Gavi
The Vaccine Alliance

JSI RESEARCH & TRAINING INSTITUTE, INC.

Lessons Learned: Pentavalent Vaccine Introduction in South Sudan

March 2016

Exhibit A-6

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Submitted to Gavi
May 31, 2016

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ACRONYMS

AD	Auto-Disable Syringes
AEFI	Adverse Events Following Immunization
AFRO	WHO Africa Regional Office
CDC	U.S. Centers for Disease Control and Prevention
CHD	County Health Department
CHW	Community Health Worker
cMYP	Country Multi Year Plan
CSO	Civil Society Organization
DPT	Diphtheria, Pertussis and Tetanus
DPT-HepB-Hib	Pentavalent Vaccine
EPI	Expanded Program on Immunization
Gavi	Global Alliance for Vaccines and Immunization
HBV	Hepatitis B Virus
HCW	Health Care Worker
HepB	Hepatitis B
HF	Health Facility
Hib	Haemophilus influenzae
ICC	Inter-Agency Coordinating Committee
IEC	Information, Education, Communication
IRE	Initiative for rural Empowerment
ISS	Immunization Services Support
MDG	Millennium Development Goal
MOH	Ministry of Health
MSF	Médecins Sans Frontières
NGO	Non-Governmental Organization
PIE	Post Introduction Evaluation
POC	Protection of Civilians
RI	Routine Immunization
REC	Reaching Every County
TWG	Technical Working Group
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VVM	Vaccine Vial Monitor
WCBA	Women of Child Bearing Age
WHO	World Health Organization

ACKNOWLEDGEMENTS

The experiences, challenges and achievements captured in this report on introduction of pentavalent vaccine are to serve as a reference for the country for further roll-out of this vaccine in the routine immunization system and when introducing other vaccines in the near future. JSI sincerely appreciates the collaboration and leadership that the Ministry of Health and its Expanded Program on Immunization have exhibited throughout the preparation and implementation of introduction activities.

In addition, the role of partners has been invaluable in supporting introduction activities, from national level planning to facility level training of the vaccinators. We would like to particularly acknowledge WHO and UNICEF for their technical, logistical and financial contributions.

We would especially like to recognize the support of Gavi, the Vaccine Alliance, for providing financial support to the Republic of South Sudan for vaccine procurement and systems strengthening, and for giving JSI the opportunity to participate and contribute to the pentavalent vaccine introduction in South Sudan.

EXECUTIVE SUMMARY

As part of the Government of South Sudan's efforts towards Millennium Development Goal 4 and per the country's immunization multi-year plan (cMYP) for 2012-2016, the pentavalent vaccine (DPT-HepB-Hib) was introduced into the routine immunization system in July 2014, replacing the trivalent DPT vaccine. Historically, DPT-3 vaccination has been used as a proxy indicator for completeness of routine immunization coverage, including in South Sudan. Despite significant efforts for the roll-out of pentavalent vaccine in 2014 and 2015, based on administrative coverage from December 2015, national penta-3 coverage is averaged at approximately 60%[1] and therefore in need of continuing strengthening. The poor performance and low completeness of reporting in some states (notably Jonglei, Upper Nile and Unity States), have been due to continued insecurity and irregularity of services as a result of the civil unrest since late 2013.

The introduction of the pentavalent vaccine into the South Sudan routine immunization system offers an opportunity for the country to improve its immunization program and coverage, as well as to apply the lessons learned to future planned vaccine introductions. In addition to the more specific recommendations noted in the following report, more general observations and recommendations for future vaccine introductions in South Sudan are summarized below:

Policy and immunization program performance

1. New vaccine introduction provides an opportunity to update national immunization guidelines, technical materials and existing policies and should be part of the initial planning as soon as a decision is made to introduce a new vaccine into the system. The roll-out and monitoring of the new vaccine should also be capitalized on to improve the routine immunization system and performance, such as re-emphasizing this as part of efforts by the MOH and partners to implement the Routine Immunization Road Map and cMYP;
2. Introducing a new vaccine into the routine system is an opportunity to improve the cold chain capacity at the national and state levels and should include efforts to replace/rehabilitate cold chain equipment and address management and maintenance issues (linked with longer-term health system strengthening).

Community Preparedness

1. The launching of pentavalent was used to promote community awareness of immunization and the introduction of the vaccine, with the launch ceremony well-covered by local media as well as international broadcasting stations (such as BBC). This media engagement should continue for routine immunization and in future introductions to target messages and information dissemination to the most appropriate audiences;
2. In addition to media dissemination, community awareness needs to be built with the majority of households that do not have TVs and/or radios. Social media was not intensive enough to provide sufficient orientation to the general public about the shift

[1] Note: These figures are not final, given denominator challenges and completeness of reporting that vary significantly across states, with a national average of completeness at approximately 70%

from DPT to pentavalent and the addition of the two antigens (HepB and Hib) to prevent the associated diseases. To maximize reach to all households, utilization of community engagement interventions should include outreach visits to community leaders, Community Theater, and health talks at health centers and outreach sites.

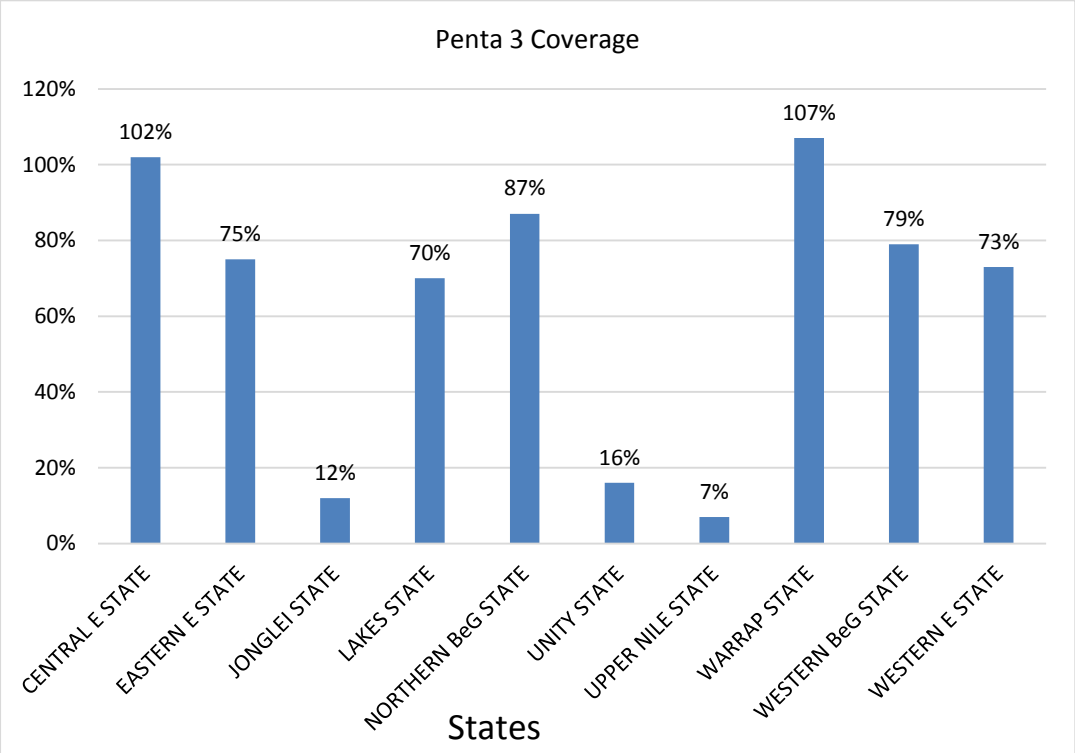
NVI in Under-resourced and Conflict Settings

1. Introduction planning should seek opportunities with local leaders and trusted partners to access conflict affected settings during intervals where fighting is on hold due to peace talks or where special humanitarian arrangements can be negotiated. Preparations should be made in advance so that when these periods of calm occur, implementers can move rapidly to carry out cold chain preparation, staff and local leader/partner training;
2. The MOH and ICC should advocate with partners working in hard-to-reach and under-served areas to engage them in preventive health and immunization system strengthening, including with new vaccine introduction preparations and training, so that they can assist with and lead, as possible, with the vaccine roll-out and linkages with broader health where the government health system is not functional due to conflict or limited resources.

INTRODUCTION

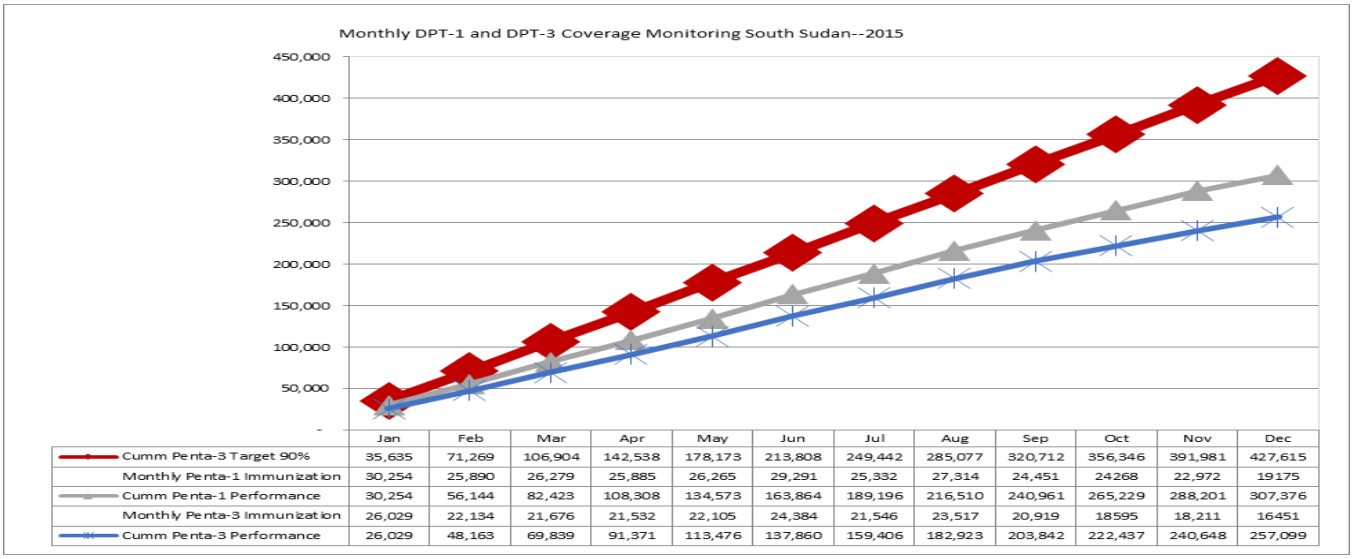
In South Sudan, delivery of health services is decentralized to the states, counties and health facilities. The state level is responsible for planning, translation of national policies to the counties under their jurisdiction and monitoring and supervision of health services standards, including EPI service delivery. The county level is responsible for delivery of health services through health facilities using the primary health care strategy. As part of the Government of South Sudan's efforts towards Millennium Development Goal 4 and per the country's multi-year plan (cMYP) for 2012-2016, the pentavalent vaccine (DPT-HepB-Hib) was introduced into the routine immunization system in July 2014, replacing the trivalent DPT vaccine. Despite significant efforts for the roll-out of pentavalent vaccine in 2014 and 2015, based on administrative coverage from December 2015, national penta-3 coverage is averaged at approximately 60%[2] and therefore in need of continuing strengthening. The poor performance and low completeness of reporting in some states (notably Jonglei, Upper Nile and Unity States), have been due to continued insecurity and irregularity of services as a result of the civil unrest since late 2013.

Figure 1: South Sudan Immunization coverage by state 2015



[2] Note: These figures are not final, given denominator challenges and completeness of reporting that vary significantly across states, with a national average of completeness at approximately 70%

Figure 2: National monthly DPT/Penta-1 and DPT/Penta-3 coverage increased steadily in 2015

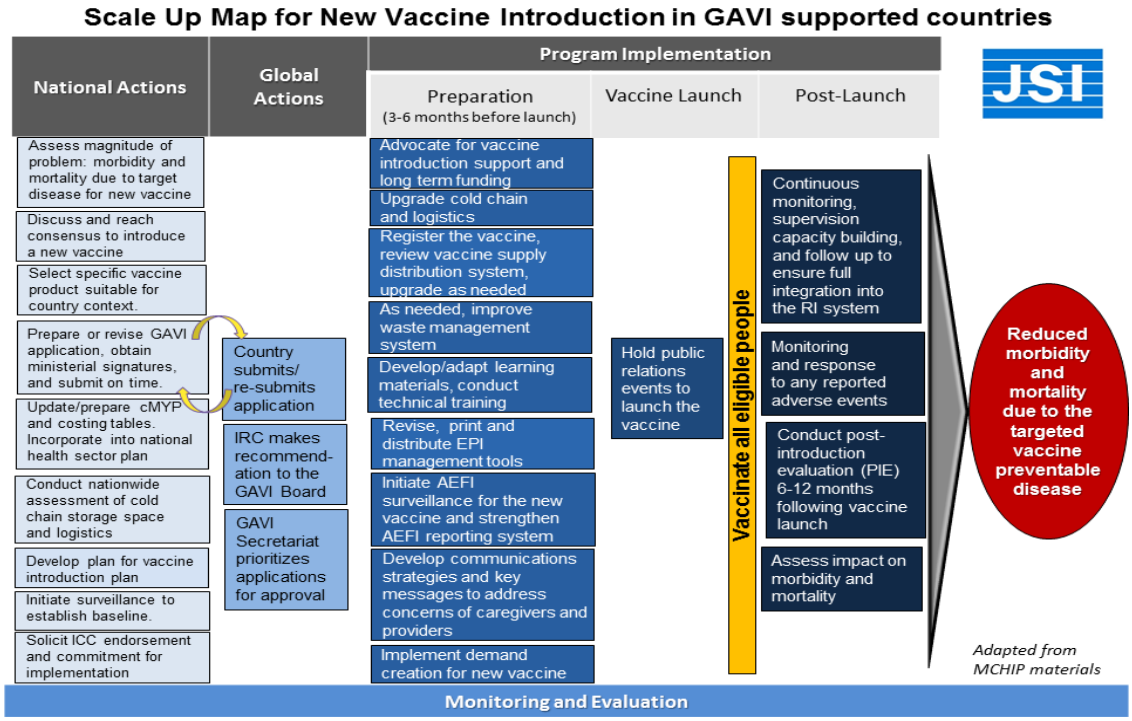


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cumm Penta-3 Target 90%	35,635	71,269	106,904	142,538	178,173	213,808	249,442	285,077	320,712	356,346	391,981	427,615
Monthly Penta-1 Immunization	30,254	25,890	26,279	25,885	26,265	29,291	25,332	27,314	24,451	24268	22,972	19175
Cumm Penta-1 Performance	30,254	56,144	82,423	108,308	134,573	163,864	189,196	216,510	240,961	265,229	288,201	307,376
Monthly Penta-3 Immunization	26,029	22,134	21,676	21,532	22,105	24,384	21,546	23,517	20,919	18595	18,211	16451
Cumm Penta-3 Performance	26,029	48,163	69,839	91,371	113,476	137,860	159,406	182,923	203,842	222,437	240,648	257,099

Source: (MOH Dec, 2015)

Figure 3 illustrates the complexity of introducing new vaccines in Gavi-eligible countries and highlights the steps necessary for successful vaccine introduction. This has been used by JSI in several countries, including South Sudan, to help guide national actions and program implementation, including detailed preparatory steps, post-introduction monitoring, capacity building, and evaluation and data use.

Figure 3: Scale-up map for new vaccine introduction in Gavi-supported countries



The introduction of pentavalent vaccine in South Sudan was originally scheduled for April 2014, but due to political unrest which began in December 2013, the official launch was

delayed until July 2014. Despite the continued instability in some areas of the country, the MOH officially launched the vaccine in 7 of the 10 states. As of March 2016, training and roll-out have also been done, as feasible, by implementing partners based in the three conflict-affected states.

This report provides an overview of the introduction of the pentavalent vaccine in South Sudan since JSI's involvement began in October 2013. It offers observations on the preparations; facilitating factors; challenges identified and proposed solutions; as well as successes, bottlenecks and lessons learned which can be used to inform future new vaccine introductions. A list of suggested indicators for monitoring new vaccine introduction progress can be found in *Annex II: Suggested Indicators for Measuring New Vaccine Introduction*.

PLANNING & PREPARATION

The MOH and partners developed a pentavalent introduction plan and timeline (see Table 1)s, which they used as a management tool that was updated throughout the introduction planning and implementation process. An Immunization Technical Working Group (TWG) of national level partners and other stakeholders (MOH/EPI, JSI, Core Group, UNICEF, WHO, MSF-Swiss, IMC, JHPIEGO, NPA Medair), chaired by the MOH/EPI Director, also met on a weekly basis (as possible). Although the TWG met on various immunization activities, preparations for pentavalent introduction were included in those discussions. The meetings served as a forum to synchronize activities and share information and ideas for action planning, including drafting/finalizing documents for the pentavalent introduction, projecting the target population and forecasting vaccine and other supply needs, and monitoring the progress of activities. An introduction checklist was also developed by JSI to assist the MOH/EPI in tracking activities for pentavalent pre-introduction, introduction and post introduction in more detail (see Annex I: *Pentavalent Introduction Checklist*).

Table 1: GANTT Chart for Introduction of pentavalent vaccine in South Sudan (2014)

	ACTIVITY	2014												
		J	F	M	A	M	J	J	A	S	O	N	D	Responsible
1	TWG to meet and synchronize EPI activity EPI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2	Cold chain assessment and preparedness	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	Review of Pentavalent documents by ICC		✓	✓	✓									
4	Meeting with ICC to endorse Pentavalent Documents					✓								
5	Translation of Monitoring Tools for Pentavalent vaccine								✓	✓				
6	Printing training field guide materials, social mobilization materials & monitoring tools								✓					

	ACTIVITY	2014												
		J	F	M	A	M	J	J	A	S	O	N	D	Responsible
7	Communication to the state Director general on the new vaccine Introduction.					✓	✓							
8	Social mobilization activities & advocacy intensify in the 7 states targeting political leaders, Health Managers, women's groups, chiefs, etc.						✓	✓	✓	✓	✓	✓	✓	
9	Distribution of Pentavalent vaccine to the states						✓							
10	Distribution of Penta to the Counties/HF							✓	✓	✓	✓	✓	✓	
11	Vaccine Forecasting		✓			✓			✓			✓		
12	Vaccine Stock Monitoring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
13	National TOT							✓						
14	State TOT Training								✓					
15	Vaccinators Training in all the counties								✓	✓	✓	✓		
16	Media Orientation on Pentavalent vaccine							✓						
17	Introduction of Pentavalent Vaccine								✓					
18	Launching of Pentavalent vaccine								✓					
19	Supportive supervision and Monitoring Visits								✓	✓	✓	✓	✓	
20	Post-Introduction Evaluation													

As part of the preparation for the pentavalent introduction, several key training and supervision tools were developed or revised by the EPI and partners. These documents provide practical technical and operational information to help guide the MOH at all levels with the introduction and integration of pentavalent vaccine into the routine immunization system and reporting, including:

- Updated EPI Policy for South Sudan;
- Health Facility monitoring tools for EPI (tally sheets, summary sheets, register, child health card);
- Pentavalent Introduction training guide and materials for South Sudan;
- Communication materials for South Sudan pentavalent vaccine introduction;
- Adverse Events Following Immunization (AEFI) guidelines for South Sudan.

These documents were reviewed and refined by the MOH/EPI TWG, and then submitted to the Inter Agency Coordinating Committee (ICC) for endorsement (see *Annex III: MOH and EPI leadership and ICC partners* for a list of ICC membership). On April 22, 2014, pentavalent introduction documents were endorsed by the ICC and then shared with WHO and UNICEF to arrange for the printing.

As preparations began for the pentavalent launch, it was brought to light through the regular meeting of the ICC that funding could not be released from the Gavi introduction grant due to the delay in the Government's submission of their audit report to Gavi. So as not to delay the introduction, it was agreed that Gavi would release the pentavalent introduction funds to UNICEF and WHO. The introduction grant for the first year of pentavalent vaccine introduction was transferred through WHO and UNICEF country offices in South Sudan to be managed by the ICC and TWG.

Based on the South Sudan immunization cMYP 2012-2016, the following strategies were proposed to ensure sustainability of pentavalent vaccine in the South Sudan routine immunization system:

- Increased contributions from the government of South Sudan as part of the Vaccine Independence Initiative to assure reliability of resources from the Ministry of Health annual budget. Funds are to be released from Ministry of Finance, Planning and Economic Development to UNICEF supply division on a quarterly basis. The government successfully met its co-financing obligation in 2014. However due to the economic crises following the conflict, co-financing for 2015 was not met.
- Mobilization of additional resources (local and external partners from current and new partners);
- Strategies to increase program efficiency through improvements in vaccine utilization. Priority will be given to reduction of vaccine wastage to obtain efficiency gains for the program, given the high costs of the new vaccines. To achieve this objective, training of EPI program staff was rolled out at the national, sub-national and county levels in vaccine administration, management, storage, vaccine wastage monitoring, and efficient cold chain system, with training in pentavalent vaccine intensified since the national training of trainers held in July 2014. The training increased the efficiency of overall EPI Program Management at various levels by streamlining vaccine distribution and management, which was reflected in health facility records (indicating no shortages). In addition, the reporting rate, completeness, and timeliness showed improvement and there were increased efforts in supportive supervision from state to county levels, and from county level to health facilities.
- Assurance of cold chain functionality, particularly reliable energy sources. At the central and state levels, electricity is provided by generators, while at the county levels most of the cold chain power is provided by solar fridges and, to some extent, by kerosene fridges. MOH and UNICEF plans also include anticipated additional solar refrigerators. While vandalism of EPI equipment continues in the conflict areas, some equipment – mostly cold boxes and solar fridges - have been supplied in the stable states and protection of civilians (POC) sites.

Most of the pre-introduction activities planned for pentavalent - such as rehabilitation of the national cold chain store, the national TOT & state TOT trainings, launching ceremony, social mobilization posters, T-shirts, banners, and aprons - were financed through the Gavi introduction grant. In addition to the support provided through the MOH, WHO and UNICEF, funding gaps were covered by various partners, notably in the counties, for trainings of vaccinators on the new vaccine. In addition, the Ministry of Health mobilized partner agencies, including IMA World Health, JPHIEGO/MCHIP (USAID-funded), and

Health Pooled Fund, to assist with financing for printing and distributing field guide training materials for pentavalent introduction. Through its Gavi/NVI support, JSI played a key role in the planning process through coordination and follow-up with the MOH/EPI and partners on the pentavalent introduction activity timeline; providing technical assistance in the review and update of the national EPI policy, routine immunization technical documents, monitoring and reporting forms and training materials; and drafting letters to the lead agencies and following up with the printing, launch preparations, and training plans.

CAPACITY BUILDING

In order to improve immunization practices and prepare the system for the pentavalent vaccine introduction, cascade training sessions for vaccinators were organized throughout the country, in many cases linked with routine immunization training. A national level training involving the state EPI and Cold Chain Managers was conducted in July 2014 with the participation of nine of the ten states, including two of the three states that continue to be affected by civil unrest. Representatives from seven of these states then conducted Training of Trainers (TOTs) for state level EPI Supervisors and Cold Chain Officers, who in turn provided cascade trainings and supervision to the frontline vaccinators as the pentavalent vaccine was rolled-out in 2014 and 2015.

By March 2016, all counties in the seven states had conducted the county level trainings, as well as some trainings completed by partners in the accessible counties of the conflict affected states. Unfortunately, due to civil unrest and the looting of cold chain equipment in some areas of the three conflict-affected states, cascade training and supervision were delayed. However, the Ministry of Health implemented a contingency in these states, putting aside funds for their TOTs as well as their pentavalent vaccine stocks until such time as the security situation in these states normalized. In addition, there are a few stable counties in these affected states that provide immunization services through POC facilities. Provided the POC facility has a functional cold chain, UNICEF is supplying these facilities with vaccines, including pentavalent. However, the MOH and TWG strongly advised partners in these states to provide orientation training to their health workers before introducing pentavalent in their facilities, and the lead agencies operating in these states were provided with electronic copies of the field guide training materials for pentavalent vaccine introduction, as well as the monitoring tools. As noted above, trainings have been carried out by implementing partners in these areas, as feasible.

Training at the county level has proved to be a challenge during the introduction and roll-out. The Government was not able to fully contribute their portion of co-financing, and the Gavi introduction grant alone was not enough to completely support pentavalent trainings with vaccinators at county level; therefore, support was sought from the lead partner agencies in country, e.g. WHO, UNICEF and USAID (through MCHIP/Jhpiego). Unfortunately, there were delays in the roll-out of the county-level trainings, in large part due to a lack of clarity during the planning process and with communications on the expectations of the role of these lead agencies in facilitating the organization of the trainings at county level.

The content of the training included pentavalent vaccine introduction, as well as overall routine immunization strengthening; however, resources were limited and not all health workers were able to attend. The funding constraints also limited the duration of each

training and how much content on routine immunization could be included. The trainings on new vaccine introduction have provided an opportunity to improve skills and capacity that are necessary to ensure roll-out of vaccine as well as to strengthen the routine immunization system. However, there is a continuous need for training on immunization at all levels, as national & sub-national capacity is weak in both human resource and technical capacity.

In the year and a half following the pentavalent launch, two JSI officers, along with MOH/EPI staff, followed-up in various targeted states and counties to continue training and monitoring activities, as funds and limited staffing permitted. Where trainings had been conducted, they made follow-up supportive supervision visits to evaluate the outcome and quality of the trainings at state and county levels using a standard routine immunization checklist (see Annex V). Their observations are summarized as follows:

Strengths:

- Health workers were offered refresher training and were oriented on the pentavalent vaccine;
- There was some experience-sharing between states;
- Attendance was high during the trainings and post-test scores from training were better than pre-test scores;
- Important topics were covered during the trainings;
- States and counties developed action plans to support routine immunization and pentavalent vaccination introduction and roll-out during the trainings.

Weaknesses:

- The trainings were rushed and not all trainings were sufficiently conducted before the pentavalent vaccine was distributed;
- Some participants were unable to attend the training due to short notice and there has been inadequate monitoring due to limited MOH staffing and financing for follow-up;
- Training materials were not printed in time for the TOTs, resulting in most training materials available only as the cascade trainings rolled out;
- At the county levels, partners were reluctant to conduct vaccinator trainings (due to lack of finances or lack of clarity/communication on their role in the process);
- Due to limited monitoring and supervision visits, few reports and recommendations have been shared with the MOH from locations where JSI has not attended or followed-up on states/county trainings.

The Post Introduction Evaluation (PIE) was scheduled to be conducted six months following the introduction of the new vaccine. However, despite continuous attempts to prioritize this, due to on-going scheduling challenges with the MOH and partners, the PIE is currently not planned to take place until May/June 2016 (*see the Monitoring and Evaluation section for additional information on the post-introduction evaluation process*).

Recommendations for improving and ensuring successful capacity building:

1) Training prior to new vaccine introduction ensures good preparedness at all levels; it is therefore necessary for training funds to be available well in advance of the launch and to ensure that cascade training is completed before vaccines are distributed;
2) Fund managers need to be involved well in-advance to assist in planning at every level so that they understand their role and are familiar with any existing funding gaps to assist in addressing these;
3) Shortages of funds requiring partner support should be communicated through appropriate channels as early as possible to allow ample time for the partners to mobilize support;
4) Training guidelines need to be tailored to the country context and pre-tested for suitability for users in the field ;
5) The selection of training facilitators to participate in TOTs should be done carefully to ensure that they have the appropriate skills and are able to carry out the trainings and subsequent monitoring;
6) Distribution of training materials, monitoring tools, and social mobilization materials (in addition to assurance and monitoring of vaccine distribution and other logistics at all levels) should be prioritized and conducted prior to the launch and in the subsequent months, to help ensure successful introduction and roll-out;
7) More than one focal point per site should be trained in new vaccine introduction in order to avoid gaps in knowledge, and programmatic errors as well as to assist with promoting demand and utilization for the new vaccine. The trainers' competencies and ability to conduct cascade training (as needed) and link this with routine immunization strengthening should also be part of a new vaccine implementation and monitoring plan;
8) For future vaccine introductions, adequate resources should be mobilized for the required pre-implementation training at Payam and Boma levels for a large number of health workers who will be working with the new vaccine;
9) It is critical that health workers as well as parents are provided adequate information such as the vaccination schedule, potential side effects, and key messages to provide them with sufficient answers to frequently asked questions. This needs to be further incorporated into efforts by the MOH and partners to implement the "Reaching Every Community" approach throughout the country.

LOGISTICS AND COLD CHAIN

As pentavalent and DPT vaccines need similar storage space (given comparable 10 dose/vial size), the cold chain capacity was anticipated to be sufficient for the new vaccine. However, to ensure that the cold chain was functional throughout the system, the MOH and partners conducted a rapid cold chain assessment as part of the preparations for the new vaccine introduction. Findings from the assessment included verification that the national cold storage space had two new cold rooms and one freezer room (in total= 24,700 liters), which were adequate for storing both the existing vaccines and the new pentavalent vaccines. Additionally, the national cold store had electricity available 24hrs/day with a standby generator, and the seven stable states also had adequate storage space. At county level, solar refrigerators were available as well as generators provided by UNICEF to run the cold rooms. However, in some counties, cold chain equipment was outdated and there were periodic shortages of fuel/energy, disrupting the functionality of the cold chain. As a result, in Budi County, some OPV and tetanus vaccines were found to be at VVM stage 4, and in Jur River County, some OPV vaccines were found at VVM stage 4. Also, as noted previously, the cold chains in the three conflict states had been destroyed due to looting during the conflict. While some of the equipment has been replaced, theft and vandalism continue as of the time of this report.

At the Central Store, vaccine storage temperatures are monitored twice daily. Although temperature monitoring reports are not shared up the system, supervision visits by JSI staff and consultants indicated that refrigerators have thermometers and that temperature is monitored two times per day at all levels. The national cold store is mainly managed by UNICEF staff. Cold chain and logistics staff supporting the National EPI remain minimal in-country, which include only one trained UNICEF cold chain technician, one MoH technician, and two CDC technicians. Given the large volume of vaccines moving through the routine system (including pentavalent vaccine) and the need for ongoing maintenance of cold chain equipment throughout the country, additional human resources are needed. UNICEF proposed a short term plan to the national level TWG for recruitment of eight national staff to assist in the cold chain/ EPI management. The MOH agreed to follow-up with this proposal and identify eight potential staff that could fill this role. However, given the planning underway to divide the South Sudan administrative system from 10 states to 28, a much bigger EPI workforce is needed. At the time of this report this issue had not yet been addressed.

Vaccine Procurement and Ordering

The first Gavi-supported consignment of 930,000 doses of pentavalent vaccine arrived in South Sudan at the national vaccine store on May 21, 2014. The country has a quarterly vaccine shipment schedule, and the pentavalent vaccine requirements forecasted by the MOH and UNICEF for 2014-2016 are indicated in Table 2 below. Since the introduction date was postponed a number of times, the estimate for 2014 (see Table 3) was based on the launch in May.

Table 2: Projected target population and vaccine doses forecasted

	Target (cohort)	Doses needed (both Gavi & Country contribution)	Wastage (25%)	Buffer (25%)	Total (rounded off)
2014 (May launch)	265,389	796,168	262,736	264,726	1,324,000
2015	410,027	1,230,081	405,927	144,276	1,780,500
2016	422,328	1,266,984	418,105	12,271	1,697,500

Table 3: Distribution Plan for Pentavalent vaccine and injection materials in South Sudan

Distribution of DPT-HepB-Hib (Penta-valent) and associated injection materials

	STATE	Target 2014 < 1yr (4%)	Doses one qtr + one monthbuffer	Vials	0.5ml Box/100	Safety boxes Box/25	Cotton wool
1	Central Equatoria	59,225	77,000	7,700	770	31	300
2	Eastern Equatoria	48,627	63,220	6,330	632	25	250
		107,852	**140,220**	**14,030**	**1,402**	**56**	**550**
3	Western Equatoria	33,220	43,190	4,320	432	17	300
4	Lakes	37,337	48,540	4,860	485	19	250
5	Northern Bahr El Ghazal	38,687	50,300	5,030	503	20	300
6	Warrap	52,212	67,880	6,790	679	27	300
7	Westen Bahr El Ghazal	17,894	23,270	2,330	233	9	200
	Sub-total	**179,350**	**233,180**	**23,330**	**2,332**	**93**	**1,350**
8	Jonglei	72,910	94,790	9,480	948	38	300
9	Unity	31,437	40,870	4,090	409	16	300
10	Upper Nile	51,752	67,280	6,730	673	27	300
	Sub-total	**156,099**	**202,940**	**20,300**	**2,029**	**81**	**900**
	Total	**443,301**	**576,340**	**57,660**	**5,763**	**231**	**2,800**

***While some areas of the conflict-affected states are now accessible and are using the vaccines, and some PoCs are administering the vaccine, some of the vaccines for these conflict affected states are still in the central store.**

Vaccine stock record books are available at the National, State and County levels. Records for pentavalent vaccine distribution were updated as part of the stock in and stock out reporting system to the counties and to facilities, which is primarily paper-based at facility and county levels and electronic at state and national levels. The expiry and batch numbers are recorded in most health centers and will be maintained at all levels. All facilities are required to conduct monthly physical stock checks to validate stock records. Before the introduction, supervisory checklists were updated to include vaccine stock spot checks during supervision visits. All stock outs, overstocks, and vaccine wastage shall be reported to the next higher level whenever new supplies are being requested. These reports will also include feedback on observed weaknesses and strengths.

Recommendations for improving and ensuring successful cold chain/logistics preparedness and management:

1. A comprehensive nationwide cold chain capacity assessment should be carried out to identify gaps and needs, including in energy supply, human resource availability, capacity to manage the cold chain, and availability of other cold chain equipment and accessories. Additional human resource capacity needs should be met as soon as possible, through contracting with partners and/or use of HSS funding.
2. Missing cold chain equipment and accessories including fridges should be installed, repaired or replaced, as needed.
3. Human resource capacity in cold chain and logistics management should be strengthened through increasing staff and training.
4. Freeze-watch monitor thermometers should be provided to all levels of the cold chain. To improve vaccine management and storage and reduce wastage, spot-checks of vials should also occur regularly at all levels to monitor the progression of vaccine to VVM stage II and identify any vials in stage III;
5. Vaccine waste management should be improved so that safety boxes are not filled past capacity and proper incineration techniques are practiced. Per WHO guidelines, safety boxes should be filled to ¾ capacity and burnt in incinerators or in pits that are covered or fenced off.
6. In areas still at high risk for theft and vandalism of cold chain equipment, rapid response missions (RRMs) should be carried out using a fast cold chain strategy (e.g. temporary cold boxes and vaccine carriers), until it is viable to install more permanent solar fridges and/or other cold chain equipment.
7. A maintenance plan for cold chain sustainability should be established.

SOCIAL MOBILIZATION AND COMMUNICATION

At national level, there has been high-level political commitment to the immunization program, as demonstrated by the coordination and leadership provided from His Excellency the Vice-President James Wani Igga, the Honorable Minister of Health Dr. Riak Gai Kokister, Dr. Martin Elia Lomuro, Minister for Cabinet Affairs, Dr. Samson Baba, Director General of Primary Health Care, and Dr. Anthony Laku, EPI Manager. As noted previously, the ICC and Immunization TWG were also actively involved in the review and endorsement of the new vaccine introduction tools and materials, as well as throughout the planning and implementation of the vaccine roll-out. However, at state and county levels, community involvement and partnerships, including through Civil Society Organizations (CSOs) and Non-Governmental Organizations (NGOs), continue to need strengthening beyond campaigns and emergency assistance to support routine EPI activities and be part of health committees to help build the health system base that is needed to sustain pentavalent implementation and future new vaccine introductions (see also the Partner Engagement section).

In order to engage the major stakeholders and update them on the pentavalent introduction, advocacy was conducted by the MOH and partners and targeted at key health managers, academia, and political and religious leaders. Advocacy and communication efforts included:

- Meetings with stakeholders to sensitize them on the new vaccine and gather their support to increase awareness of and demand for pentavalent vaccine;
- Visits to political, religious, and traditional leaders to request their assistance in resource mobilization and information dissemination in their constituencies;
- Identification of social mobilization needs and addressing gaps;
- Development of IEC materials and ensuring their distribution to facilities;
- Training of Health Workers on the new vaccine, including messaging and communication;
- Development and use of social media (such as jingles played on national and state radio channels).

The national launch of the vaccine was held on July 16, 2014 and provided an opportunity for high-level government representatives, public officials and community leaders to express their support for the vaccine before a wide audience and the media (for nationwide dissemination). The Vice President presided over the event, with speeches and participation from the Minister of Cabinet Affairs, Minister of Health, Governor and local officials of CEQ, WHO and UNICEF Representatives, as well as representatives from the Gavi Alliance, donors, lead agencies working in South Sudan, and CSO and community partners. It was also planned for each

Dr. Martin Elia Lomuro, Minister of Cabinet Affairs, during pentavalent launch in Juba,

state to conduct launching ceremonies; however, these were not able to take place due to insufficient funding.
In preparation for the launch, partners worked with the Communications Working Group to develop IEC and communications materials such as posters, leaflets and t-shirts, distributed at the national launch ceremony as well as to each state.

Overall, the advocacy and awareness efforts carried out throughout the introduction preparations and vaccine launch, which focused on the benefits of the vaccine, were considered by the MOH and partners to have contributed to the increases in penta-3 coverage (see Figure 2 and Figure 4).

Recommendations for improving and ensuring successful social mobilization and communication:

1. It is critical to reinforce key messages to parents on the vaccines, as well as the diseases they prevent by developing routine immunization communication guidelines and providing job aids, IEC materials, and communication support for health workers. These messages should be developed, pretested, printed, and distributed during training and in advance of the launch to address frequently asked questions and concerns posed by health care workers and parents;
2. Various communication channels and resources should not only be part of the new vaccine introduction planning but also sustained (e.g. using radio talk shows, TV programming, newspapers, involvement of community leaders, etc.), to circulate important information on vaccines and vaccination to increase awareness amongst the general population and help with inter-personal communication with communities and parents on the vaccination schedule, identifying eligible children, and defaulter tracing;
3. Advocacy and social mobilization/communication for the roll-out of pentavalent vaccine should continue and be intensified with efforts to promote RI. High level advocacy should be carried out with top government officials, highlighting the economic benefits for pentavalent and immunization overall and explain expectations from the government. In addition, efforts should be encouraged - and community and CSO/NGO partners engaged – by EPI and partners at state and lower levels (e.g. utilizing health committees and other group forums, radio, posters/media, and daily health talks at HF and outreach sites);
4. A social mobilization focal person within the EPI should be recruited and trained, and tasked with assuring that a communication sub-committee is active with the TWG for routine immunization and continuing to support community awareness for pentavalent and other vaccines and encouraging parents to ensure their children's completion of the vaccination schedule. The CSO Platform can also be further engaged to assist with this;
5. Ceremonial launch and routine immunization advocacy events should be held at national, state and county levels, with participation from influential people (political CSOs, religious and other social groups and leaders).

PARTNER ENGAGEMENT/ICC

The senior ICC committee played an active role in coordinating and overseeing the pentavalent vaccine roll out. This committee is usually chaired by the Minister of Health or his Under Secretary, and is composed of various stakeholders supporting the MOH in immunization activities. The ICC, which usually meets once a month (or at least once every three months), met more frequently as the pentavalent vaccine introduction approached.

In addition to the ICC and the immunization TWG (which provides the day-to-day technical assistance and guidance), CSOs assist in implementing primary health care services throughout South Sudan. CSOs were involved in the pre-introduction and introduction activities at all levels, including support to county-level trainings (e.g. by the respective implementing CSOs in each county). However, the involvement of CSOs was not uniform, and while some were able to support the vaccine introduction immediately upon its launch in July, others were still organizing trainings up to and after the launch of the vaccine.

In July 2015, JSI collaborated with the MOH and Catholic Relief Services (CRS)/IRE to conduct a two-day workshop with local CSOs to orient them on the penta introduction and overall practical aspects of RI. The workshop provided an opportunity for CSOs to discuss and identify strategies for how they can support immunization services in South Sudan, including through the CSO Platform that is being established to enable them to access resources from the Gavi HSS funding. Work plans were developed by the CSOs to establish their related activities to support routine immunization (including pentavalent uptake) in the years ahead. In addition, JSI has been working with the MOH, CRS, and local CSOs to build CSO capacity to engage in routine immunization and support development of the CSO Platform in South Sudan. Although the CSO mapping and terms of reference have been completed, the platform has faced challenges in getting established, in part due to in the need for higher level CSO leadership and advocacy to support the platform's registration.

Recommendations for improving and ensuring successful partner engagement:

1. The CSO Platform needs to be registered and its role concretized with the MOH and ICC. Gavi provided funds for developing the CSO Platform for immunization through CRS (as noted above). Through IRE, the original implementing partner, mapping of local civil society organizations supporting immunization in the states and counties was carried out. This mapping and follow-up from the July 2015 CSO workshop can be used to identify and strengthen the capacity of local CSOs to support routine immunization services. The EPI, JSI and partners can continue to provide the CSOs with technical orientation and guidance related to new vaccine integration with routine immunization, REC, and community partnerships with health services.

2. The importance of strengthening and ensuring routine immunization as a population-based, preventive service that is a critical base for primary health care should continue to be emphasized with the broader health community through the Health Partners Forum and other health and development sector coordination committees.

MONITORING AND EVALUATION

Coverage and Reporting

As noted previously, WHO and UNICEF led the production and dissemination of the training and reporting tools (such as child registers, child health cards, women of child bearing age (WCBA) and monthly reporting forms), with assistance from partner agencies for printing and dissemination. While the updated monitoring tools to include pentavalent were reviewed and approved by the TWG in advance, this required shepherding by JSI and EPI for finalization. The clearance from MOH management took some time due to the request that the documents be translated into Arabic, with the tools consequently not printed until October 2014, after the launch. This also resulted in delays in completeness of reporting in some of the states, which was addressed through supervision and follow-up by the EPI, JSI, and partners (as limited staffing allowed). Due to the delay, some health facilities improvised their child health registers, child health card, and tally sheet to record immunization data.

Supervision visits conducted by EPI, JSI and county partners since September 2014 confirmed that penta-3 coverage increased slightly over this time (see Figure 4); however, additional support is needed to reduce drop-out and promote defaulter tracing, improve access and outreach, implement REC, and address coverage gaps (as possible) in the states with highest insecurity (i.e. Unity, Upper Nile and Jongeli States).

Several attempts have been made since the introduction of pentavalent vaccine to plan a post introduction evaluation (PIE) within the recommended time frame (6 months to 1 year post-launch). JSI has continued to advocate for this with the MOH and partners, including in various TWG and ICC discussions. In order to maximize partners' time and resources, it was agreed that the PIE would take place jointly with an EPI Review. However, due to scheduling conflicts, competing priorities, and difficulties with accessing certain areas, the two evaluations were postponed multiple times. At the time of this report, the government is now planning to hold this joint PIE/EPI Review in the last quarter of 2016 – two and a half years after the launch.

Figure 4: DPT3/Penta3 Coverage by State 2013- 2015

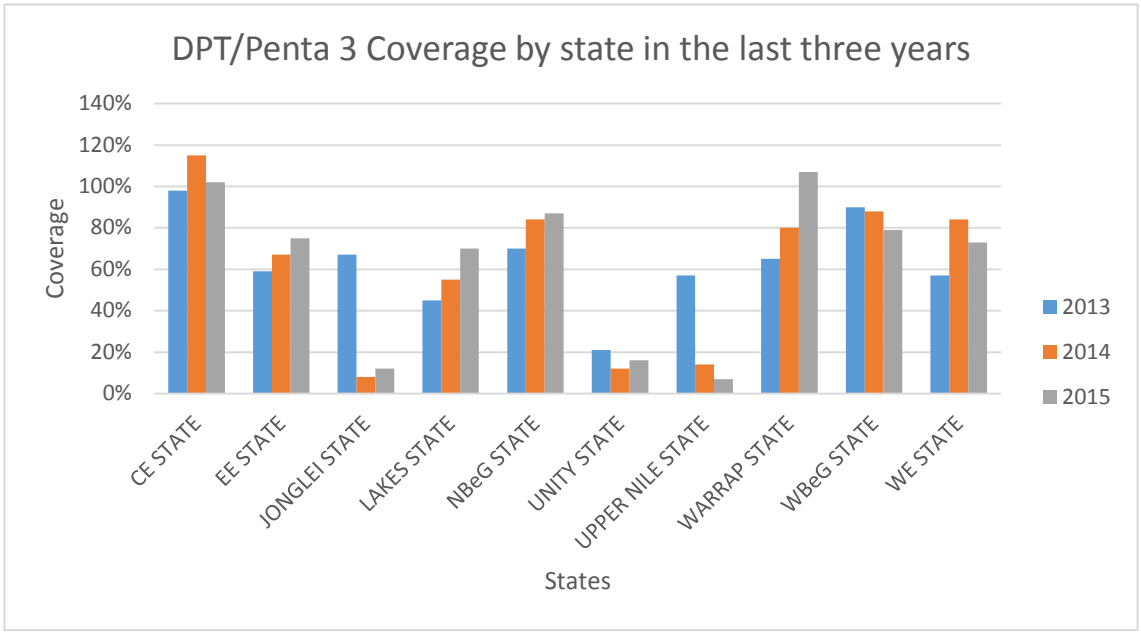
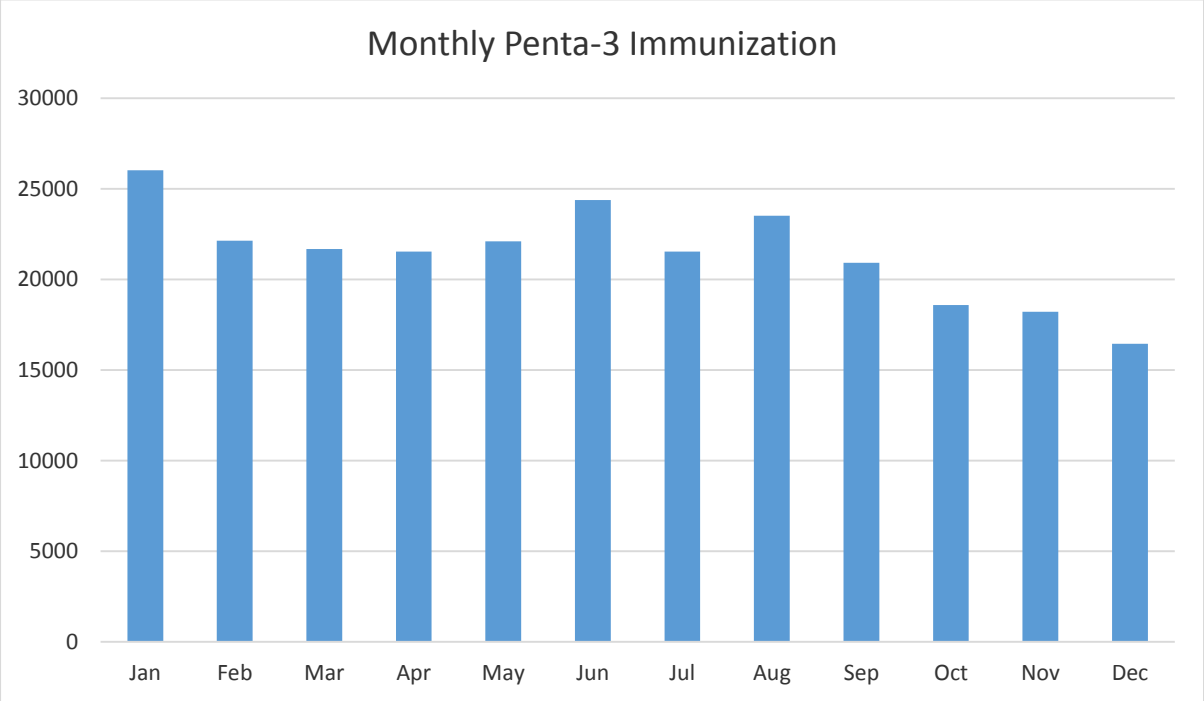


Figure 5: Monthly Penta3 coverage for South Sudan in 2015



**Fund Managers HPF, IMA, ISDP and Core group started scaling down in-country technical assistance from September 2015*

Recommendations for improving pentavalent monitoring and evaluation:

1. The pentavalent PIE needs to be conducted as soon as possible.
2. Nationwide guidance through refresher training and supportive supervision visits to state, county, and sub-county levels (and involving representatives at those levels) should be prioritized and funded (e.g. through HSS, donor and partner resources). This can be done as part of micro-planning and health partner forums/support to improve data quality, including how to calculate, analyze, and use immunization coverage and drop-out data (from pentavalent and other antigens) to guide immunization activities;
3. Timeliness and completeness of reporting at state and lower levels need to be a priority for the EPI and partners to better assess the coverage and outcomes of pentavalent introduction as well as to improve the system for future introductions.

Post-Introduction Supervision and Monitoring

As noted, the MOH, JSI, and other partners have been monitoring the introduction of pentavalent vaccine in the states and counties since August 2014 (as possible, given staff and funding constraints). JSI assisted in developing a standardized checklist for use by the EPI and partners at state and county levels (see Annex V). These follow-up visits have assisted the states and partners to conduct cascade county level trainings and monitor implementation of pentavalent vaccine roll-out, as well as to strengthen capacity and support for the routine immunization system. These supervision and technical visits are critical for addressing gaps and needs at county and sub-county levels, notably given the continued capacity building needs for health staff at county and sub-county levels. Significant additional funds and human resources are needed, however, to support this, particularly to increase focus on routine immunization. Findings and suggestions from these visits are included in the recommendations that follow.

Recommendations for increasing and strengthening supervision and monitoring:

1. South Sudan should encourage and improve supervision by establishing nationwide use of the standard supervisory checklist and logbooks to record observations and recommendations for improvement from field supervisory visits. In addition, health workers should ensure that the supervisory checklist is updated and adapted to local context to include issues related to the new vaccine and other priority areas identified. Synchronization and quality of supervisory visits should also be considered and key indicators for immunization included with integrated supervision by other health programs and partners to reduce burden and leverage human and financial resources at all levels;
2. Supportive/formative supervision and monitoring should be prioritized and carried out based on identifying bottlenecks and correcting obvious problems on-site or through coaching, self-assessment or other adult learning methods. This includes use of HSS and other funds to support county and sub-county capacity building – through supervision, performance improvement approaches, review meetings and other opportunities for on-the-job learning and peer technical exchange.

RECOMMENDATIONS FOR FUTURE NEW VACCINE INTRODUCTION

The introduction of the pentavalent vaccine into the South Sudan routine immunization system offers an opportunity for the country to improve its immunization program and coverage, as well as to apply the lessons learned to future planned vaccine introductions. In addition to the more specific recommendations noted in each of the previous sections, more general observations and recommendations for future introductions in South Sudan are summarized below:

Policy and immunization program performance

1. New vaccine introduction provides an opportunity to update national immunization guidelines, technical materials and existing policies and should be part of the initial planning as soon as a decision is made to introduce a new vaccine into the system. The roll-out and monitoring of the new vaccine should also be capitalized on to improve the routine immunization system and performance, such as re-emphasizing this as part of efforts by the MOH and partners to implement the Routine Immunization Road Map and cMYP;
2. Introducing a new vaccine into the routine system is an opportunity to improve the cold chain capacity at the national and state levels and should include efforts to replace/rehabilitate cold chain equipment and address management and maintenance issues (linked with longer-term health system strengthening).

Community Preparedness

1. The launching of pentavalent was used to promote community awareness of immunization and the introduction of the vaccine, with the launch ceremony well-covered by local media as well as international broadcasting stations (such as BBC). This media engagement should continue for routine immunization and in future introductions to target messages and information dissemination to the most appropriate audiences;
2. In addition to media dissemination, community awareness needs to be built with the majority of households that do not have TVs and/or radios. Social media was not intensive enough to provide sufficient orientation to the general public about the shift from DPT to pentavalent and the addition of the two antigens (HepB and Hib) to prevent the associated diseases. To maximize reach to all households, utilization of community engagement interventions should include outreach visits to community leaders, Community Theater, and health talks at health centers and outreach sites.

NVI in Under-resourced and Conflict Settings

1. Introduction planning should seek opportunities with local leaders and trusted partners to access conflict affected settings during intervals where fighting is on hold due to peace talks or where special humanitarian arrangements can be negotiated. Preparations should be made in advance so that when these periods of calm occur, implementers can move rapidly to carry out cold chain preparation, staff and local leader/partner training;

2. The MOH and ICC should advocate with partners working in hard-to-reach and under-served areas to engage them in preventive health and immunization system strengthening, including with new vaccine introduction preparations and training, so that they can assist with and lead, as possible, with the vaccine roll-out and linkages with broader health where the government health system is not functional due to conflict or limited resources.

ANNEX I: PENTAVALENT INTRODUCTION CHECKLIST PRE-LAUNCH

Example from May 2014

Issue	Update	Action(s) to be taken	Lead Agency / Focal point
	Need for cold chain equipment		
Assessment for cold chain equipment	The cold chains in Juba, Yambio, Torit, Wau, Kuajok Aweil and Rumbek are functional. JSI visited Juba Central Cold chain, Wau, Yambio, Torit and Kuajok state cold chains. (See Annex 1)	-The 2 new constructed cold rooms in Juba central stores are completed by UNICEF contractor	UNICEF
Advocacy to targeted new partners for additional cold chain equipment	Although replacement equipment has been sent, additional cold chain needs in unstable areas will need to be assessed, when possible	UNICEF emailed assessment tool to partners to update MOH and UNICEF on gaps to be addressed	UNICEF
Additional cold chain equipment needs (and if so, by when)	All states (10) had received additional cold chain equipment e.g. solar Ice liners and deep freezers for the storage of vaccines and Ice packs	Monitor the situation on the ground.	UNICEF
Distribution plan for new equipment	UNICEF distributed solar fridges and generators to the 3 affected States. Pending installation.	UNICEF to send Technician to install solar fridges	UNICEF
Distribution and installation of new CC equipment at County and health facility levels	The two cold rooms in Wau are completed, shelves remain to be fixed.	UNICEF to send carpenter to fix shelves.	UNICEF
	Revision of recording, reporting and of the monitoring EPI tools		
Revision of technical guideline and other EPI policy documents	Technical documents for Pentavalent introduction were reviewed by partners and endorsed by ICC. The M&E director for Planning in the Ministry of health wanted the documents translated into Arabic including the monitoring tools to because states that board the Sudan are using Arabic language.	JSI Technical Advisor followed it up with WHO and MOH. The monitoring tools were still being translated. However, JSI technical advisor shared the soft copy with partners to print for time being for data collection at HFs as the MOH makes progress on the Arabic translation.	JSI/WHO/MOH
Revision of all EPI management tools (tally sheet, immunization	The M&E director for Planning in the Ministry of health has decided to translate the monitoring tools to Arabic because the states that are boarding the Sudan are using Arabic language	As above	JSI/WHO/MOH

Issue	Update	Action(s) to be taken	Lead Agency / Focal point
register, child health card, reporting forms, etc.)			
Distribution of revised EPI tools	Partners are printing the revised EPI tools endorsed by ICC. Dr. Tunda provided soft copy of monitoring tools to partners to print and use it for data collection.	JSI Technical advisor shared the soft copy with partners	JSI
Availability of the revised EPI tools at health facility level	JSI Technical Advisor requested Partners to print tool and use in the facilities to facilitate data collection	Monitoring tools were widely circulated to partners through emails and Workshops	JSI
	Training of health workers and logisticians		
Availability of the adapted training materials (Trainers' guide, modules for health workers at peripheral level)	2000 copies of field training guide were printed (A5 1200 & A4 800).	The Ministry of Health/EPI and UNICEF and partners are facilitating the distribution of the field training materials to the 7 stable states	MOH and partners
Training of trainers	TOT Conducted at the national level and 5 states	To conduct TOT in the remaining 2 states (Lakes and North Bahr El Ghazal)	MOH/UNICEF/WHO/JSI/ Partners
Training of logisticians (installment and maintenance of cold chain equipment)	Ongoing	The on-job training of national/states/county cold chain officers and assistants	UNICEF
Training of health professionals at the operational level	Conducted at the National TOT and states	Training is being cascaded to the counties.	MOH/Partners/ JSI/UNICEF/ WHO
Training of community health educators and/or CSOs	To be conducted next quarter	Partners have plans to train Home Health Promoters (HHP)	Partners
	Advocacy, Communication & Social Mobilization		
Stakeholder sensitization and advocacy	Ongoing at national, states and county levels.	Advocacy and community sensitization to be intensified through radios, TV programs and visits to the states to increase vaccine demand	JSI/MOH-EPI/ WHO/UNICEF/ Partner
Key messages developed (to address KAP	SMG- continued working on developing relevant messages to increase demand for mothers/care givers to bring	Sub-committee for social mobilization reviewing and updating key massages (in four	Social Mobilization group

Issue	Update	Action(s) to be taken	Lead Agency / Focal point
and any possible concerns of parents for this vaccine)	children for immunization	different languages).	
Pretest of the messages and communication materials	UNICEF pretested the materials amongst women	Pretest conducted before final printing of the IEC materials.	Social mobilization group/MOH
Media identification and sensitization	Media groups were oriented for one day in MSH conference hall	MOH/JSI/WHO/UNICEF oriented and guided media house to be careful in communicating messages to the general public-MH provided with face sheets/handouts presentation	UNICEF/MOH/WHO/JSI/ Partners
Communication in the community	Started in small scale	In the coming quarter it will be intensified, using penta jingles and penta song	ALL
	Vaccine and injection material supply		
Readiness to receive the vaccine and injection material	CVS has enough space for the new vaccine and injection materials	Two more cold rooms are being installed to have more capacity to receive additional penta and continue to store campaign vaccines, remaining DPT, and RI vaccines	UNICEF/MOH
Reception of penta vaccine and injection material	The vaccine is accepted by health workers and the community	Continue to intensify social awareness to increase demand for the vaccine	UNICEF/MOH
Registration of vaccine doses and of the syringes, etc.	The national central cold chain and state cold chain register batch number and doses of vaccines	Similar practices needed to be performed in HFs as well. MOH to provide Vaccine control books	UNICEF/MOH
Availability of vaccine and injection material at all levels	Vaccine and injection material available at all levels	HFs to conduct regular vaccine inventory	ALL
	Injection safety, waste management and disposal		
Availability of vaccines and syringes, needles, safety boxes, etc. at national level	The first vials of Pentavalent and injection materials arrived Juba on the 21/05/2014.	Vaccines are injection materials are being stored in the Central Vaccine store and preparations underway for distribution next quarter.	UNICEF.
Distribution of vaccines and syringes, needles, safety boxes, etc. to County and facilities	State EPI and cold chain have already distributed needles, safety boxes to counties and HFs	Partners to facilitate and support CHD with vaccine, needles and safety boxes	MOH
Availability of functional	Some HFs have functional incinerator some don't, some don't use them	Construction, rehabilitation, Training and Supervision	JSI/MOH/WHO/UNICEF

Issue	Update	Action(s) to be taken	Lead Agency / Focal point
incinerators at health facilities	properly, some have damaged incinerators		
Training for the correct use of incinerators	Conducted during the TOT at national, state levels and county levels	Discuss in new vaccine trainings; Conduct field visits in the 7 stable states	MOH/UNICEF/WHO/JSI and partners
Other tasks (to be defined)			
	Surveillance system updated for VPDs and AEFIs related to new vaccines		
Surveillance system for bacterial meningitis	Not strong yet	Introduction of Pentavalent will be used as an opportunity to start surveillance planning	MOH/WHO
Surveillance for AEFI	Forms for AEFI available.	MOH and Partners to conduct AEFI training at the National Level and state levels and form AEFI committees at all levels	MOH/ UNICEF/ partners
Training of staff for surveillance	Conducted during the TOT trainings	Availability of funds for training	WHO
Surveillance reporting system activated for new vaccine	Forms already available, systems need to be re-enforced	Refresher Training of Health workers on correct use of the new surveillance forms	MOH/JSI/WHO/UNICEF/ partners
Other tasks for surveillance?			
	Launching ceremony preparation		
Introduction date set	Pentavalent was introduced on the 1st of July	MOH to communicate and update Gavi and the state ministry of health DGs	MOH/EPI
Site for launching ceremony determined	Launching was conducted in Al Sabah Children Hospital	Authorities of the hospital were contacted and informed of the MOH plan to launch Penta in the facility	MOH
Preparation of the site with IEC materials and media	It was done one day before the launch	Committee for launching and Social mobilization was formed	MOH/JSI/UNICEF
Ceremony arrangements	It was under the launching committee, under the leadership of UNICEF	To be planned in June, prior to launch	UNICEF/launching committee
	Documentation		
Monitoring system in place for tracking introduction and roll-out			MOH/WHO/ UNICEF/JSI
Plan for follow-up in under-performing areas or	Not yet	After the introduction of the vaccine	MOH/WHO/ UNICEF/JSI

Issue	Update	Action(s) to be taken	Lead Agency / Focal point
districts where additional training/ capacity building is needed			
Supportive supervision	Conducted to Western Bahar El Ghazal, Warrap, Central, Eastern and Western Equatoria states and in the counties	To be conducted regularly using penta checklist	MOH/WHO/ UNICEF/JSI
Plans for PIE	Not done	Not done	

ANNEX II: SUGGESTED INDICATORS FOR MEASURING NEW VACCINE INTRODUCTION

Illustrative Indicator	Definition/clarification	Data source /collection method	Frequency of data collection
Vaccine pre-introduction plans finalized and implemented	# and % of plans prepared and implemented; ICC subcommittees established and meeting regularly	Record review	Quarterly
Recording, reporting, and monitoring tools are updated, printed distributed	# and % of EPI management tools revised to reflect new vaccine information	Record review	Once, before vaccine introduction
Health workers capable of using new vaccine properly	Minimum of one trained health worker per health facility providing immunizations (public and private); Minimum of one trained teacher per school providing immunizations for HPV (public and private)	Record review	At least once before vaccine introduction
New vaccine fully integrated into routine immunization system	Technical guidelines revised to reflect new vaccine; reporting tools revised; new vaccines available and used regularly in most HFs; Quarterly (monthly if feasible) monitoring of coverage (for rota) reported post-introduction; Supervision	Record review and supervision visits	Once for record review; ongoing monitoring through supervision
Country co-financing process and communication with Gavi improved	Key advocacy meetings conducted; teleconference/meeting discussions held between country and Gavi; co-financing discussed on ICC agenda	Annual Progress Report to Gavi	Quarterly

ANNEX III: MOH AND EPI LEADERSHIP AND ICC PARTNERS

Name /Title	Agency /Organization
Hon. Dr. Riek Gai Kok /The Minister of Health	Ministry of Health
Dr. Richard Lino Lako / Acting Undersecretary& DG Planning and Research	Ministry of Health
Dr. Samson P. Baba / DG Primary Health Care	Ministry of Health
Dr. John Rumunu /Focal Point, Health in Africa	World Bank, Juba
Dr. Abdi Aden Mohamed / Head of Office	WHO South Sudan
Dr. Jonathan Veitch / Country Representative	UNICEF South Sudan
Miss. Holly Suzanne / Health Coordinator	NGOs Health Forum
Dr. Susan Juan Salvatore /Acting DG Admin. & Finance	Ministry of Health
Mr. Anthony Kisanga / Project Director	Core Group Polio Project, South Sudan
Mr. Taban Musa / Deputy Director of EPI & Child Health	Ministry of Health
Ms. Veronica Lucy Gordon / Journalist, South Sudan Radio/TV	Ministry of Information
Ms. Veronica Kenyi / Health Coordinator	South Sudan Red Cross
Dr. Basilica Keji / Health Specialist	USAID South Sudan
Dr. Morris Timothy	JHPEIGO South Sudan
Dr. Mounir Lado	IMA South Sudan
Dr. Damianos Odeh	Health Pooled Fund South Sudan
Dr. Mawein Atem / Executive Director Food & Drugs Control Authority	Ministry of Health
Dr. Anthony Laku	MOH

ANNEX IV: ORIGINAL INTRODUCTION ACTIVITIES / TIMELINE – MOH AND PARTNERS

S/N	Activity Description	Budget	2014												Responsibility
			J	F	M	A	M	J	J	A	S	O	N	D	
1	COLD CHAIN AND LOGISTICS MANAGEMENT	$22,500													UNICEF
	Objective: To ensure functional cold chain system and availability of vaccines and injection materials														
1.1	*Rehabilitation of the central Cold chain*					✓	✓								UNICEF
1.2	*Outsource for repair and maintain Cold Chain equipment in all states*						✓	✓							UNICEF
1.3	*Distribute Pentavalent vaccine to all states and counties*							✓							UNICEF
1.4	*Deliver injection materials for the new vaccines*							✓							UNICEF
1.5	*Backhauling of Balance DTP vaccines in the states and Counties*								✓						UNICEF
	Subtotal:	$22,500													
2	MICRO PLANNING AND STRENGTHENING OUTREACHES	$65,000						✓							WHO
	Objective: To ensure adequate preparedness for the introduction of Pentavalent Vaccine														
2.1	Micro-planning (review) for Pentavalent Introduction in all states and counties including Donor and NGOs supporting MOH in delivering Primary Health Care Service														
2.1.1	*Invitation of Participants from the Counties*							✓							DG-SMOH
2.1.2	*Transportation of Participants*							✓							WHO
2.1.3	*Transportation of Facilitators*							✓							WHO
2.1.4	*Hiring of a hall*							✓							WHO
2.1.5	*Per diem to participants*							✓							WHO
	Subtotal:	$65,000													WHO

3	SURVEILLANCE AND MONITORING TOOLS	$30,000													UNICEF
	Objective: To ensure availability and utilization of monitoring tools.														
3.1	Review and update of immunization monitoring tools to include Pentavalent	$10,000	✓	✓	✓	✓	✓								MOH / TWG
3.1.1	*MOH/JSI share documents with Partners in EPI to enrich tools and include Pentavalent.*		✓		✓		✓								MOH / JSI
3.1.2	*ICC to endorse the reviewed monitoring tools*						✓								ICC
3.2	Printing and distribution of the monitoring tools (tally sheets, CHC, monthly reporting forms)						✓	✓							UNICEF
3.2.1	*Identification of Printing Press (3 quotations)*						✓								UNICEF
3.2.2	*Monitoring tools printed Samples revised*							✓							UNICEF
3.2.3	*Printing of Monitoring tools-5000 copies*							✓							MOH / UNICEF
3.2.4	*Distribution of Monitoring tools to states and Counties*							✓							MOH / Partners
	Subtotal:	$30,000													
4	TRAINING AND SUPERVISION	$126,304													WHO / UNICEF
	Objective: To equip the EPI Managers and service providers with knowledge and skills to manage smooth introduction of Pentavalent														
4.1	Develop and print a New Vaccine Introduction training Manual for South Sudan	$50,000													UNICEF
4.1.1	*Review of Field Training Manual to include Pentavalent Vaccine*		✓	✓	✓	✓	✓								MOH / Partners
4.1.2	*Endorsement of the training Manual by ICC*						✓								ICC
4.1.3	*Identification of Printing Press (3 quotations)*						✓								UNICEF
4.1.4	*Printed Sample Revised*							✓							UNICEF
4.1.5	*Printing of 5000 training materials*							✓							UNICEF
4.1.6	*Distribution of training materials to states and Counties*							✓							MOH / Partners
4.2	Training of Operational Level Health Workers by County	$45,000													WHO
4.2.1	*Ident cation of vaccinators*							✓							MOH / Partners

4.2.2	*Training of 5000 vaccinators*							✓							MOH / WHO / UNICEF / PARTNERS
4.3	Orientation of Hospital based Health Workers (in State and teaching Hospitals) : includes	$23,304													MOH / WHO / UNICEF / PARTNERS
	3 Days Workshop/ Invite the following:							✓							MOH / WHO / UNICEF / PARTNERS
4.3.1	*Medical officers*														
4.3.2	*Immunization officers*														
4.3.3	*Cold Chain managers*														
4.3.4	*EPI supervisors*														
4.3.5	*Data managers*														
4.3.6	*Frontline workers*														
4.3.7	*Nurses*														
4.3.8	*Private practitioners involved in immunization*														
4.3.9	*Pharmaceuticals*														
4.4	Training of Tutors in health Training Institutions	$8,000													MOH / WHO / UNICEF / PARTNERS
4.4.1	*Identification of tutors in health training institutions*														MOH / PARTNERS
4.4.2	*40 Tutors Trained*														MOH
	Subtotal:	$126,304													
5	SOCIAL MOBILISATION AND ADVOCACY	$61,072					✓	✓							UNICEF
	Objective: To create demand and increase awareness for Pentavalent and immunization in general														
5.1.1	*Develop and pre-test IEC materials and messages*							✓							UNICEF
5.1.2	*Print IEC materials in various languages (4 languages)*														UNICEF
5.1.3	*Disseminate IEC materials at the national and states levels*							✓							MOH / UNICEF / PARTNERS
5.1.4	*Printing of T-shirts carrying Pentavalent messages*							✓							UNICEF
5.1.5	*Distribute T-shirts to states*							✓							MOH / UNICEF / PARTNERS

5.1.6	*Printing of Burners and Posters*							✓							UNICEF
5.1.7	*Distribute and display Burners and Posters to states*							✓							MOH / UNICEF / PARTNERS
5.2	Sensitization of stakeholders at national level	$8,500						✓							UNICEF
5.2.1	*Conduct 1 day workshop*							✓							MOH / UNICEF
5.2.2.	*Invitation of participants*							✓							MOH
5.2.3	*Hiring of a Hall*							✓							UNICEF
5.3	Sensitization of the media	$10,000						✓							UNICEF
5.3.1	*1 day workshop*							✓							MOH / UNICEF
5.3.2	*Invitation of participants*							✓							MOH
5.3.3	*Hiring of a Hall*							✓							UNICEF
5.4	Radio and TV Programs	$10,000						✓							UNICEF
5.4.1	*Advertise the new vaccine on 4 news papers*						✓	✓							MOH / UNICEF
5.4.2	*4 Radio show talk*						✓								MOH / UNICEF / JSI / PARTNERS
5.4.3	*Send radio Messages on New vaccine introduction and other routine vaccines*						✓	✓							MOH / UNICEF
5.4.4	*TV discussion on Pentavalent and other routine vaccines*							✓							MOH / UNICEF / JSI / PARTNERS
5.4	Launching at National and state levels	$32,572						✓							UNICEF
5.4.1	*Formation of Launching committee (TWG)*							✓							TWG
5.4.2	*Invitation of important government officials*							✓							MOH
5.4.3	*Identification of Launch Venue*							✓							MOH
5.4.4	*Send SMS messages on New vaccine introduction*							✓							UNICEF
5.4.5	*Media-Press conference by the Minister of Health*							✓							UNICEF
5.4.6	*Launching date*							26							MOH
	Subtotal:	$61,072													
6	Monitoring, data collection and management including financial management	$25,000						✓							WHO / UNICEF

	Objective: To ensure that the planned activities are being implemented on schedule and quality is being maintained.														
6.1	Updating the existing monitoring and support supervision guidelines to include Pentavalent	$10,000					✓	✓							WHO
6.1.1	*Supervision guideline updated and printed*							✓							JSI / WHO
6.1.2	*Distribution of Supervision guidelines to states*							✓	✓	✓	✓	✓	✓	✓	MOH / WHO / Partners
6.2	Conducting hands on Supportive supervision directly focusing on Pentavalent as an integrated part of the strengthened supportive supervision	$15,000							✓						MOH / WHO / UNICEF / JSI / PARTNERS
6.2.1	*Communicate to states on dates for the supervision*								✓	✓	✓	✓	✓	✓	MOH / WHO / UNICEF / JSI / PARTNERS
6.2.2	*Travel to states and Counties for the supervision using the checklist supervision guidelines*								✓	✓	✓	✓	✓	✓	MOH / WHO / UNICEF / JSI / PARTNERS
6.2.3	*Provide feedback*								✓	✓	✓	✓	✓	✓	MOH / WHO / UNICEF / JSI / PARTNERS
6.2.4	*Write report*								✓	✓	✓	✓	✓	✓	MOH / WHO / UNICEF / JSI / PARTNERS
	Subtotal:	$25,000													
	Recovery Cost	$24,802													WHO / UNICEF
	WHO	$11,116													WHO
	UNICEF	$13,686													UNICEF
	Subtotal:	$24,802													
	Grant Total	$354,678													

ANNEX V: STATE AND COUNTY LEVEL ROUTINE IMMUNIZATION SUPERVISION CHECKLISTS

State level EPI Supervision Checklist, Republic of South Sudan

I. General Information

1. Name of the state _____-_____
2. Date of Visit:_____Date of previous supervision:_____
3. Name and responsibilities of the contacted person_____
4. Total state population:_____
5. Target population for the year: Total birth/ PW_____ Surviving Infants_____ NPW_____
6. How many counties do you have in the state?_____
   - How many counties have EPI supervisor_____
7. How many PHCC and PHCU are there in the state?_____
   - what proportion have trained vaccinator_____
8. Are there unreached population with immunization? Yes_____ No_____
   - If yes, Number of Boma's unreached :_____, total Population: _____
9. Is the EPI policy document available at the state office? Yes_____, No_____
10. Are state micro plans and budget prepared annually? Yes_____ No_____

II. EPI Plan:			
No	**Description**	**Yes**	**No**
1.	Is there an updated EPI Work Plan (monthly/quarterly)?		
2.	Are there annual and quarterly vaccine and other EPI logistics plan for the state?		
3.	Were outreach and static services reestablished according to REC approach?		
4.	Is there social mobilization plan incorporated in the EPI plan?		
5.	What proportion of the counties conducted pentavalent introduction training?		
6.	What was the source of funding for the pentavalent vaccine training?		

III. EPI Service Delivery

1.	Has the state health Department monitored its immunization coverage monthly?		
2.	If yes, compare the coverage against the total catchment area surviving infants?		
	i) BCG coverage _____ (___%) ii) PENTAVALENT3 Coverage _____ (___%) iii) OPV3 Coverage _____ (____%) iv) Measles Coverage _____ (____%) v) PW TT2+ Coverage _____ (____%) vi) NPW TT2+ Coverage _____ (____%)		
3.	How many in-service training have you conducted in the previous 6 months?		
IV.	**EPI Monitoring Tools**		
1.	How many supervision visits did you conduct in the previous quarter?		
2.	Have the vaccination monitoring charts been updated and used correctly?		
3.	Is dropout rate monitored monthly?		
4.	What is the current dropout rate for?		
	i) PENTAVALENT1-PENTAVALENT3 _____%		
	ii) PENTAVALENT1-Measles_____%		
	iii) PW TT1-TT2 _____%		
	iv) NPW TT1-TT2 _____%_		
5.	Did supervisor visit this state health office in the last quarter with a checklist?		
6.	Was there any supervision feed back?		
7.	Any review meeting conducted in the state in the last quarter?		
8.	Have you ever conducted any advocacy visit to decision makers?		
V.	**Vaccine and Cold Chain management**		
1.	Does the state have adequate cold storage space?		
2.	What proportion of the counties has adequate cold storage space?		
3.	Is there enough vaccine at least for three months at state cold room?		
4.	Does the cold chain person know the actions to be taken during power interruption?		
5.	Are there enough refrigerator spare parts in the state?		
6.	Is open multi-dose vial policy in use in the state?		
7.	How many trained cold chain technician in the state?		
8.	Is there any county or HFs not providing immunization service because of non-functional refrigerator?		

9.	How many?____,Type_____ Reasons for non-functioning		
	VI. Safety of injection		
1.	Are there sufficient amount of Ad syringes in the state dry store?		
2.	What percentage of PHCCs have incinerator?		
	VII. **Community mobilization/community involvement**		
1.	How is community mobilization carried out for immunization in the state?		
2.	Who mobilizes the target population at the Boma level?		
3.	Is there community involvement in mobilizing mothers?		
4.	What proportion of the Boma's has Boma health committee?		
5.	How many partners coordination meetings have you conducted in the last quarter?		
6.	Any minute of the above meetings?		
7.	What have you done to mobilize the community for pentavalent vaccine introduction?		
	VIII. Support from Higher Level		
1.	Do you receive regular feedback for monthly EPI reports?		
2.	Provision of policies and guidelines?		
3.	When was the last EPI review meeting conducted in the state?		
4.	Have you received any financial support from higher level?		
	IX. Observations by supervisors		
1.	Is stock balance of vaccine and other EPI logistics monitored at state cold store regularly?		
2.	Is the refrigerator at the state cold room placed close to the wall, heat object and sunlight?		
3.	Current temperature reading of the refrigerator		
4.	Do you record the refrigerator temperature twice daily including weekends?		
5.	Has refrigerator temperature been $>+8^{o}$c and/or $<2\ ^{o}$c been recorded in the last month. What was the range?		
6.	Are there unnecessary materials placed on the top of the refrigerator?		
7.	Are the vaccines stored in the proper compartment?		
8.	Is there vaccine that has exceeded expiry date in the refrigerator?		
9.	Is there vaccine vials without labels in the refrigerator?		
10.	Is there frozen PENTAVALENT or TT vaccines confirmed by shake test?		
11.	Is there vial with VVM that has reached discard point?		

12.	Is the number of vials of measles/BCG vaccine available equal to the no. of vials of diluents?		
13.	Did you submit your monthly reports timely in the previous month?		
14.	Is there immunization map with health facilities and EPI activities?		
15.	Are the EPI reports of the previous months properly filled?		
16.	Do you give feedback to counties reports? (Do you have the copy?)		
17.	Do you have the updated list of NGOs in the state?		
18.	Do you have a map indicating the health facilities in the state?		
19.	Is there adequate pentavalent vaccine in the state store?		
20.	Check the July and August report including pentavalent vaccine?		

X. Summary of the supervision activity

(1) Strengths of the state MOH in EPI:

_____

_____

_____

_____

_____

_____

_____

_____

(2) Five major areas for improvement:

_____

_____

_____

_____

_____

_____

_____

_____

(3) Five major recommendations with action points (responsible person/agency and date)

_____

_____

_____

_____

_____

_____

NB: All challenges and recommendations have to be put in the supervision book or prepare two copies and give one to supervisee.

Name and title of supervisor: _____

Date and signature of supervisor:_____

II. General Information

11. Name of the County_____State_____

12. Date of Visit:_____Date of previous supervision:_____

13. Name and responsibilities of the contacted person_____

14. Total county population:_____

15. Target population for the year: Total birth/ PW_____ Surviving Infants_____ NPW_____

16. How many payams do you have in the county?_____

- How many payams have EPI supervisor_____

17. How many PHCC and PHCU are there in the county?_____

- what proportion have trained vaccinator_____

18. No. of EPI static sites: _____,Outreach:_____ Mobile_____ _____

19. Are there unreached population with immunization? Yes_____ No_____

- If yes, Number of Boma's unreached :_____, total Population: _____

20. Is the county EPI supervisor trained on EPI? Yes_____, No_____

- If yes, When?:_____

21. Is the EPI policy document available at the county office Yes_____, No_____

22. Are county micro plans and budget prepared annually? Yes_____ No_____

II. EPI Plan:

No	Description	Yes	No
7.	Is there an updated EPI Work Plan (monthly/quarterly)?		
8.	Do you have a map indicating the health facilities in the county?		
9.	Are there annual and quarterly vaccine and other EPI logistics plan for the county?		

10.	Were outreach and static services reestablished according to REC approach?		
11.	Is there social mobilization plan incorporated in the EPI plan?		
	XI. EPI Service Delivery		
4.	Has the county health Department monitored its immunization coverage monthly?		
5.	If yes, compare the coverage against the total catchment area surviving infants?		
	vi) BCG coverage _____ (___%) vii) PENTAVALENT3 Coverage _____ (___%) viii) OPV3 Coverage _____ (____%) ix) Measles Coverage _____ (____%) x) PW TT2+ Coverage _____ (____%) vi) NPW TT2+ Coverage _____ (____%)		
6.	Which is your priority Payam and why?		
	XII. EPI Monitoring Tools		
9.	Have the vaccination monitoring chart been updated and used correctly?		
10.	Is dropout rate monitored monthly?		
11.	What is the current dropout rate for?		
	i) PENTAVALENT1-PENTAVALENT3 _____%		
	ii) PENTAVALENT1-Measles_____%		
	iii) PW TT1-TT2 _____%		
	iv) NPW TT1-TT2 _____%_		
12.	Did supervisor visit this county health department in the last quarter?		
13.	Was there any supervision feed back?		
14.	Any review meeting conducted in the county in the last quarter?		
15.	Have you ever conducted any advocacy visit to traditional leaders?		
	XIII. Vaccine and Cold Chain management		
10.	Is there enough vaccine at least for one month at county cold room?		
11.	Does the cold chain person know the actions to be taken during power interruption?		
12.	Are there enough refrigerator spare parts?		
13.	Is open multi-dose vial policy in use in the county?		
	XIV. Safety of injection		
3.	Are there sufficient amount of Ad syringes?		
4.	Are safety boxes used for needles and syringes?		
	XV. **Community mobilization/community involvement**		

8.	How is mobilization carried out for immunization in the county?		
9.	Who mobilizes the target population at the Boma level?		
10.	Is there community involvement in mobilizing mothers?		
11.	What proportion of the Boma's has Boma health committee?		
	XVI. Support from Higher Level		
5.	Feedback for monthly EPI reports?		
6.	Provision of policies and guidelines?		
7.	When was the last EPI review meeting conducted?		
8.	Have you received GAVI fund this year?		
	XVII. Observations by supervisors		
21.	Is stock balance of vaccine and other EPI logistics monitored at county cold store?		
22.	Do you have refrigerators out of order in the whole county?		
	How many?____,Type_____ Reasons for non-functioning		
23.	Is the refrigerator at the county cold room placed close to the wall, heat object, or sunlight?		
24.	Current temperature reading of the refrigerator		
25.	Do you record the refrigerator temperature twice daily including weekends?		
26.	Has refrigerator temperature been $>+8^{o}$ c and/or $<2\ ^{o}$c been recorded in the last month. What was the range?		
27.	Are there unnecessary materials placed on the top of the refrigerator?		
28.	Are there sufficient ice packs in the freezing compartment?		
29.	Are the vaccines stored in the proper compartment?		
30.	Is there vaccine that has exceeded expiry date in the refrigerator?		
31.	Is there vaccine vials without labels in the refrigerator?		
32.	Is there frozen PENTAVALENT or TT vaccines confirmed by shake test?		
33.	Is there vial with VVM that has reached discard point?		
34.	Is the number of vials of measles/BCG vaccine available equal to the no. of vials of diluents?		
35.	Is reporting complete?		
36.	Is reporting timely?		
37.	Is there immunization map with health facilities and EPI activities?		
38.	Are the EPI reports of the previous months properly filled?		
39.	Do you give feedback to health facility reports? (Do you have the copy?)		
40.			

41.			
42.			
43.			

XVIII. Summary of the supervision activity

(1) Strengths of the county health office:

_____

_____

(2) Five major areas for improvement:

_____

_____

(3) Five major recommendations with action points (responsible person/agency and date)

_____

NB: All challenges and recommendations have to be put in the supervision book or prepare two copies and give one to supervisee.

Name and title of supervisor: _____

Date and signature of supervisor:_____