawa attained the annualized non-polio AFP rate of 2/100,000 <15 year population and Anbar NPAFP rate went from 0.7 to 1.6. It seems that the current intensification of AFP advocacy meetings and weekly feed backs in addition to WHO mobilization of funds for AFP surveillance is having some positive effect on AFP surveillance.

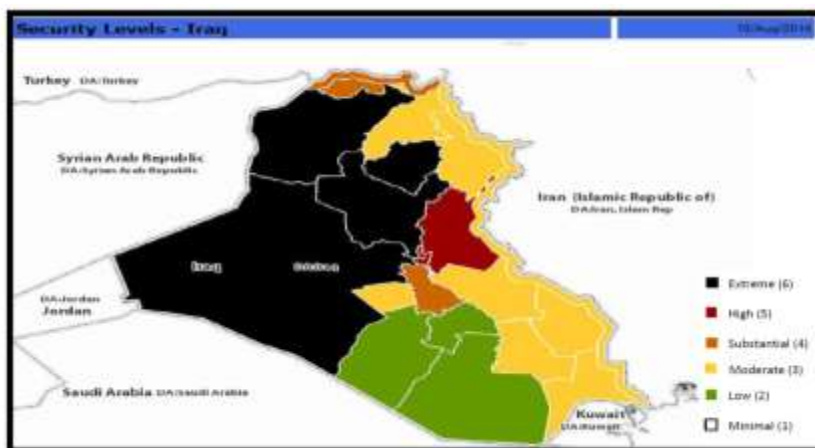
In 2014, Iraq participated twice in the Middle East polio outbreak response review meetings held in April and September. In both meetings Iraq presented the efforts made by MOH and partners to curb the 2014 polio outbreak. After each review appropriate recommendations have been developed by national team and its international partners. However, these reviews lacked field review by external experts as per the WHA59.1 resolution. WHO in collaboration with UNICEF and EMPHNET formed a team composed of five experts to conduct field visit to Iraq to review the response to the recent polio outbreak. The team conducted the review during the period 10/1/2015 through 18/1/2015. This report described the findings of Iraq response and recommendations to address the remaining issues.

## Objectives

- Determine as accurately as possible whether or not polio transmission has been stopped
- Determine the level of support the country requires in order to achieve or maintain levels of surveillance sensitivity and population immunity sufficient enough to reliably maintain a polio-free status
- Provide recommendations for strengthening AFP surveillance and to ensure that a comprehensive and adequate outbreak preparedness plan is in place.

## Methodology

- Interviews with key informants i.e. Government officials at national level, Kurdistan Region, sub-national levels, and Partners (UNICEF & WHO)
- Field visits that covered: surveillance, routine immunization and lab activities, and reviewed SIAs retroactively
- Review of key documents and programme data



Map 1. Iraq security level by Governorate



Table 2 Reviewers names and governorates covered

International reviewer	Facilitator	Governorate reviewed
Dr Shoubo Jalal (UNICEF)	Dr Bakhtear and Dr. Saleh	Dahuk
Dr Arshad Quddus (WHO)	Dr Feras	Erbil and desk review for Karkuk
Dr Ali Bin Break (EMPHNET)	Dr Craig	Sullaimanyah
Dr Hala Safwat (WHO)	Dr Omer Mekki and Ms Wasan Altamimi	Baghdad-Rasafa and Baghdad-Kurkh, National poliovirus laboratory, Medical City and Central level.
Dr Salah Haithami (WHO)		
Independent national reviewer from universities	Governorate reviewed	
Dr.Salwa Sh.Abdul-Wahid	Diyala	
Dr Riadh Kareem Aboud	Karbela	
Dr Baqir Kareem Abed	Al-Muthana	
Dr Fares Al Lamy	Najaf	
Dr Alaa Husein	Elbasarah	
Dr Ali Sadoun	Thi Qar	

### Subject areas of assessment

- Speed and appropriateness of immediate outbreak response activities as per WHA Resolution, 2006 (WHA59.1)
- Effectiveness of partner coordination during outbreak response
- Implementation of previous technical support missions recommendations
- Quality of SIAs – planning, delivery, monitoring and communications – this assessment should include adequacy of vaccine supply and appropriateness of the type of vaccine used
- AFP surveillance sensitivity
- Routine Immunization performance
- Adequacy of human resources to carry out effective response activities

## Findings:

### Speed and appropriateness of immediate outbreak response

Table 3 Speed and appropriateness of immediate outbreak response activities as per WHA Resolution, 2006 (WHA59.1)

Outbreak response process indicators	Status
• Activation of outbreak response within 72 hrs. of notification	Done
• At least <b>three large scale OPV SIAs</b>	Done
• SIA coverage at least 95% as evaluated by PCM data	By Admin. Coverage the country reached more than 95% however PCM showed ~ 92% by recall
• Initial response SIA conducted within 4 wks. of notification	Done
• At least 2 SIAs since date of onset of last WPV	Done
• Rapid analysis of AFP and lab data conducted	Done By national team and supported by WHO
• <b>Response plan</b> prepared within two weeks of outbreak notification	Done (Mar-Oct)
• Response plan was followed during outbreak response	Done (Details in subsequent slides)

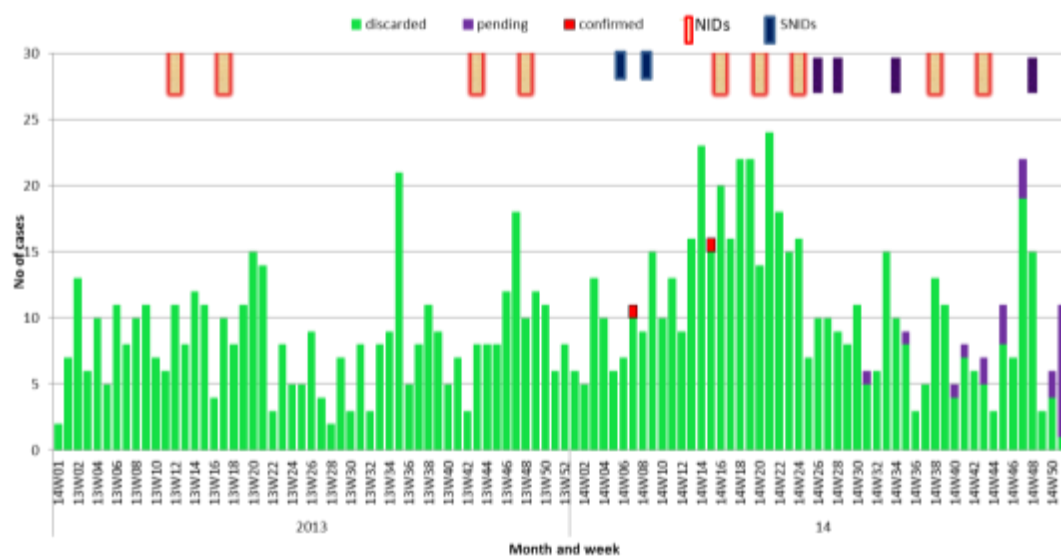


Figure 1 EPI curve with SIAs conducted in Iraq 2013-2014

### Effectiveness of partner coordination during outbreak response

Focal persons were identified

A functional coordination mechanism was put in place (MOH, WHO, UNICEF, USAID).

Iraqi Red Crescent was responsible for conducting IM

Strong collaboration of MOH with different ministries, Iraqi media, Key religious leaders and local authorities

Regular weekly meetings of national surveillance team with lab and EPI

### Implementation of previous technical support missions recommendations

Recommendation	Status
<p><b>AFP Surveillance</b></p> <ul style="list-style-type: none"> <li>Increase attention to center and south.</li> </ul>	<ul style="list-style-type: none"> <li>Advocacy meetings have been conducted in major hospitals to sensitize the clinicians on the importance of early detection and notification of AFP cases.</li> <li>Conducted training courses for AFP surveillance officers at governorate &amp; district levels to enhance their technical skills on active surveillance, stool samples collection, storage &amp; transportation, clustering of AFP cases, hot AFP cases, stool specimens collection from contacts, epidemiological investigation of reported AFP cases, sixty day examination of AFP cases &amp; final classification of AFP cases.</li> </ul>
<ul style="list-style-type: none"> <li>Direct satellite internet technology to aid communication and reporting</li> </ul>	<ul style="list-style-type: none"> <li>This technology has been adopted in carrying out IM of some polio SIAs.</li> <li>Internet &amp; cell phone are used by the AFP surveillance network for notification &amp; follow up of reported AFP cases.</li> </ul>
<ul style="list-style-type: none"> <li>Motivate surveillance staff.</li> </ul>	<ul style="list-style-type: none"> <li>Official letters of appreciation have been issued by MoH for those who have detected and notified AFP cases.</li> <li>Adequate financial support was allocated by MoH for those transporting stool specimens of AFP cases.</li> <li>With WHO support incentives have been paid to those participating in detection, notification &amp; investigation of AFP cases.</li> </ul>
<ul style="list-style-type: none"> <li>Advocacy to give priority to vaccine and AFP specimens transportation on UN flights</li> </ul>	<p>Using UN flight for transportation of vaccines &amp; stool specimens of AFP cases was not feasible, instead &amp; with support of WHO &amp; UNICEF vaccines &amp; stool specimens of AFP cases are transported to &amp; from hard to reach areas &amp; population through private contractor.</p>
<ul style="list-style-type: none"> <li>Improved case investigation procedures for all zero-dose AFP cases</li> </ul>	<p>Through coordination &amp; synchronization of AFP surveillance &amp; EPI staff at governorate, district &amp; PHCC levels, AFP cases with zero OPV doses are identified and investigated to find the reasons why they were not immunized. . This policy is not fully implemented all over the country but in some governorates only and decision has been taken to adopt this policy all over the country.</p>
<ul style="list-style-type: none"> <li>Conduct periodic training</li> </ul>	<p>With collaboration between MoH, WHO, UNICEF &amp; USAID training courses were carried out all over the country on all aspects of EPI &amp; AFP surveillance.</p>
<ul style="list-style-type: none"> <li>Special plans/strategies for HR areas</li> </ul>	<p>Special plans and strategies are in place for High Risk areas which include special activities to enhance routine immunization, Special SIAs &amp; strengthening AFP surveillance.</p>
<ul style="list-style-type: none"> <li>Comprehensive supervisory</li> </ul>	<p>Supervisory visits are carried out from different levels to</p>



plan	<p>sub-ordinate levels in secure areas.</p> <p>No supervision has been carried out in insecure areas.</p> <p>No supervisory activities from federal MoH to KRG MoH and governorates, also no supervision from KRG MoH to DoH in KRG.</p>
<ul style="list-style-type: none"> <li>Reasons for delayed samples</li> </ul>	<ul style="list-style-type: none"> <li>Security issues.</li> <li>Administrative issues.</li> </ul>
<ul style="list-style-type: none"> <li>Involve more private facilities</li> </ul>	Limited private sector involvement in AFP surveillance meanwhile private sector plays a considerable role in routine immunization and in SIAs.
<ul style="list-style-type: none"> <li><b>Active surveillance</b></li> </ul>	Active surveillance is carried out in major high and middle priority hospitals with some concern on its quality.
<ul style="list-style-type: none"> <li>Systematic awareness</li> </ul>	Tremendous efforts have been done to raise the awareness of general population & health staff on the importance of immunization and AFP surveillance through utilization of all available means of communication like mass media, NGOs, social leaders and other social sectors.
<p><b>SIAs</b></p> <ul style="list-style-type: none"> <li>➤ More detailed mapping of inaccessible populations within the conflict areas</li> </ul>	<p>Although most conflict areas were included in the NIDs and SNIDs carried out in 2014, additional special mopping up activities was conducted in those areas.</p> <p>There is some concern about the quality of SIAs that were carried out in those areas as staff involved in most of those activities was deprived from training, supervision &amp; monitoring.</p>
<ul style="list-style-type: none"> <li>➤ Increase quality of micro-plans through triangulation of local staff knowledge, accessibility data collection, and technology. Must be done at a lower level—PHC—than is now done.</li> </ul>	<p>Special training courses on micro-planning and micro-mapping has been carried out in Baghdad-Resafa DoH from where the two polio cases were reported.</p> <p>Specific focus is needed to strengthen the micro planning in other governorates and at lower levels</p>
<ul style="list-style-type: none"> <li>➤ Increase precision of population estimation for better planning and coverage estimates</li> </ul>	<ul style="list-style-type: none"> <li>In some governorates and districts there is a special programme called "Health visitor" where the total population in different geographical areas was counted. This data was used to estimate targeted children for both routine &amp; SIA immunization.</li> <li>The number of vaccinated children in a campaign is used as a target for next campaign.</li> </ul>
<ul style="list-style-type: none"> <li>➤ Ensure teams in high risk areas (Baghdad slums, low accessibility and immunity areas, etc.) are better trained and motivated</li> </ul>	<ul style="list-style-type: none"> <li>Additional and special training has been carried out for supervisors and vaccinators in all Baghdad Resafa and Baghdad kerkh districts.</li> <li>Letters of appreciation have been issued by MoH for good performing immunization staff.</li> </ul>
<ul style="list-style-type: none"> <li>➤ Strengthen presence of</li> </ul>	<ul style="list-style-type: none"> <li>There is an effective &amp; supportive presence of WHO &amp;</li> </ul>

UNICEF and WHO in the central MoH	UNICEF staff in the federal & KRG MoHs.
<p><b>Routine immunization</b></p> <ul style="list-style-type: none"> <li>➤ Support KRG MoH regional vaccine store.</li> </ul>	<p>A comprehensive plan was established to build and expand vaccine cold chain in KRG.</p>
<ul style="list-style-type: none"> <li>➤ Determine solutions to reporting problems in conflict areas, including communication and motivation issues</li> </ul>	<p>The only applicable means for reporting in those areas are cell phones and internet though both do not cover all conflict areas and are not applicable at all times.</p>
<ul style="list-style-type: none"> <li>➤ Support MoH activities for shifting from OPV to IPV</li> </ul>	<p>There is a plan to shift from tOPV to bOPV in 2016 and all the necessary measures were taken apart from deciding on number of IPV doses that will be included in the new vaccination schedule.</p>
<ul style="list-style-type: none"> <li>➤ Support DQS assessment</li> </ul>	<p>DQS is adopted as part of supportive supervisory skills and applied regularly by all supervisors at all levels.</p>
<ul style="list-style-type: none"> <li>➤ Special attention for districts with low immunity applying tailored solutions based on local context</li> </ul>	<p>Limited actions have been taken regarding this issue in both secure and insecure areas.</p>
<p><b>Social Mobilization</b></p> <ul style="list-style-type: none"> <li>➤ Mass Media, particularly TV, has greatest ability to reach most people (over 60% mentioned TV as source for May IM)</li> </ul>	<p>Mass media has been utilized to large extent for social mobilization.</p>
<ul style="list-style-type: none"> <li>➤ Strategy to reach high risk groups (persons in slums, persons affected by conflicts, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Through communication and coordination with local health staff in conflict areas educational materials was distributed in those areas.</li> <li>• Local mass media like radio and TV stations covering some of those areas were fully utilized for the purpose.</li> </ul>

## AFP surveillance sensitivity

Table 4. Iraq AFP performance indicators at national level 2013-2014. (Detailed table by governorate in Annex)

Year	Adjusted Population estimate below 15 years	AFP	Confirmed Polio	P1	P3	Compatible	VDPV	Discarded	Pending	Non polio AFP rate/ 100,000 <15 years	% adequate stool specimens	% Cases notified within 7 days from onset of paralysis	% AFP cases investigated within 48 hrs from notification	% specimens in lab within 3 days	% Non polio Enterovirus	GB Rate/100,000 <15 yrs	% of VDPVs	% of Sabin Like	Count NP/AFP cases 6-59 m with of zero OPV	% NP/AFP 6-<59 m with 3+ OPV
2013	14,411,802	444	0	0	0	0	0	444	0	3.08	84.23	82.43	88.74	65.54	7.21	1.69	0	2.25	4	89.46
2014	14,539,423	577	2	2	0	0	0	547	28	3.95	89.25	84.06	89.25	68.11	14.04	1.35	0	4.51	4	90.4

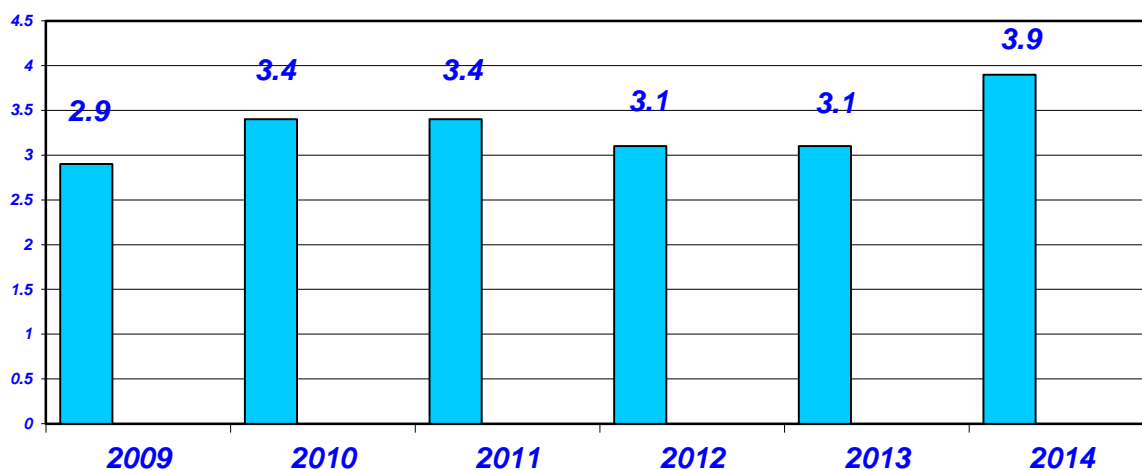


Figure 2 Non polio AFP rate/100,000 under 15 years in Iraq, 2009-2014

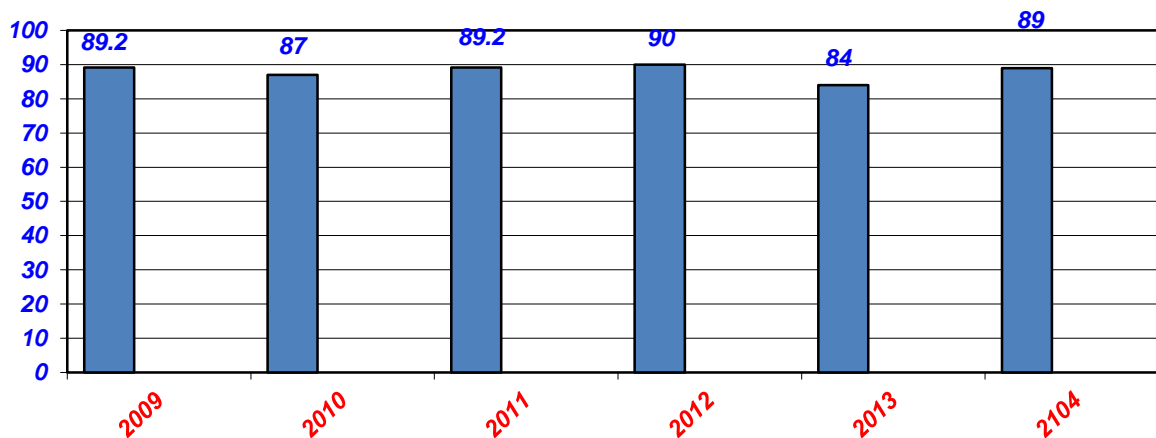


Figure 3 Percent Stool Adequacy in Iraq, 2009-2014

Percent of AFP cases with adequate samples by province, Iraq 2014



Non polio AFP rate /100,000 under 15 years by province in Iraq, 2014



Map 4 Non polio AFP rate / 100,000 <15 years and percent adequacy by governorate in Iraq 2014

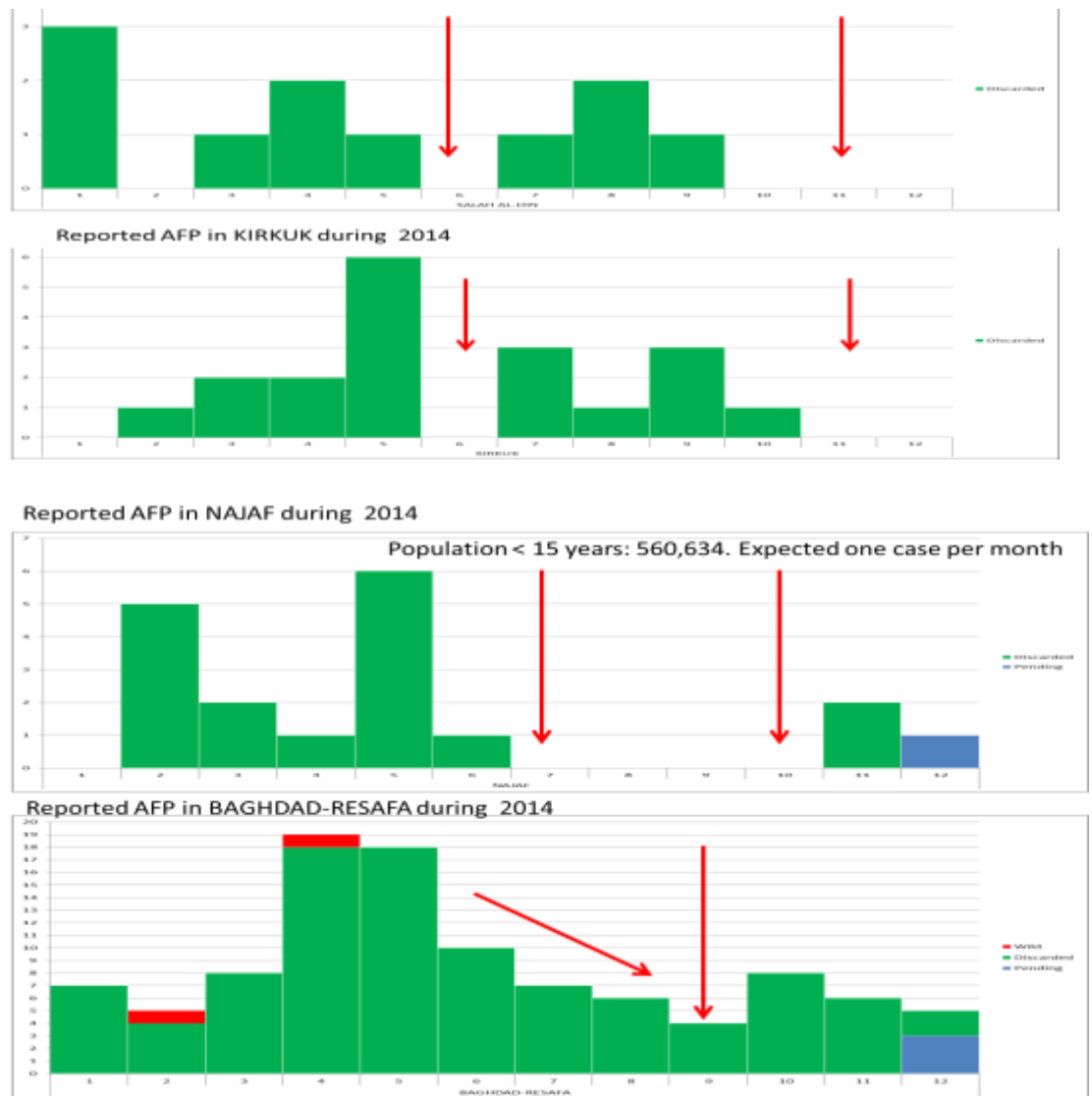


Figure 4: Distribution of wild polio and AFP cases by month of onset of paralysis by Governorate, 2014

**Case investigation:**

- Timeliness: All governorates are reporting within standard time except El Muthana.

### Average time in days from onset of paralysis to lab results in Iraq 2011- 2014

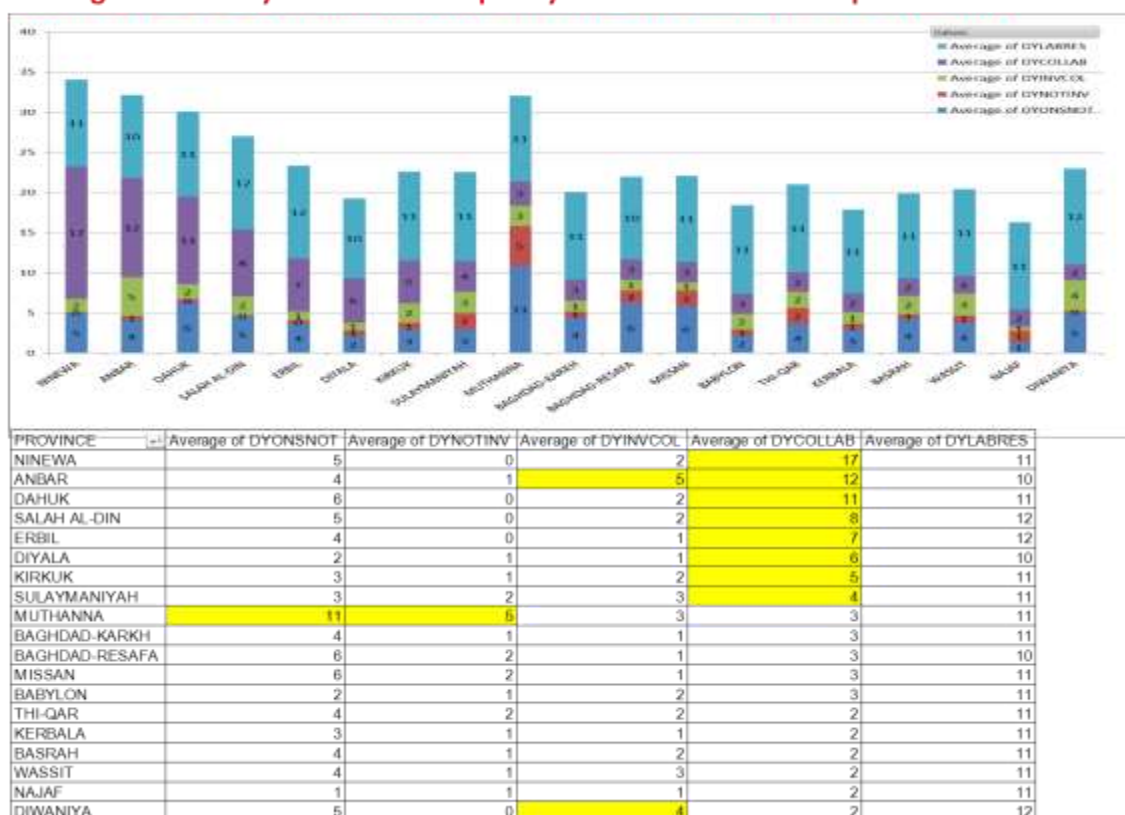


Figure 5 Average time in days from onset of paralysis to lab isolation results by Governorate, 2014

- Quality: In a situation of outbreak in Iraq and specifically in Baghdad, investigation of an AFP case was expected to be more vigilant than the current practice. For example:
  - Case classification by NEG: NEG is composed of a pediatric neurologist, epidemiologist and virologist. Group meets 2-3 times per year with minutes including final diagnosis and classification but missing detailed epidemiologic investigation and findings on which cases were discarded.

Table 5 Iraq inadequate AFP cases with residual paralysis, cases found dead or cases lost for follow up during 2014

IRCODE	HOTCASE	DISTRICT	PROVINCE	DONSET	DNOT	DSTCOLL1	DSTCOLL2	FUP	CLASS	FDIAG	OTHDIAG
IRQBG14049	2	ALAAMEL	BAGHDAD-KARKH	12/04/14	12/04/14			4	3	1	
IRQBG14110	2	ALAAMEL	BAGHDAD-KARKH	22/07/14	23/07/14	23/07/14		4	3	1	
IRQBG14050	2	DORA	BAGHDAD-KARKH	15/04/14	15/04/14			4	3	5	G04
IRQBG14115	2	KARKH	BAGHDAD-KARKH	26/07/14	09/08/14	10/08/14	12/08/14	1	3	5	T80
IRQBG14012	2	BAGHDAD ALJEDIDA	BAGHDAD-RESAFA	10/01/14	30/01/14	02/02/14	03/02/14	1	3	1	
IRQBG14010	2	BAGHDAD ALJEDIDA	BAGHDAD-RESAFA	18/01/14	21/01/14	24/01/14		1	3	1	
IRQBG14071	1	BALADIAT	BAGHDAD-RESAFA	12/03/14	14/05/14	21/05/14		1	3		
IRQBG14018	2	SADDER CITY	BAGHDAD-RESAFA	16/02/14	19/02/14	03/03/14	04/03/14	1	3	1	
IRQBG14039	2	SADDER CITY	BAGHDAD-RESAFA	20/02/14	08/04/14	09/04/14	10/04/14	1	3	5	T80
IRQBG14081	2	SADDER CITY	BAGHDAD-RESAFA	19/05/14	23/05/14	04/06/14	06/06/14	1	3	1	
IRQBG14125	2	SADDER CITY	BAGHDAD-RESAFA	16/08/14	30/08/14	01/09/14	03/09/14	1	3	1	
IRQBG14064	2	SHAB	BAGHDAD-RESAFA	20/04/14	13/05/14	15/05/14	16/05/14	1	3	5	C95
IRQQA14026	2	DIWANIYA 1	DIWANIYA	26/05/14	15/06/14	22/06/14	23/06/14	4	3	5	99
IRQQA14021	2	DIWANIYA 2	DIWANIYA	29/04/14	29/05/14	01/06/14	02/06/14	1	3	5	T80
IRQKR14007	2	KERBALA	KERBALA	15/02/14	27/02/14	07/03/14	08/03/14	1	3	1	
IRQMS14007	2	QAL'AT SALEH	MISSAN	08/05/14	09/05/14			4	3	1	
IRQMU14004	2	AL-RUMAITHA	MUTHANNA	17/04/14	19/04/14	04/05/14	05/05/14	1	3	1	

- Baghdad Rasafa 43% of AFP cases had residual paralysis compared to 17 % at national level. Eight out of 12 AFP cases with inadequate specimens in Baghdad Rasafa had residual paralysis and all were discarded with no compatibles.
- Contact specimens are collected from inadequate AFP cases and hot cases with no further detailed epidemiologic investigation or active retrospective search for other missed AFP cases. At national level contact specimens were collected from 68% of the inadequate AFP cases.

Table 6 Number and percent of eligible AFP cases with contact samples by governorate, 2014

PROVINCE	No. of AFP cases	No. of eligible AFP cases for contact sampling*	%of eligible AFP cases with contact samplings
ANBAR	11	7	14.3
BABYLON	42	3	55.7
BAGHDAD-KARKH	53	12	41.7
BAGHDAD-RESAFA	103	13	92.3
BASRAH	41	2	50.0
DAHUK	24	3	100.0
DIWANIYA	35	3	55.7
DIYALA	31	1	100.0
ERBIL	22	0	
KERBALA	21	3	55.7
KIRKUK	19	0	
MISSAN	12	3	100.0
MUTHANNA	15	4	100.0
NAJAF	18	0	
NINEWA	30	2	100.0
SALAH AL-DIN	11	0	
SULAYMANIYAH	37	3	55.7
THI-QAR	16	0	
WASSIT	25	3	55.7
<b>Grand Total</b>	<b>577</b>	<b>62</b>	<b>57.7</b>

- Cluster of 3 cases reported from Baghdad Kerkh governorate – Alaamel district in July 2014 were not noticed nor investigated. (3 cases were inadequate one died and one was lost to FUP). Detailed epidemiologic investigation , active case search and cluster investigation are not routine procedures

#### Active surveillance:

- Sites nationally increased from (215) to reach (280 ) in 2014 .
- Completeness rate was 87% within first 6 months of 2014 and declined to reach 71% in the 2<sup>nd</sup> half of the year.
- Quality of active surveillance varies between governorates and is conducted by district and governorate staff in public facilities with insufficient documentation.
  - In Erbil IDP and refugee camps are included in AFP surveillance network and reported 4 out of 22 cases in 2014.
  - Out of the 24 cases detected in Duhok, one was a Syrian refugee, and 4 cases from Mousel IDP population.
  - 92% of Sulleimaneih AFP cases (32 out of 37 reported AFP cases) were discovered by active surveillance. However no active surveillance is conducted in IDPs and refugee camps.
  - Limited active surveillance in Medical City facilities (main referral hospital) conducted by focal point of communicable disease unit responsible for zero reporting.

- Difference between Zero reporting and active surveillance is not always clear on implementation. Hospital inpatient and outpatient clinics log books are not reviewed during active surveillance visits. In Najaf 12 suspected AFP with onset of paralysis in July –October 2014 (silent period) were identified by the review from the Neurology ward in Hakeem Hospital.
- Another suspected AFP case from Dokan/Sullemaneih general hospital in December 2014 was missed as per interviewed GP in hospital
- Diagnosis like “convulsions with unconsciousness and meningitis” was not highlighted (Naajaf, Erbil)
- The program identified silent districts however no action was taken to increase awareness or to do active search for AFP cases.
- Reporting sites are adequately distributed. Network is mostly formed from governmental facilities.
- Private sector is not part of the network. Most private pediatricians are part of the government health system.
- Community religious leaders in holy governorates that might see AFP cases are not part of the reporting system.
- Current active surveillance methodologies are not in line with global standards, example: it is not done by a surveillance officer from outside the facility; outpatient records are not included in the surveillance process.

Awareness sessions were done to governmental health providers in some governorates after the outbreak. Un-awareness was still noticed among a number of met physicians and other health providers. Some high priority sites lacked posters and guidelines.

### Poliovirus Laboratory

- Lab processing done on time according to WHO algorithm (11 days on average from receipt in lab to isolation)
- National Polio lab was accredited in 2013
- In 2014 Lab achieved 100% score in proficiency test

Table 7 Work load of Iraq national polio lab, 2013-2014

Data	2013	2014
Count of LAB	1083	1392
Count of SPWILD		5
Count of SPSABIN	29	69
Count of SPVDPV		
Sum of % pos NPEV	7.5	14.2

- NPEV detection rate doubled in 2014 compared to 2013 from 7.3% to 14.6%

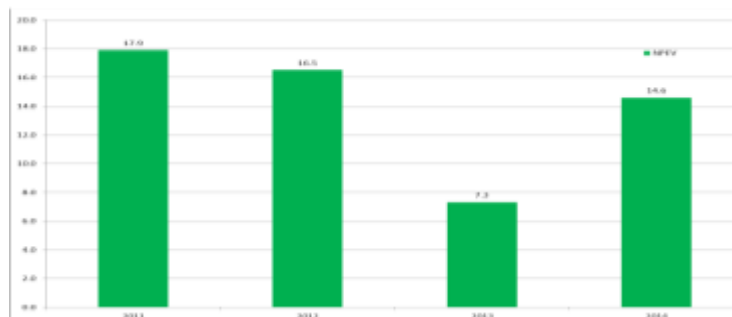


Figure 6 Percent isolation of NPEV from AFP cases by Iraq National Polio Lab, 2011-2014

- One main challenge facing the lab is the cuts in power supply though a stand by generator is available for Public Health labs but not attended to by a dedicated responsible person after working hours which might affect stored cell lines.
- Concerns regarding maintenance of lab equipment purchased by WHO

### Maintaining surveillance and SIAs in conflict affected areas:

- Active surveillance visits and monitoring is not possible in some areas of Karkuk, Anbar and Salah Addin.
- Health facilities are allowed to work but only contact of provincial staff is through telephone
- No AFP case reported from these districts from June since taken over by the armed groups.
- Shipment of stool specimens is a challenge in case an AFP case is reported
- In another district, Daqooq health facilities are damaged and high proportion of population has move out.
- Although vaccination (routine and SIAs) is allowed in areas controlled by armed groups but shipment of vaccine is not possible due to road challenges
- The coverage, as assessed by Red Crescent, is below 50% in the conflict affected areas of Kirkuk.

### Potential risk:

- The PCM showed low coverage in the conflict-affected areas.  
Any movement of individuals from an endemic country into the conflict affected areas can pose risk of infection which may lead to an outbreak.

Supplementary Immunization Activities:

- In 2013, 5 NIDs and 2 SNIDs were conducted. After second and last wild polio case 4 NIDs and 5 SNIDs were conducted

Table 8. Number of SIAs by month targeting below 5 years in Iraq, 2014

Activity	1	2	3	4	5	6	7	8	9	10	11	12
NIDs			NIDs	NIDs	NIDs				NIDs	NIDs		
SNIDs	SNIDs	SNIDs				SNIDs		SNIDs				
Mop-up			Mop-up	Mop-up	Mop-up						Mop-up	



- Strong commitment and engagement by authorities, political and local community influencers and leaders
- In addition to MOH supervision and monitoring, Iraq Red Crescent monitored independently the last 6 SIAs since April 2014

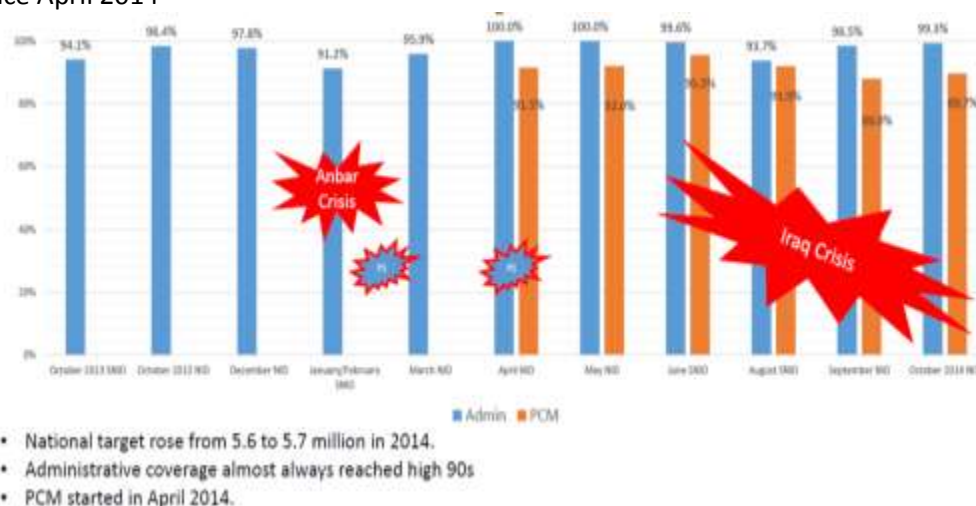


Figure 7. Administrative vaccination coverage and PCM results in Iraq, Oct 2013 - Oct 2014. (Source: UNICEF report)

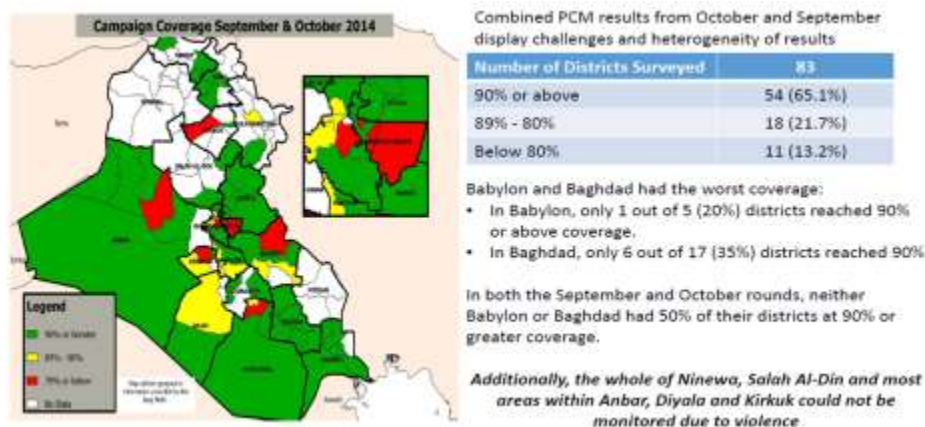


Figure 8. September and October 2014 combined PCM results. (source: UNICEF report)

- Fund for SIAs was made available by MOH and partners (UNICEF, WHO & USAID)
- UNICEF provided vaccines, transport, cold chain equipment and social mobilization
- WHO provided operational costs
- USAID conducted training, provided IEC and supported updating and printing SIA guideline
- Sufficient quantity of vaccines to cover NIDs and routine
- tOPV was used nationwide while bOPV was used in high risk areas
- Delays in timely release of funds was a challenge for both sides (WHO and MOH)

#### Micro-planning:

- Available logistic plans at all levels including terms of reference of different categories
- Average number of children to be vaccinated by team is 100 per day and one supervisor per catchment area to cover around 5-8 teams

- IM results were used to update the plans of the last two SIAs (Oct & Nov) at higher level but IM report was shared with lower level and used in November SIA.
- Micro-plans include maps that need further reviewing to include details of the high risk areas, IDP communities and nomadic population

### Monitoring & Supervision:

- Evening meetings were carried out for follow up of campaign and immediate correction action
- Supervisory checklist available at central level but not universally used at lower levels.
- Independent Monitoring methodology in place since April 2014 carried out by Iraq Red Crescent
- IM is done during and after each campaign (ICM & PCM)
- Real time reporting of IM was initiated since April 2014 using mobile technology
- MOH is looking for wider benefit of IM results through revising the methodology
- Plan to start using finger markers by next SIAs

### Routine Immunization:

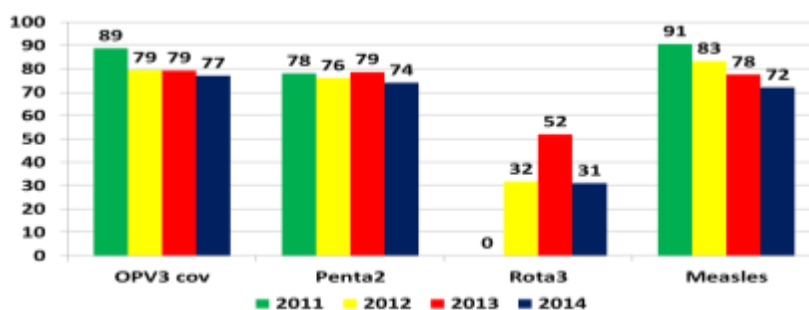


Figure 9 Routine immunization coverage of < 1 year with OPV3, Penta2, Rota3 & Measles in Iraq (2011-2014)

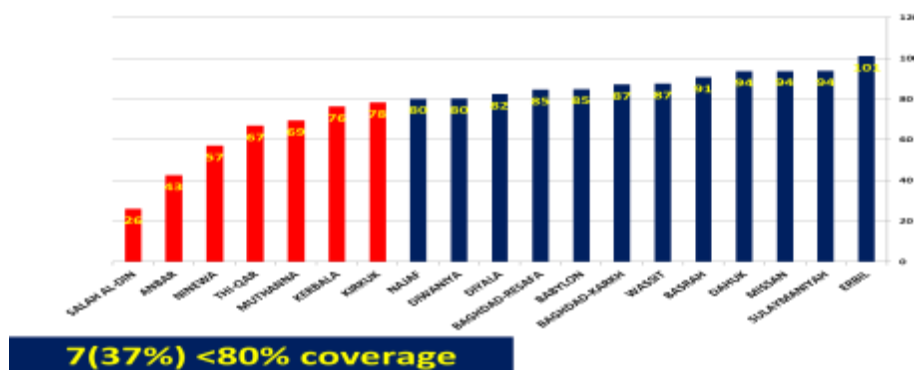


Figure 10 Routine immunization coverage with OPV3 in < 1 year children by governorate, (Jan-Nov 2014)

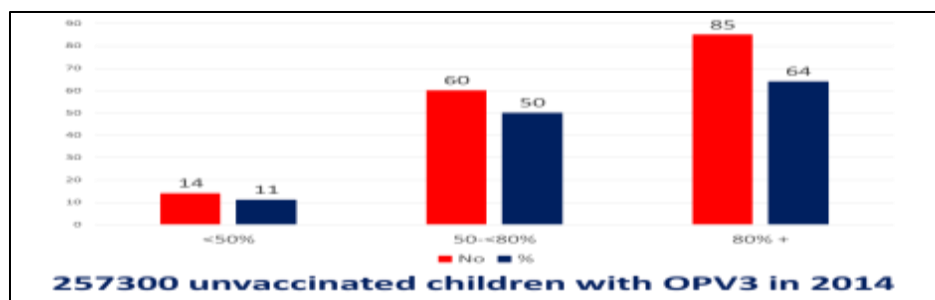


Figure 11 Number and percent of districts by OPV3 coverage rate, (Jan-Nov 2014)

- Communication materials have adequately addressed messages for routine and SIA
- SIA data was used to improve routine coverage through identified children vaccinated for first time
- Training activities for SIAs were used to strengthen capacity building of routine immunization staff.
- Specific training activities targeted to improve routine immunization coverage in polio infected areas, insecure areas, mobile populations or very hard to reach populations
- MOH showed strong commitment to make available vaccines and logistics to ensure continuous immunization activities in high risk and insecure areas
- Established outreach immunization sessions in IDPs and Syrian refugee camps
- EPI faced a challenge to secure vaccines other than OPV
- Destruction of cold chain in Ninewa and Salah El Din
- More than 26% of targeted children are beyond access of regular and sustained routine immunization activities due to insecurity and inaccessibility.
- Massive population movement, IDPs and unavailability of precise population data which is further complicated by political issues.
- Sub - national supervision needs to be strengthened in some DoHs.

### Impact of immunization activities as reflected by notified AFP cases 6m- <5years. (SIAs and Routine)

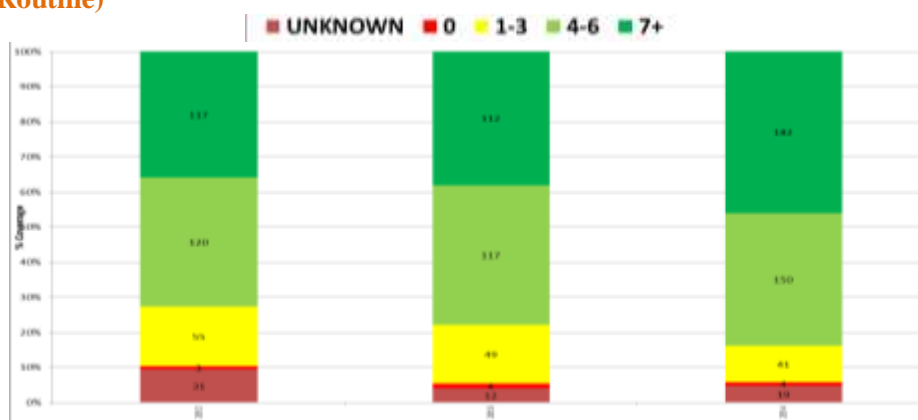


Figure 12. Iraq immunity profile of non- polio AFP cases 6-59 months old, 2012-2014

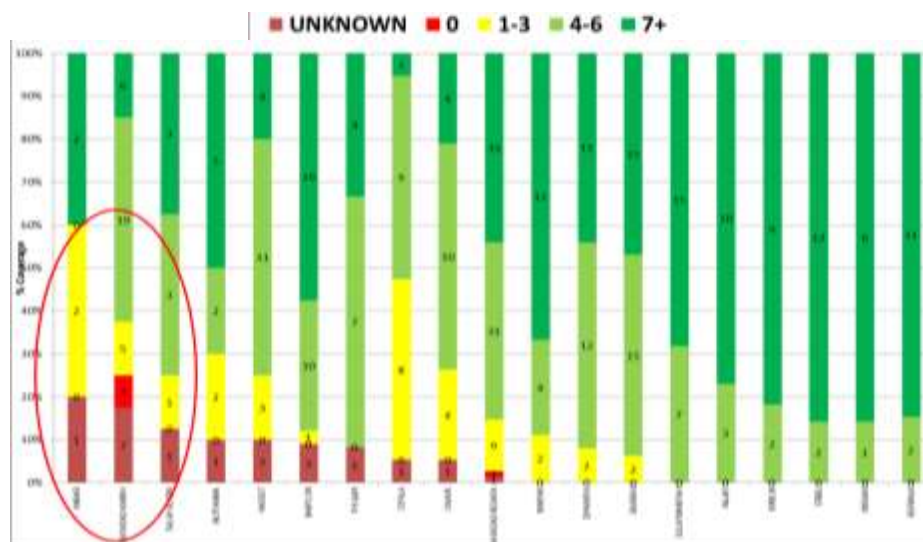


Figure 13. Iraq immunity profile of non-polio AFP cases 6-59 months old, by province, 2014

### Maintaining surveillance and SIAs in insecure areas

- MOH is committed to make OPV available to high risk and difficult to access areas.
- Among efforts to support and boost routine immunisation a private courier was contracted to transport vaccines to security compromised areas.
- IDPs were vaccinated upon arrival to secure governorates.
- The immunization status of an estimated 200,000 children under 5 years in conflict areas remain doubtful due to lack of supervision, monitoring and adequate training.
- MOH analysed accessibility in Iraq and developed mitigation measures applied in October & November SIAs.

### Communications

- Communication plans were developed /implemented at both national and governorate levels. The plans include pre campaign and intra campaign efforts as well as specific interventions targeting high risk areas.
- Strong media engagement component with national and local level media channels and well established community level engagement including religious leaders, local authorities and NGO as well as engagement of other ministries.
- Monitoring communication interventions is done through supervisory visits from central level pre-campaign and during campaigns, (lack documentation of results).

However,

- The plans are mostly central with limited flexibility for modification at local levels.
- Communication results are not systematically monitored. For e.g. Awareness levels over campaigns was decreasing and In Sep and Oct, at least 25-30 % of children in high risk areas were not reached through communication efforts.
- The PCM data has not been utilized at both national and subnational levels and there was no evidence of local efforts to identify social barriers to immunization
- “Team did not visit” have been the major reason for missed children
- Although this could be operational reason , it may reflect social reasons influencing the vaccinators themselves, Need to be studied

- Collective social reasons have been increasing (This indicator is the sum of child / parent not available, refusal, child is sick, child is visitor).
- TV and MOH staff are the most significant source of information
- Role of TV and Religious groups is increasing reflecting good communication efforts

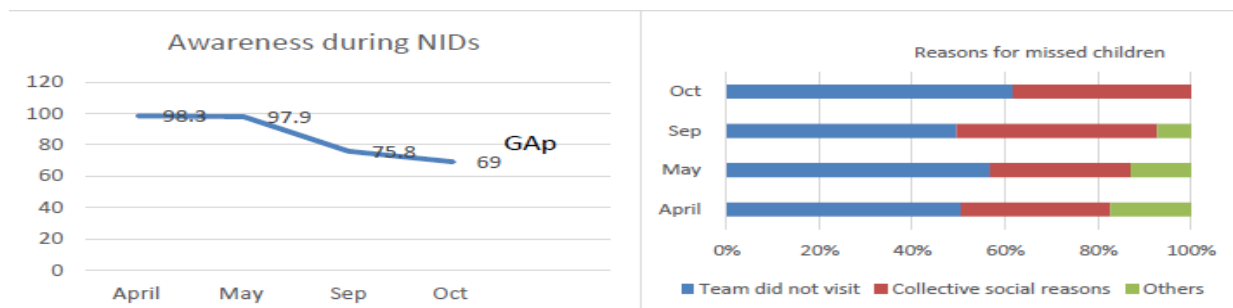


Figure 14. Reasons for missed children in SIAs (April-Oct) 2014

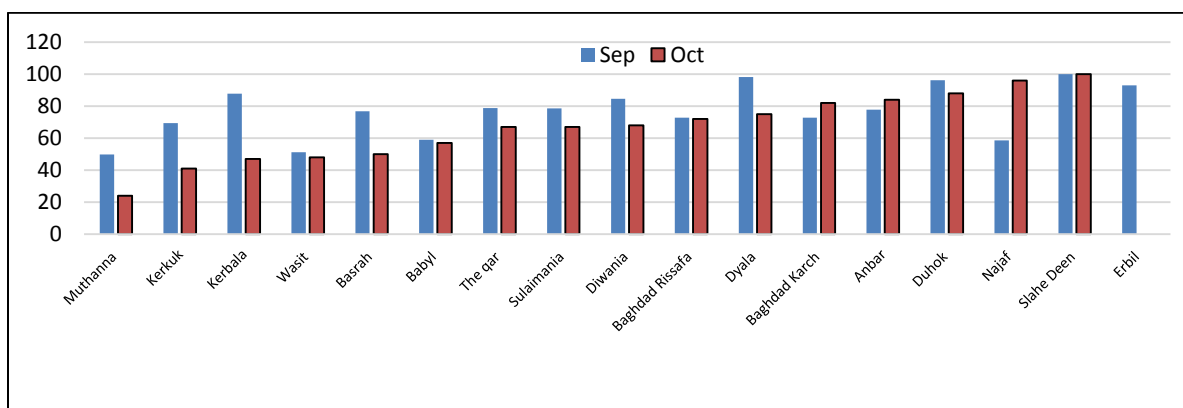


Figure 15. Awareness levels by PCM results in Sept & Oct NIDs, 2014

- Lack of training courses on IPC for vaccinators and health personnel
- Current SIA and Communication Plans seem to be in-effective in some districts which has consistently reported low coverage

	Muthanna			Baghdad-Karch									
April ( below 80% )	Warka			Kademia	El e3lam								
April( Districts 80%-90% )		El Rumaitha				Mahmodia							
May	Warka	El Rumaitha			El e3lam	Mahmodia							
Agust ( districts below 80% )	Warka				el alam		el 3amel	Karch					
Aguts ( 80%-90% Districts		El Rumaitha	Smawa 2						Abu Graib				Adeel
Sep ( Below 80% )	Warka			Kademia	El e3lam			Karch			Taji	Tarmia	
Sep ( 80%-90% )													
Oct below 80%	Warka				El e3lam		el 3amel	Karch	Abu Graib				Adeel
Oct (80%-90 %)		El Rumaitha	Smawa 2										

	Wasit		Babylon		Baghdad-Karafa				Najaf		Kerkuk
April ( below 80% )	Kar1	Azera		Harham							
April Districts 80%-90%				Al Muzaitab	Hala 1				Al azhima		
May											
Agust ( districts below 80% )		Azera				Balader	Madan	Shabab			
Aguts ( 80%-90% Districts		Al Nazbanina		Al Muzaitab	Hala 1	Hala 2			Paraf		
Sep ( Below 80% )			Kar1	Harham			Madan	Shabab	Paraf		

Table 9. District with chronic low coverage by PCM, (April- October 2014)

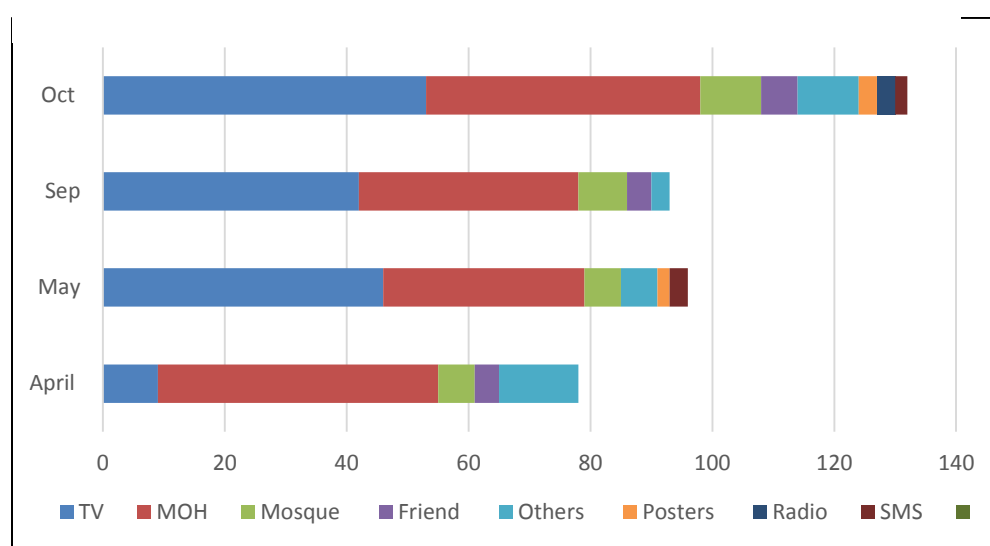


Figure 16. Most common sources of information by PCM (April-October 2014)

### Adequacy of resources to carry out effective response activities

- OPV, cold chain and operational costs for SIAs were adequate; however delays in release of vaccinator incentives were reported.
- AFP Surveillance staff in Rasafa, Kerkh Medical City and Central level is over loaded by responsibilities which affects the quality of response activities
- Incentives for surveillance have been interrupted by partners.

### Conclusion

- Review team is commending Iraq MOH for the strong commitment at all levels and for the efforts done in response to the polio outbreak in spite of the complex situation and difficult circumstances.
- The review team acknowledges the good initiatives that were observed in the different components of the program.
- The frequency of the campaigns conducted before and during the outbreak (2013-2014) has managed to minimize the risk of having more polio cases.
- Response measures by the governorates hosting IDP are commendable.

- The program is still facing challenges in surveillance system at the different levels particularly in the outbreak area and in the insecure areas making it not possible to conclude that circulation has stopped. The review revealed that the risk still exists, which will require to continue the efforts to strengthen routine immunization activities, achieve high quality SIAs, enhancing AFP surveillance and effective communication.

## Recommendations

### General recommendations

- All polio eradication strategies need to be strengthened in areas surrounding conflict areas to ensure high immunity of children and early detection of any polio virus importations
- Maintain the political commitment and partnership at national and sub-national level
- Update of the emergency action plan at all levels to reflect the fast changes in the country as well as the current review recommendations
- Every opportunity of tranquillity in conflict areas should be utilized to conduct SIADs in coordination and collaboration with local health staff, population and Iraq Red Crescent / ICRC
- Review and update the preparedness plan for polio importation to include special measures to deal with frequent religious mass gatherings.

### AFP Surveillance:

- Special efforts to enhance AFP surveillance in Baghdad Kerkh, Rasafa, Medical City and in governorates receiving mass religious gatherings with special emphasis on active surveillance.
- Collection of contact samples from all AFP cases reported from Baghdad Kerkh, Rasafa, governorates receiving mass religious gatherings and from all conflict affected areas.
- Active Surveillance needs to improve quality of active surveillance in terms of:
  - Active surveillance should be conducted by a surveillance officer from outside the facility to double check missed cases
  - Active surveillance visit should be properly documented and all those diagnosis that may indicate possibility of AFP should be highlighted and discussed with attending pediatrician.
  - Medical City is the referral for all complicated cases and there is a need to identify a qualified medical officer to conduct active surveillance weekly
  - Make available budget to support active surveillance visits and activities.
  - Ensure effective supervision to districts and reporting sites for better quality of surveillance activities.
  - All inadequate AFP cases as well as hot cases should be fully investigated epidemiologically with good documentation to record any epidemiologic links, retroactive search for missed AFP cases around the index case as well as immunity status in area of residence of index case.
  - Train SIA vaccinators on AFP case search during the campaign.

### Maintaining Surveillance and immunization activities in conflict affected areas

- *Surveillance in conflict zones:* efforts should continue to establish alternate mechanisms to overcome access restriction for surveillance activities in conflict-affected areas.
- There is need to engage Iraq Red Crescent or ICRC to negotiate with armed groups and separate negotiation with local commanders of security forces to promote program neutrality and allow vaccine shipment and transportation of stool specimens.
- Permanent vaccination teams may be considered at the entry and exit points of the two security affected districts of Kirkuk governorate.
- National team should send guidelines on immediate vaccination using SIADs in case of any window of opportunity.

### Capacity building & awareness:

- Refresher training and awareness sessions to existing surveillance focal persons



- Basic training for newly appointed surveillance officers
- In reporting sites there is need to conduct regular orientation and seminars.

#### **Private health sector:**

- Assure that the doctors in private hospitals and GPs are regularly visited and include them in orientation sessions.
- Sensitize religious community leaders and famous traditional healers to notify AFP cases

#### **Exclusion of AFP cases:**

- Exclusion of AFP cases should be avoided as it reflects a weakness in training of focal persons.
- Maintain records of the excluded cases with complete documentation on reasons for exclusion. a

#### **Feedback System**

- Need to strengthen feedback of lab results to the pediatricians once an AFP case is reported.
- Develop a regular feedback from central level to governorates & districts that includes updated line list, surveillance performance indicators and reports on SIA activities (Administrative and independent monitoring).

#### **National Expert Group**

National Expert Group should present evidence based reports for the discarded inadequate AFP cases with residual paralysis/lost for follow up/died.

#### **SIAs**

- **Micro-plan:**
  - Improve micro-plan by identifying high risk/nomads areas and special strategy used to deal with these areas.
  - Include training and supervision components in micro-plan.
  - Utilize available monitoring data to update micro-plans before following round.
  - Recording of not available children is almost of negligible. This indicates that either teams are not trained or don't spend enough time to ask about not available children.
- **Campaign Monitoring**
  - There is need to establish a mechanism to ensure intra-campaign monitoring using a standardized checklist and to immediately communicate results of monitoring data for action.
  - Use finger markers for accurate monitoring
  - Revise IM methodology to expand monitoring in high risk areas as well as conduct a random cluster sampling survey to validate administrative coverage as requested by MOH.
  - Sharing IM reports with governorate and district level staff as soon as possible to review micro-plan according to findings
- **Schedule of SIAs**
  - Continue conducting SIAs as dictated by the epidemiological situation

#### **Routine Immunization**

- Ensure regular vaccine supplies and continuous flow of vaccine to conflict areas through local partners

- Improving coverage in high risk and low performing areas
- Establish vaccination posts on exit points from conflict and high risk areas.
- Enhance and support supervisory visits of the central EPI staff to governorates and Kurdistan Region
- Revise the new routine immunization schedule to comply with SAGE recommendations and introduce IPV before end of 2015

#### **Payments Release**

- Partners should release the SIA funds in a timely manner in order not to affect staff motivation
- EPI to ensure timely liquidation of SIA payments

#### **Surveillance Budget**

- WHO to resume financial support to AFP surveillance system

#### **Human Resources**

- Recruit additional staff to support outbreak response activities at central level, Baghdad Rasafa, Baghdad Kerkh and Medical City.

#### **Communications**

- It is critical that communication plans are reviewed in line with campaign results and monitored systemically.
- Develop communication supervision checklist , strengthen supervision and ensure that supervisory observation is analyzed and used to improve performance especially in areas where the post campaign monitoring are not conducted.
- An effective monitoring mechanism needs to be put in place to monitor the contribution of community actors
- In areas of chronically low coverage, social studies need to be conducted.
- A community volunteer network need to be established to ensure local solutions and ownership of the plans.
- Data on reasons for non-vaccination from PCM should be shared with all levels, particularly the local/district level to assure that that information is used for better targeted communication activities.
- There is need to conduct training programmes for HP focal points on strategic communication planning and for Vaccinators ,lower level HP staff as well as volunteers on communication skills .

#### **Acknowledgment**

Review team acknowledges Iraq MOH for facilitating this mission and the warm and sincere welcome the mission received. The transparency and cooperation of MOH are commendable.

MOH surveillance and EPI team at national, governorate, district and facility deserve our deep appreciation for making this mission smooth.

This review would not have been completed without the contribution of the University independent reviewers.

Review team profoundly thanks both WHO & UNICEF COs for the excellent support to this mission.

## Annex

Table 10. Iraq AFP surveillance performance indicators by governorate, 2014

PROVINCE	Adjusted Population estimate below 15 years	AFP	Confirmed Polio	P1	Compatible	VDPV	Discarded	Pending	Non polio AFP rate/100,000 <15 years	% adequate stool specimens	% Cases notified within 7 days from onset of paralysis	% AFP cases investigated within 48 hrs from notification	% specimens in lab within 3 days	% Non polio Enterovirus	GB Rate/100,000 <15 yrs	% VDPVS	% positive Sabin like	Count AFP cases with of zero OPV	% NPAFP 6-<59 m with 3+ OPV
ANBAR	677,650	11	0	0	0	0	6	5	1.62	36.36	90.91	90.91	18.18	27.27	0.3	0	0	0	60
BABYLON	789,997	42	0	0	0	0	40	2	5.32	92.86	90.48	92.86	78.57	14.29	1.39	0	0	0	90.91
BAGHDAD-KARKH	1,727,390	63	0	0	0	0	58	5	3.65	80.95	77.78	88.89	65.08	7.94	1.04	0	6.35	3	72.5
BAGHDAD-RESAFA	1,659,391	103	2	2	0	0	98	3	6.09	87.38	78.64	85.44	80.58	14.56	1.21	0	8.74	1	92
BASRAH	1,077,579	41	0	0	0	0	40	1	3.8	95.12	75.61	95.12	97.56	7.32	2.51	0	7.32	0	96.88
DAHUK	451,471	24	0	0	0	0	23	1	5.32	87.5	79.17	95.83	4.17	12.5	0.22	0	8.33	0	84.21
DIWANIYA	493,118	35	0	0	0	0	35	0	7.1	91.43	82.86	100	97.14	17.14	3.24	0	0	0	100
DIYALA	611,478	31	0	0	0	0	28	3	5.07	96.77	100	93.55	16.13	9.68	0.33	0	9.68	0	84.21
ERBIL	710,171	22	0	0	0	0	20	2	3.1	100	86.36	95.45	50	4.55	0.84	0	4.55	0	100
KERBALA	453,220	21	0	0	0	0	20	1	4.63	85.71	90.48	85.71	90.48	19.05	0.66	0	9.52	0	100
KIRKUK	608,732	19	0	0	0	0	19	0	3.12	100	94.74	94.74	73.68	15.79	1.97	0	5.26	0	100
MISSAN	406,770	12	0	0	0	0	12	0	2.95	75	58.33	66.67	75	16.67	2.46	0	0	0	100
MUTHANNA	302,491	15	0	0	0	0	15	0	4.96	73.33	80	93.33	73.33	20	1.98	0	6.67	0	90
NAJAF	560,634	18	0	0	0	0	17	1	3.21	100	100	88.89	100	22.22	1.43	0	0	0	100
NINEWA	1,381,204	30	0	0	0	0	29	1	2.17	93.33	86.67	100	26.67	10	1.01	0	0	0	88.89
SALAH AL-DIN	592,463	11	0	0	0	0	11	0	1.86	100	81.82	100	72.73	18.18	1.01	0	0	0	75
SULAYMANIYAH	721,329	37	0	0	0	0	35	2	5.13	91.89	91.89	70.27	45.95	13.51	0.97	0	0	0	100
THI-QAR	803,629	16	0	0	0	0	16	0	1.99	100	81.25	75	93.75	31.25	1.49	0	0	0	91.67
WASSIT	510,706	26	0	0	0	0	25	1	5.09	88.46	84.62	84.62	92.31	19.23	3.13	0	0	0	85

Table 11. Silent districts and population estimates of under 15 years in Iraq, 2014

PROVINCE	DISTRICT	Adjusted Population estimate below 15 years	AFP
ANBAR	FALLUJA	187,030	0
ANBAR	RAWA-ANA	23,717	0
BAGHDAD-KARKH	ALRASHEED	288,139	0
DAHUK	AKRE	66,666	0
DAHUK	AMEDI	31,134	0
DIYALA	AL-MANSURIYE	36,788	0
DIYALA	KHANAQIN	78,763	0
ERBIL	CHOMAN	14,716	0
KIRKUK	DAQUQ	66,662	0
NINEWA	HATRA	21,854	0
SALAH AL-DIN	AL-DAUR	30,111	0
SALAH AL-DIN	AL-SHIRQAT	81,664	0
SALAH AL-DIN	TIKRIT	84,312	0
SULAYMANIYAH	BAZVAN	19,286	0
SULAYMANIYAH	DARBANDIKHAN	22,868	0
SULAYMANIYAH	PSHDAR	43,038	0
SULAYMANIYAH	SHARBAZHER	8,038	0

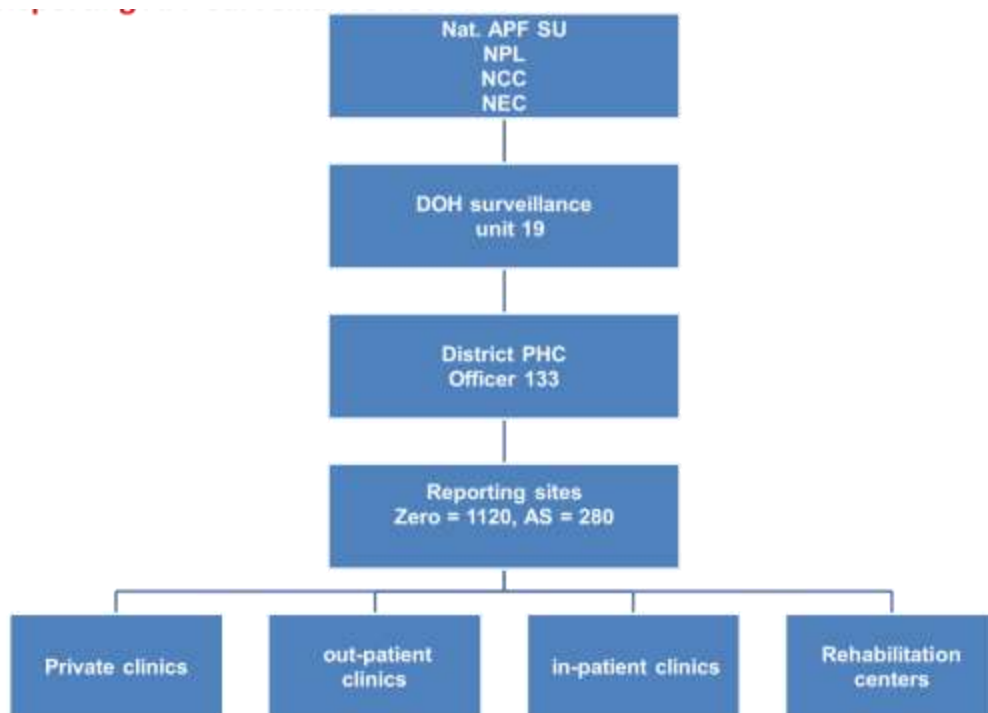


Figure 17. AFP surveillance reporting network of Iraq

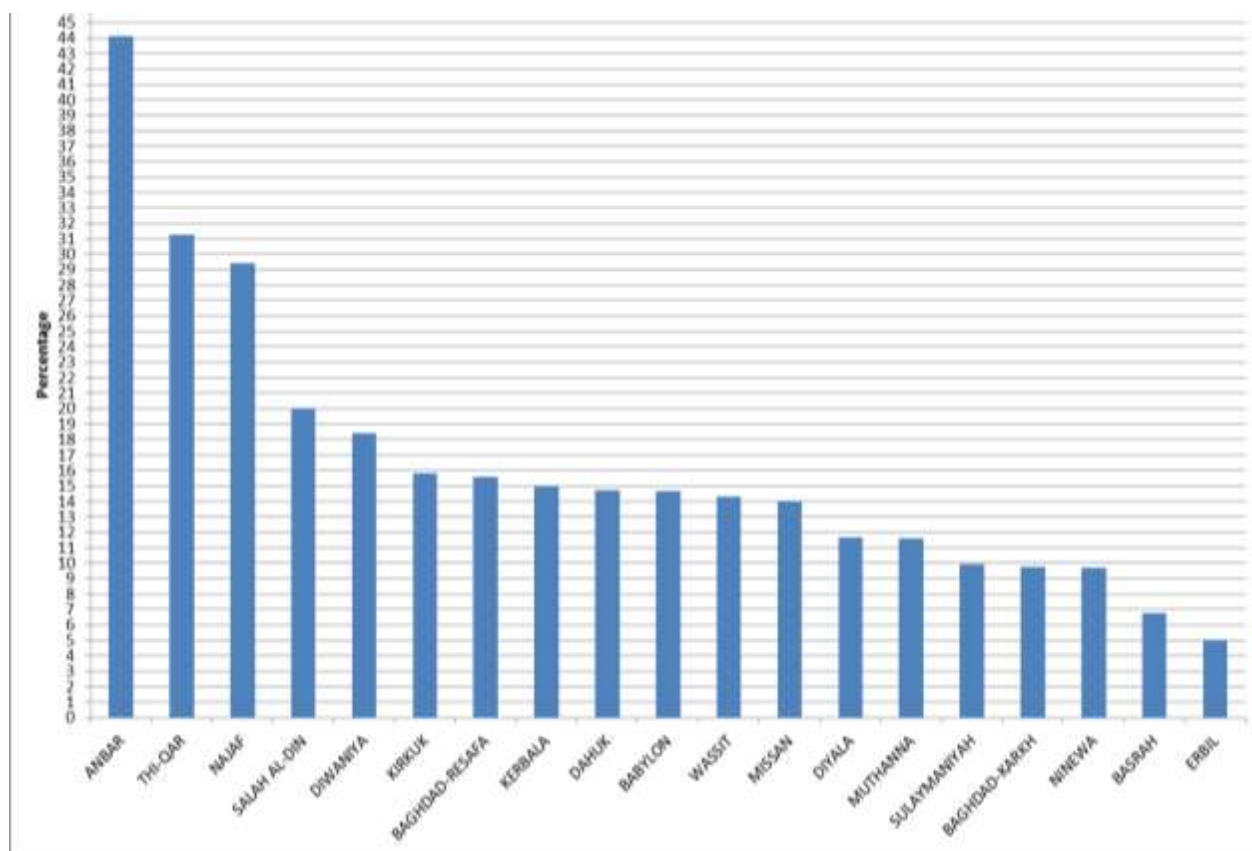


Figure 18. Percent Non polio enterovirus isolation from AFP cases in Iraq by governorate, 2014