Joint Appraisal report 2017

Country	Uganda
Full Joint Appraisal or Joint Appraisal update	Full
Date and location of Joint Appraisal meeting	3-7 July 2017, Kampala
Participants / affiliation[1]	See Annex attached
Reporting period	Jan 2016-Dec 2016
Fiscal period[2]	Same
Comprehensive Multi Year Plan (cMYP) duration	2016-2020

1. SUMMARY OF RENEWAL AND EXTENSION REQUESTS

As part of the ongoing grant cycle, Gavi reviews and renews its support to the country annually (referred to as "renewal"). If a country's new and underused vaccine support (NVS) is coming to an end and the country is still eligible for Gavi support, it may submit a request to extend the support (referred to as "extension").

1.1. New and Underused Vaccines Support (NVS) renewal request(s)

Type of support (routine or campaign)	Vaccine	End year of support	Year of requested support	Target (population to be vaccinated)	Indicative amount to be paid by country (US$)	Indicative amount to be paid by Gavi (US$)
Routine	Human Papillomavirus	2020	2018	597,876	343,500	7,674,500
Routine	Rotavirus	2020	2018	1,669,393	695,500	6,485,000
Routine	Pneumococcal	2020	2018	1,669,393	1,060,000	15,491,500
Routine	Pentavalent (DTP-HepB-Hib)	2020	2018	1,669,393	1,056,500	3,274,000
Routine	Inactivated Polio Vaccine	2020	2018	1,669,393	0	TBD
Totals					**3,155,500**	**32,925,000**

1.2. New and Underused Vaccines Support (NVS) extension request(s)

Type of Support	Vaccine	Starting year	Ending year
NA	NA	NA	NA

1.3. Health System Strengthening (HSS) renewal request

[1] If taking too much space, the list of participants may also be provided as an annex.
[2] If the country reporting period deviates from the fiscal period, please provide a short explanation.

*Below table summarises key information concerning the amount requested for the next year. Please note that funds previously requested and approved may be pending disbursement and do **not** require further approval.*

Total amount of HSS grant	US$ 30,600,000[3]
Duration of HSS grant (from…to…)	2017-2022
Year / period for which the HSS renewal (next tranche) is requested	NA – first tranche already approved but not yet received in country
Amount of HSS renewal request (next tranche)	NA – first tranche already approved

1.4. Cold Chain Equipment Optimisation Platform (CCEOP) renewal request

Below table summarises key information concerning the amount requested for the next year.

Total amount of CCEOP grant	US$ 8,310,085	
Duration of CCEOP grant (from…to…)	2017-2018	
Year / period for which the CCEOP renewal (next tranche) is requested	NA - first tranche already approved	
Amount of Gavi CCEOP renewal request	NA - first tranche already approved	
Country joint investment	**Country resources**	US$0
	Partner resources	US$0
	Gavi HSS resources[4]	**US$1,662,017**

1.5. Indicative interest to introduce new vaccines or request Health System Strengthening support from Gavi in the future[5]

	Programme	**Expected application year**	**Expected introduction year**
Indicative interest to introduce new vaccines or request HSS support from Gavi	*Measles/Rubella campaign*	*2017*	*2018*
	Measles/Rubella (first dose) Introduction in Routine immunisation	*2017*	*2018*
	PCV switch	2017	2018

[3] HSS 2
[4] Approved previously as part of HSS2
[5] Providing this information does not constitute any obligation for either the country or Gavi, it merely serves for information purposes.

2. CHANGES IN COUNTRY CONTEXT SINCE LAST JOINT APPRAISAL

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Governance: In July 2016 an additional four (4) districts were established in Uganda, increasing the current number of fully functioning districts to 116 across the country. It is expected that in the financial year 2017/2018 an additional 6 districts will be created, raising the total number of districts in Uganda to 122. Each new district requires health resources and facilities, although some will come from previous district facilities, in other cases these will need to be created or renegotiated. As such, this change may create some challenges for immunisation delivery in the short term.

Finances: Uganda experienced a volatile and unstable economy over 2016 and to the present date. This is largely attributed to a national election in early 2016, which complicated policy making[6]; to lower commodity prices; delayed investments affecting regional demand (including from South Sudan) and a growing refugee crisis, constraining local government budget expenditure[7]. The Ugandan shilling declined against the dollar, dropping from 3442.9 shillings to the dollar in FY 2015/16, to 3528.2 shillings to the dollar in FY 2016/17 and has experienced a further decline since, dropping to 3610.9 shillings against the dollar by the end of June 2017[8]. As a result, the Ugandan economy has seen inflation increase from 5.2% in mid-2016 to 6.4% in mid-2017[9]. These economic changes have negatively affected health service delivery, by increasing the real cost of services, consumables and operational items such as fuel, salaries and staff remunerations.

Immunisation Coverage: Uganda continues to experience fast population growth, with more children needing immunisation services each year. The national population growth rate is currently estimated to be 3% per annum[10]. Using the Ugandan Bureau Of Statistics (UBOS) population projections, the population in 2016 is estimated to be 36,560,700 individuals. It is further projected to grow to around 37,673,800 in 2017 and reach 38,823,100[11] in 2018.

Table 1 Population projections 2016-2018[12]

	2016	2017	2018
Total population	36,560,700	37,673,800	38,823,100
Children Less than One year	1,467,300	1,503,800	1,539,400
Children Less than 5 years	6,468,700	6,672,400	6,893,800
10 year old (Girls & Boys)	1,064,200	1,087,300	1,109,600

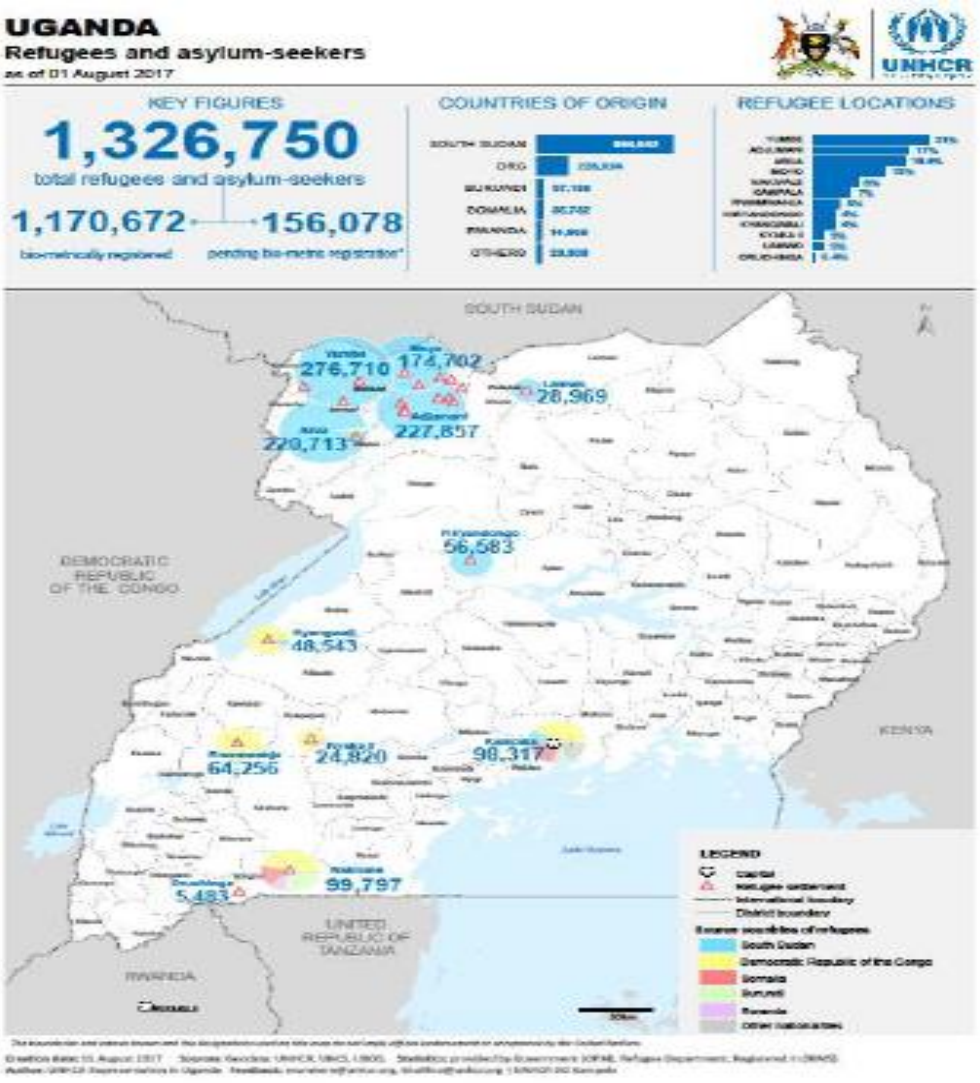
The 2016 Uganda Demographic Health Survey (UDHS) reported that 55% of children aged 12-23 months received all basic vaccinations, an increase from 52% in the 2011 UDHS. Despite this improvement coverage rates remain below the 80% GVAP indicator. In 2016 DPT-HepB-Hib3 coverage was at 79%, OPV3 at 66% and PCV3 at 64%, this was an increase from 72% DPT-HepB-Hib3 and 63% OPV3 coverage in 2011. No significant difference was found in the coverage rates for all basic vaccinations, between male (56%) and female (55%) children, or between children from urban (55%) and rural (56%) areas. Immunisation uptake was found to increase with the level of the mother's education. Children whose mothers had secondary level education were 64% more likely to have had all basic vaccinations than mothers with lesser education[13].

Refugees: Uganda's refugee population stands at historically unprecedented levels, with UNHCR recording around 1,3626,750 refugees and asylum seekers in country as of August 2017.[14] Of these refugees, approximately 977,746 originate from South Sudan, many arriving in large numbers in 2016 due

[6] http://www.imf.org/external/pubs/ft/scr/2017/cr1707.pdf
[7] http://www.unhcr.org/en-us/partners/donors/589497987/2017-south-sudan-regional-refugee-response-plan-january-december-2017-23.html
[8] http://www.bou.or.ug/bou/rates_statistics/statistics.html
[9] CPI_Inflation Rates_BOU Website
[10] National Population and Housing Census 2014
[11] District specific growth rates
[12] UBOS, Population Projections 2015-2020
[13] UDHS 2016
[14] South Sudan refugee situation inter-agency refugee contingency plan – Uganda

to the declining security situation across the border. These have mostly settled in the North West districts of Adjumani, Arua, Moyo, Kiryandongo, Lamwo and Yumbe where despite Aid Agencies and Government efforts, health (and other) services are under increasing pressure. According to the Ugandan Inter-Agency Refugee Contingency Plan, as many as 86% of the refugees are women and children[15].

Figure 1 Refugees and Asylum seekers



In addition, Uganda continues to receive and host refugees from the Democratic Republic of Congo, Burundi, and other countries. This unprecedented mass influx of refugees into Uganda has put enormous pressure on the country's resources especially immunization service delivery. There are ongoing discussions for Gavi to start supporting refugee vaccination.

UNICEF has been supporting immunization for refugee populations in Uganda mainly through procuring polio vaccines targeting children 0 – 59 months and measles vaccinations for children 6 months – 14

[15] South Sudan refugee situation inter-agency refugee contingency plan – Uganda

years. In addition UNICEF provides financial support to the local governments for supporting the vaccinations in the camps. The other childhood vaccines, including BCG, PCV, DPT –HepB+Hib and the more recently introduced HPV vaccine have not been given in a formalized way to refugees. The refugee population also need to get inactivated polio vaccine (IPV) given the current VDPV outbreak in DRC, given the high population movement between West Nile region and DRC then South Sudan. Rotavirus vaccine will be introduced in Uganda in 2018 and the refugee population should also be targeted for this.

There are ongoing discussions between Gavi, the Government of Uganda and UNICEF to provide all the childhood immunizations to the refugee population. In 2017, this will include a catch up campaign for the under 5 children by giving them 3 doses for PCV and DPT HepBHib plus 1 dose of measles and continue with routine immunization schedule for under 1 year in 2018 calendar year. HPV will also be given to 10 year old girls. These will be administered according to the Ugandan immunization schedule preferably at an interval of 30 days between the intensified immunization activities. The objective of the catch up campaign is not to ensure the progressive increase of population immunity that would result in long-term protection against a given disease, but rather the rapid reduction of risk from a disease in order to protect a population during a relative short period of extreme vulnerability. UNICEF has agreed to meet the Gavi co-financing obligations, as required.

The estimated figures for refugees/doses are listed below.

Vaccines requirement for refugees for a catch up campaign in 2017 and routine immunisation in 2018

Year	Vaccines	Refugee population	Under 5 children	Under 1 children	Estimated coverage	wastage factor	No doses per recipient	Total needed
2017			0.205	0.043	95%			
	PCV	1,265,500	259,428		95%	1.1	3	813,305
	Penta	1,265,500	259,428		95%	1.1	3	813,305
	Measles	1,265,500	259,428		95%	1.25	1	308,070
2018	Penta	1,500,000		64,500	90%	1.1	3	191,565
	PCV	1,500,000		64,500	90%	1.1	3	191,565
	IPV	1,500,000		64,500	90%	1.1	1	63,855
	Measles	1,500,000	307,500		90%	1.25	2	691,875
	rota virus	1,500,000		64,500	90%	1.1	2	127,710
	HPV for 10 year old girls (2.2%)	1,500,000	33,000		90%	1.1	2	65,340

3. PERFORMANCE OF THE IMMUNISATION SYSTEM IN THE REPORTING PERIOD

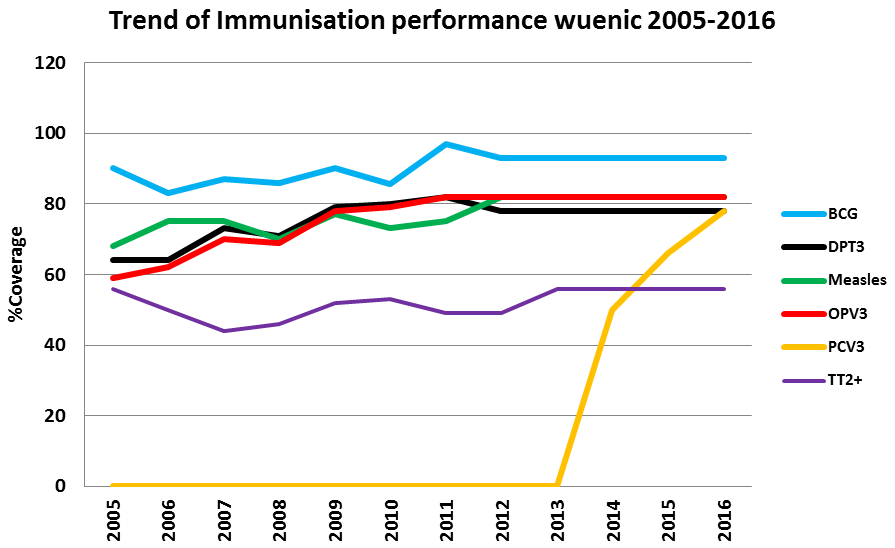
Coverage and equity of immunisation

The data sources for the 2016 Joint Appraisal report for Uganda immunization coverage include:

(i) Administrative data submitted by all districts through the District Health Information System (DHIS2), on a monthly basis
(ii) WHO/UNICEF (WEUNIC) estimates of National Immunization Coverage for 2016
(iii) Uganda Demographic and Health Survey (UDHS), in 2016
(iv) Coverage and Equity Assessment, September 2016

The last 10 years have seen progressive improvement in routine immunisation performance at the national level in Uganda, though more recently with observed stagnation during the period 2014 - 2016 (**Figure 2)**[16]. Improvements have mainly been attributed to greater investment in human resources, strengthening of the cold chain system (i.e. through procurement of additional fridges - including Solar Direct Drive fridges), improvement in vaccine delivery processes, immunisation transport systems (increased vehicles and motorcycles) advocacy, communication and social mobilization.

Figure 2 Trend of immunisation performance WUENIC 2005-2016



According to WUENIC, DPT3 and MCV1 (**Figure 2**) coverage was less than 80% for three consecutive years (78% from 2014-2016) and therefore did not meet the GVAP target (80%)[17].

Between 2012-2016, there has been a difference between the country's administrative figures and the WUENIC results, indicating a data discrepancy. In 2016, administrative data (DHIS2), recorded DPT3 and PCV3 coverage of 101% and 93% respectively, compared to WEUNIC figures of 78% for each, a difference of 23% and 15% respectively.

[16] Country WUENIC reports
[17] GVAP 2011–2020

Figure 3 WUENIC and Adminstrative data for DPT3 and MCV1

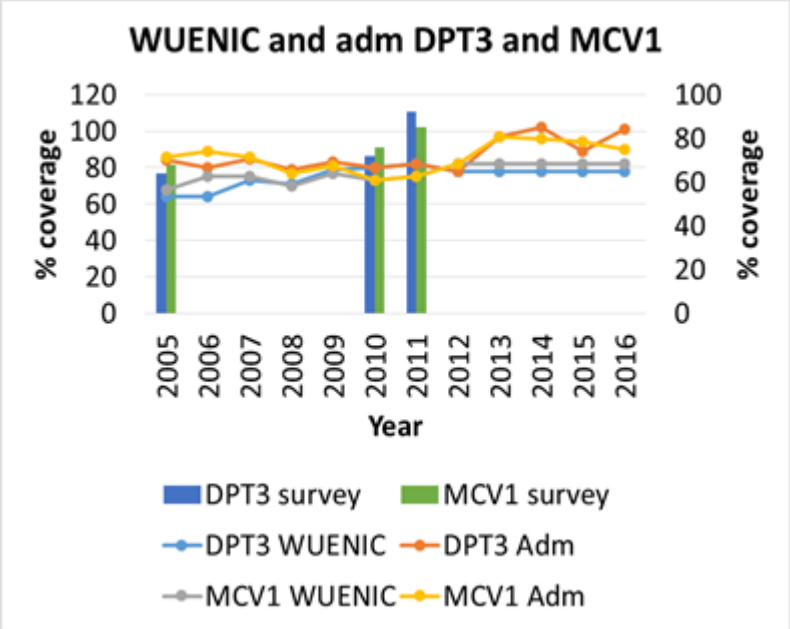


Table 2Table 2 below provides a summary of immunization coverage (Admin and WUENIC) by antigen for the past 3 years.

Table 2 Immunisation coverage by antigen 2014-2016

	Admin			WUENIC		
Antigen	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
BCG	90%	95%	94%	93%	93%	93%
DPT1	108%	110%	108%	89%	89%	89%
DPT3	102%	100%	101%	78%	78%	78%
OPV3	100%	103%	97%	82%	82%	82%
IPV	-	-	60%	-	-	60%
MEASLES	96%	106%	92%	82%	82%	82%
PAB	18%	22%	25%	85%	85%	85%
PCV3	50%	87%	93%	50%	66%	78%

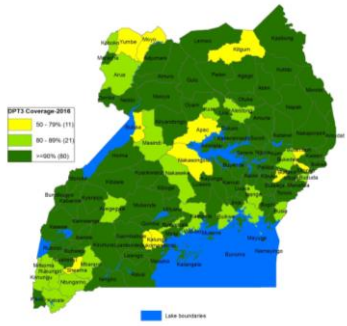
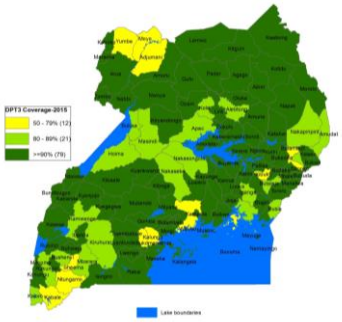
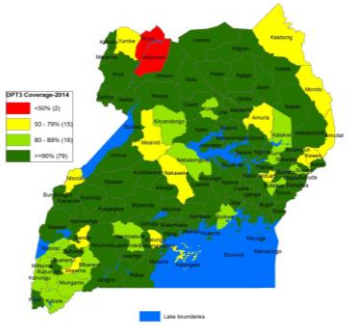
Analysis of the available data highlights several important issues:

- Immunization coverage plateaued between 2010-2013, it is important to identify the reasons behind this change **(Figure 2, Table 23)**
- There is a large difference between Admin and WUENIC data (Table 2 Immunisation coverage by antigen 2014-2016**Table 2**).
- The difference between Penta3 vs PCV3 coverage (Admin) persists, but has narrowed to 8% in 2016 **(**Table 2**)**
- Measles coverage is low, at 82% in 2014 to 2016 (WUENIC **Table** 23) with the country at risk of outbreaks due to accumulating numbers of unimmunized

- HPV1 coverage in 2016 was 89% vs HPV2 coverage of 22% (Admin 2016), important to identify and address the key reasons for high drop-out levels

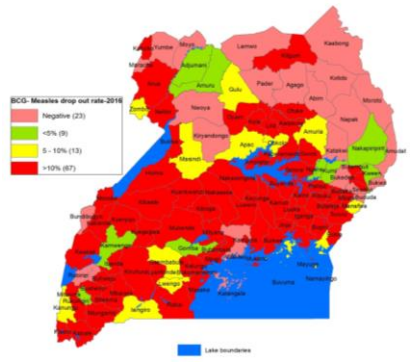
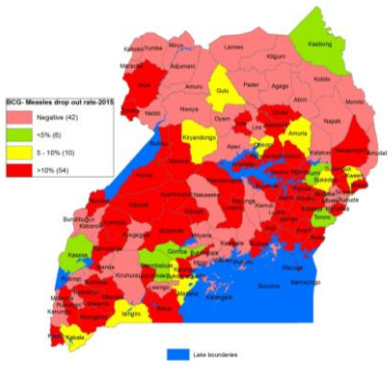
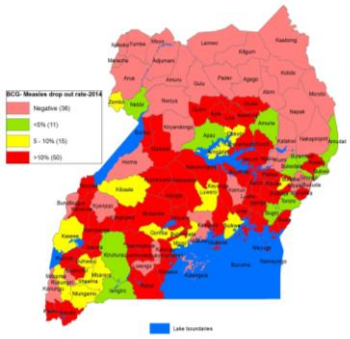
Nationally, in 2016 DPT3 coverage was 101% (Admin) with a total of 103 (93%) districts achieving a DPT3 coverage ≥ 80% (**Figure 4**). This is below the GVAP target of every administrative unit attaining coverage of ≥ 80%. Nevertheless, the trend over the past three years (see Figure 4 below) shows that progress is being made, with an increasing percentage of districts each year achieving ≥ 80% DPT3 coverage. For the past two years no district has recorded DPT3 coverage below 50%.

Figure 4 District performance of DPT3 in Uganda, 2014-2016 (Admin. data)

2016	2015	2014
		
Proportion of districts with a coverage >=80% is 93% (103). Districts with a coverage <80% Apac, Budaka, Bukomansimbi, Bulambuli, Buliisa, ***Kalungu***, Kitgum, Moyo, Nakasongola, ***Sheema***, ***Yumbe***	Proportion of districts with a coverage >=80% is 90% (101). Districts with a coverage < 80% Adjumani, Bukomansimbi, Bulambuli, Buvuma, Kabale, ***Kalungu***, Kibuku, Moyo, Ntungamo, ***Sheema***, Wakiso, Yumbe	Proportion of districts with a coverage >=80% is 87% (97). Districts with a coverage <80% Abim, Adjumani, Amudat, Amuria, Ibanda, Kaabong, Kalangala, ***Kalungu***, Kapchorwa, Kibuku, Kween, Masindi, Moyo, Nakaseke, Ntoroko, ***Sheema***, ***Yumbe***

The DPT1-3 Dropout Rate (DoR) at the national level is less than 10%. However, the number of districts with a DoR greater than 10% has been increasing over the last three years **(**Figure 5) which suggests multiple causes such as irregular immunisation services (outreaches & static), or even poor quality of services. Some districts have even recorded negative dropout rates, a clear indication of poor data quality. In 2016, a total of 27 districts had DoR of >10% (DPT1-DPT3), of which 8 districts had a DoR ≥15%. The BCG-measles dropout rate was >10% in 67 districts, of which 53 districts had a DoR of ≥15%.

Figure 5 Drop Out Rates of DPT1-3 by district in Uganda, 2014-2016 (Admin. data)

2016	2015	2014
		
Sixty seven (67; 60%) of the districts had a dropout rate of >10%	Fifty four (54; 48%) of the districts had a dropout rate of >10%	Fifty (50; 45%) of the districts had a dropout rate of >10%
Over the past three years there is an increase in the number of districts with a dropout rate of >10%.		

Among the current interventions to improve data management UNEPI and partners are conducting regional DIT training so far two regions have been trained. The trainings include mentorship on data management and use, geared towards building district DIT capacity to conduct regular data self-assessment and harmonization in all health facilities. National effort to build capacity in EPI data desk review are ongoing and we plan to conduct in-depth data quality assessment; the findings will guide the activities to be considered in the multi-year data quality improvement plan.

Immunisation Coverage and Equity

In order to identify the reasons behind the stagnating performance and drop-out rates mentioned above and as part of shifting from "Reaching Every District" (RED), to "Reaching Every Community" (REC) as a strategy to address immunization inequities, in 2016 the Ministry of Health, with immunisation partners, conducted a coverage and equity assessment. This aimed to identify factors that may be impacting immunisation performance, underserved communities and provide a more detailed understanding of the barriers to access and uptake of immunization services in Uganda.

The assessment included a desk review of key documents (2011 UDHS report, 2015 EPI Review), data analysis (2013 – 2015 UDHIS2, measles and AFP surveillance data, secondary analysis of GAVI FCE household survey data etc.) and a survey of the perceptions of key EPI stakeholders and District Health Officers. The assessment found that 36 of Uganda's 116 districts contained important immunization inequities and that these districts also contained 53% of the total under-immunized children in Uganda. The Eastern region contained the largest number, at 32%, followed by Central at 30%, (with South West at 21% and Northern at 17%).

Key factors effecting low coverage and equity in districts included: low social community mobilization, due to low Village Health Team (VHT) involvement; socio-economic factors, including certain religious beliefs, individual's distance from health facilities, low education levels of mothers and the wealth levels of parents. Wider system factors identified included: inadequate gas supplies for health facilities; the creation of new sub-counties/districts without health facilities; health staff absenteeism, and the non-distribution of vaccines to sub-district levels by District Health Teams (DHTs) causing vaccine shortages. The high risk communities / underserved communities identified were: urban poor settlements, migrants, ethnic minorities, some religious sects (especially Muslims, Bisaka sect and triple 6), upcoming town settlements, fishing communities, refugee communities, remote rural, island and mountainous communities. Kampala district had a lot of urban poor settlements and was found to have the largest

number of under immunized children for DPT3 for the period 2013 to 2015.

The assessments recommendations included: better facilitation of VHT involvement in community mobilization, children registration and defaulter tracking; increasing dialogue with religious leaders and communities holding negative views on immunization; increasing outreaches in under-served areas and to high risk communities; carrying out micro planning at facility level and ensuring planned activities are actually implemented, through regular supervision and monitoring by DHTs; conducting targeted equity assessments in each of the 36 districts identified with immunization inequities, using an equity assessment tool[18] tailored to Uganda's specific context. The equity assessment tool for identifying high risk communities has been incorporated into health facility micro planning template.

In Kampala district, the Ministry of health and partners have put in place some interventions aimed at reaching the urban poor communities through establishing outreaches in underserved parishes, conducting community dialogue meetings with refugee communities and religious leaders.

The 2016 UDHS report (reviewing the period 2014-2015) found that:

- 55% of children aged 12-23 months received all basic vaccinations (were fully immunized) compared to 52% in 2011 (UDHS 2011), an increase of 3%
- 37% of children received all age-appropriate vaccinations.
- One (1%) percent of children in the same age group hadn't received any vaccinations
- 96% of children had received the BCG vaccination
- 95% of children had received the first dose of DPT-HepB-Hib and OPV
- 87% of children had received the first dose of the pneumococcal vaccine (PCV)
- 80% of children had received a measles vaccination
- Coverage rates declined significantly for subsequent doses, with 79% of children receiving the DPT-HepB-Hib3, 66% OPV3, and 64% PCV3

The 2016 UDHS found there was little difference in the coverage rates for all basic vaccinations between male (56%) and female (55%) children, or children in urban (55%) and rural (56%) areas[19]. Basic vaccination coverage was highest in the Karamoja sub region (73%) and lowest in Busoga sub region (45%). DTP3 coverage was 80% or higher in 8 out of the 15 regions in Uganda (53.3%) for which disaggregated performance was presented.

The 2016 UDHS found that immunisation coverage increases with the level of the mother's education; with children whose mothers have secondary education or above more likely to have had all basic vaccinations (64%), than children of mothers with less education (53-57%). Wealth had minimal influence on immunisation services (UDHS 2016).

The cumulative total number of unvaccinated children, from 2014 to 2015 is 683,382 (i.e. in 2014 342,879 were unvaccinated; in 2015 the number was 340,503)[20] .

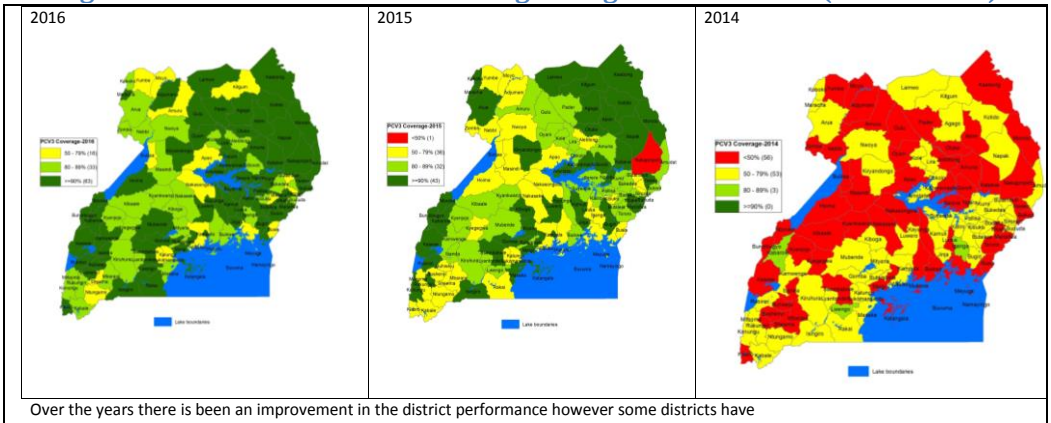
Pneumococcal Conjugate Vaccine: PCV10 was introduced nationwide as part of the government's routine immunisation program in April 2014. Since then PCV10 third dose coverage has steadily increased from 50% in 2014, to 77% and in 2015 and 93% in 2016 (Admin data).

The coverage difference between DPT3 and PCV3 has also been decreasing, from a 52% difference in 2014, to the current 8% difference in 2016 (Admin data). This reduction has been the result of efforts to improve vaccine supply and distribution[21]; strengthen data management[22] and the monitoring of routine

[18] Uganda Immunization Equity Assessment Report, February 2017
[19] Coverage and Equity used UDHS 2011, this explains the difference in the coverage
[20] UDHS 2016
[21] NMS Vaccine stock status report
[22] Data Improvement Team training reports

immunisation services at district levels. In 2016, a total of 96 districts achieved PCV3 coverage of 80% and above (**Figure 6**).

Figure 6 PCV3 Immunisation coverage in Uganda 2014-2016 (Admin. data)



Over the years there is been an improvement in the district performance however some districts have not achieved a coverage of 80% and above.

Measles: In 2016, only 45% of the districts in Uganda attained MCV1 administrative coverage of ≥90% (compared to 56% of districts in 2015). This is a clear indication of declining performance in measles coverage (Error! Reference source not found.**, Figure 8)**. Among the reasons for the observed performance include suboptimal performance of static and outreach, worsened by inadequate mobilization of the community.

The measles incidence per 1,000,000 total population has ranged between 3 and 5 cases for the past three years (3.83, 5.89, and 3.53 in 2014, 2015, and 2016 respectively). The global target is to have a rate of <5 per 1,000,000 population.

Figure 7 District performance of MCV1 against districts with measles cases 2016

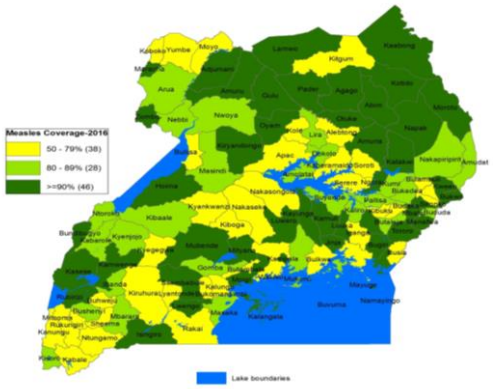
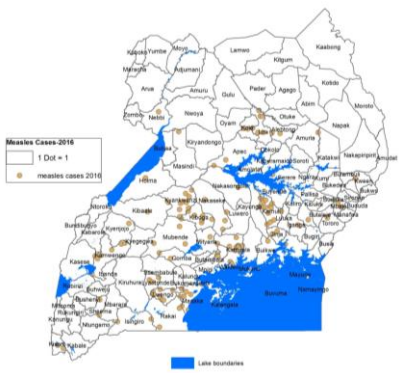
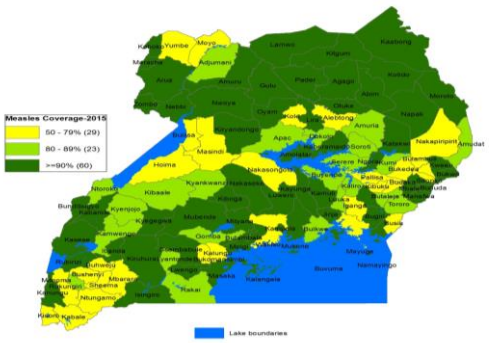
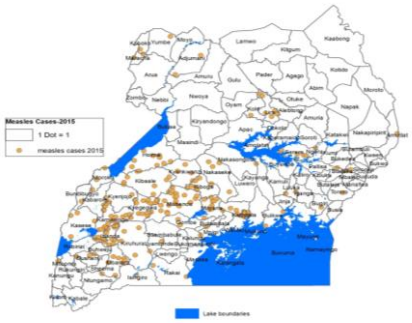
Comments	**2016 MCV1**	**2016 confirmed measles cases**
Proportion of districts with a coverage >=90% is 45% (50). A total of 42 districts had at least one confirmed measles case.		

Figure 8 District performance of MCV1 against districts with measles cases 2015

Comments	2015 MCV1	Confirmed measles cases 2015
Proportion of districts with a coverage >=90% is 56% (53). A total of 45 districts had at least one confirmed measles case.		

Human Papilloma Virus (HPV) Vaccine: HPV vaccine was introduced nationally into the country's routine immunisation in November 2015, targeting 10 year old girls out of school and Primary 4 level girls in school. In 2016, HPV1 and HPV2 coverage was 88% and 22% respectively, showing a wide difference in HPV uptake.

A rapid assessment of the barriers to greater uptake of HPV carried out in 2017[23] found the main challenges to be: implementing a mixed mode of HPV delivery, through Child Days Plus (April/October) and routine immunization services; low awareness and knowledge of HPV amongst caretakers and in schools; insufficient community engagement on HPV; limited clarity on methods of delivery of vaccines to the target populations (routine immunisation versus Child Days Plus strategy) amongst stakeholders; limited Health Worker training at the programmes inception and the limited availability of HPV related job aids and data tools.

Inactivated Polio Vaccine (IPV): IPV was introduced into routine immunisation in April 2016. The IPV forecast for 2016 was for 1,988,140 doses[24]. The country received a total of 702,800 doses in December 2015[25] to be used for IPV introduction and routine immunisation in 2016. Thereafter no additional IPV doses were received in 2016. Due to the global supply shortage, Uganda has experienced stock outs with IPV which has affected coverage. In 2016, IPV coverage was 60% (Admin).

Tetanus toxoid vaccine: TT2+ in pregnant women has increased from around 49% in 2012 to 56% in 2016 (Admin). There are challenges with the recording and documenting of TT doses administered during pregnancy (including the failure to identify women already fully protected from previous pregnancies) and misunderstandings about reporting babies protected at birth (PAB) through the routine HMIS reporting system.

Vaccine Preventable Disease Surveillance

Neonatal Tetanus: There is no reliable, case-based surveillance system for Neonatal Tetanus (NNT) in Uganda, making it very difficult to document the status of Maternal Neonatal Tetanus Elimination (MNTE). This is being addressed through opportunistic training of health workers.

Non-Polio AFP: the Non-Polio AFP rate in Uganda has been maintained above 2/100,000 children under 15 years at the national level, although more than 40% of districts are below this level. Stool adequacy has

[23] Identifying barriers to uptake of HPV Uganda-2017

[24] Immunisation forecasting 2016

[25] Vaccine Arrival Report December 2016

been maintained above 80% nationally. There have not been any confirmed WPV or VDPV cases in the past three years. However, three polio compatible[26] cases have been reported over the past three years, one in 2014 (in Oyam district) and two in 2016 (in Kyegegwa and Jinja districts), which together indicate low surveillance performance.

Measles and Rubella: Over the past 3 years Uganda has experienced a number of measles outbreaks, (as shown in **Table 3**). The largest number of measles outbreaks were recorded in 2015 (10 laboratory confirmed measles outbreak) compared to 5 laboratory confirmed measles outbreaks in 2014 and 4 laboratory confirmed measles outbreaks in 2016. In a total of 4 laboratory confirmed measles outbreaks recorded in 2016 a total of 252 cases were laboratory confirmed measles cases nationwide in Uganda.

The majority of measles outbreaks experienced have mainly affected children under 5 years of age. The main cause of the outbreaks has been the failure to vaccinate sufficient numbers of young children through routine immunisation services; this is as a result of irregular static and outreach services exacerbated by low social mobilization and inadequate communication activities.

A spike in the number of rubella outbreaks was registered in 2015, with a total of 45 outbreaks reported that year, compared to 6 outbreaks in 2014 and 14 reported in 2016 **(Table 4).** The reasons for this are not entirely clear; however it seems possible that suspected measles and rubella outbreaks are probably being missed each year due to sub-optimal implementation of case based surveillance. More cases are being reported through monthly HMIS updates than through the case based surveillance system. It is likely that districts with low coverage are not adequately reporting suspected cases at present.

The Central Public Health Laboratories (CPHL) set up a network (Hub system) of sample transportation from the health facilities to the national specialized central laboratories. This hub system has been transformed into a national laboratory sample transportation system. It was initially used for Early Infant Diagnosis (EID) then for suspected viral hemorrhagic sample transportation during outbreaks. Over the years VPD surveillance, laboratory support and sample transportation has been reliant on donor funding.

Due to reducing donor funding for EPI sample transportation to the EPI laboratory, the UNEPI decided to integrate suspected measles samples via the Hub sample referral system. This integration resulted in a decline in the measles investigation rate causing a drastic reduction in the sample transportation. Currently with support from Health Partners, a pilot study is being conducted to identify and document the synergies of the Hub system.

Table 3 Reported and Confirmed measles and Rubella outbreaks in Uganda 2014-2016

	Year		
Variable	**2014**	**2015**	**2016**
Number of outbreaks reported as measles rubella	28	64	21
Number of laboratory confirmed measles outbreaks	5	10	4
Number of laboratory confirmed rubella outbreaks	6	45	14
Number of laboratory confirmed outbreaks negative for both measles & Rubella	17	9	3

HMIS reporting: HMIS Timeliness and Completeness at the national level has been relatively good over the past three years, with over 90% of the health facilities submitting the required monthly reports.

[26] **Polio-compatible case:** a case in which one adequate stool specimen was not collected from a probable case within 2 weeks of the onset of paralysis, and there is either an acute paralytic illness with polio-compatible residual paralysis at 60 days, or death takes place within 60 days, or the case is lost to follow-up

Adverse Event Following Immunization: A total of 22 AEFIs were reported over the past three years in Uganda (12 in 2014, 3 in 2015 and 7 in 2016). These were considered to be serious AEFIs. The program needs to continue strengthening the AEFI surveillance systems, in order to achieve the global indicator target (of detecting at least 10 per 100,000 AEFIs among surviving infants).

3.1. Key drivers of low coverage/ equity

Health Work Force

Availability and distribution of health work force: Delivery of immunisation services is integrated with wider Primary Health Care services, with health workers at operational levels providing services across a continuum of programs. Health human resource gaps exist across Uganda, with the health worker-to-population ratio in Uganda at 1.49 health workers per 1,000 population. This is still considerably below the WHO recommended minimum of 2.3 health workers per 1,000 population[27],[28]. A Human Resource (HR) for immunization supply chain, rapid assessment[29] was conducted in September 2016. This found a number of key HR challenges affecting immunisation service delivery, including:

- High levels of staff attrition and turn-over
- Issues around the sustainability of funding for staff positions
- Inadequate levels of supportive supervision at facility level
- Lack of sustainable funding for training, poor planning of staff training and an overall lack of routine training
- Inadequate health care worker training in first line maintenance
- Inadequate collaboration of MoH/UNEPI with Medical Institutions to ensure EPI and Vaccine Management are included in curricula
- Inadequate Mid-Level Manager training of UNEPI program officers, both at the central and districts level. This compromises the delivery of quality service and managerial potentials

The Human Resource for immunization supply chain, rapid assessment resulted in the following recommendations:

HR Planning
- Interventions to attract and retain EPI workers in remote areas
- Recruitment of additional Cold Chain Technicians
- Sustainable funding for EPI staff positions
- Timely replacement of retiring staff

HR Management:
- Developing Job descriptions for workers at Vaccine Stores
- Improving supportive supervision
- Introducing a reward system for good performers

HR Development
- Carrying out Training Needs Assessment

[27] The state of the world midwifery
[28] Human Resources for Health Commitments (2014/15 - 2018/19)
[29] Human Resource for the immunization supply chain rapid assessment September 2016

- Implementing outstanding training
- Ensuring routine periodic training
- Ensuring sustainable funding for training
- Training users in first-line maintenance
- Collaborating with Medical Institutions

TA Opportunities
Possible opportunities for providing Technical Assistance to MoH\UNEPI and Partner Agencies include:
- Comprehensive Training Needs Assessment of EPI staff
- Critical assessment of Supportive Supervision system
- Training in Vaccine Management

Supply chain

Key insights from the latest Effective Vaccine Management Assessment (EVMA) conducted in 2014 and from the implementation of the EVMA improvement plan (last updated in August 2017) include:

Unreliable immunization supply chain*:* UNEPI has taken steps to strengthen the reliability of immunization supply chain data and its use in improvement and management decision making. The country's Cold Chain Equipment (CCE) Inventory was updated twice during 2016. This requires dedicated work to collect, compile and collate health facility data to update the CCE inventory.

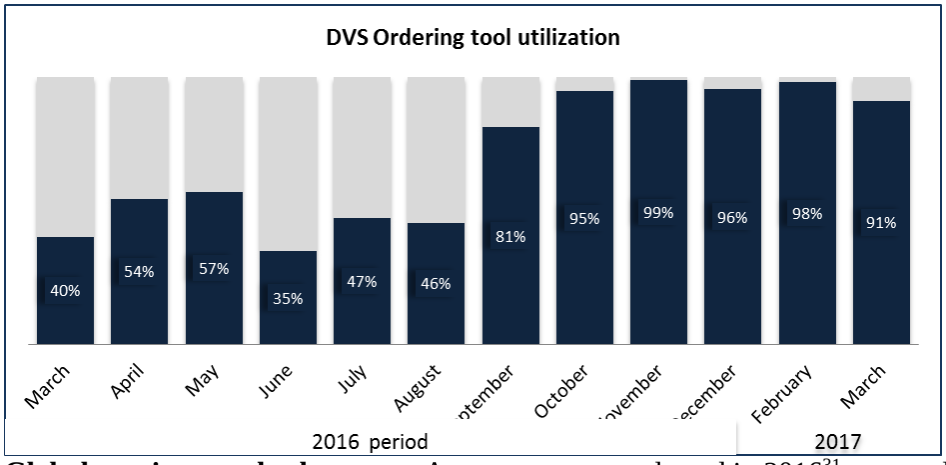
Fridge tags were rolled out in 2016. A total of 26 (22%) districts were able to report vaccine temperature monitoring data regularly as a result[30]. Main reasons for failure to regularly report from the districts include: lack of qualified cold chain technicians in the districts; communication gaps between the district and UNEPI due to lack of internet access.

Lack of adequate use of the available district ordering and forecasting tool: a "District Vaccine Ordering (DVO) tool", was rolled out to a total of 112 districts in 2016. The DVO helps improve the oversight, forecasting and management of stock, better ensuring vaccine availability and helping to reduce avoidable stock-outs at district and health facility vaccine stores. An assessment of the existing data collection tools and reporting mechanisms was conducted in 2017 and the program, with support from partners, is in the process of streamlining and harmonising immunization supply chain data systems, to allow greater visibility and better management at all levels of the supply chain.

Inadequate district capacity to order for EPI services: The quality of district ordering has improved over the past 12 months, since the scale-up and roll-out of the District Vaccine Ordering tool mentioned above (see Error! Reference source not found.**9 below**). However, district vaccines stores are still not maintaining adequate levels of buffer stock, as required. This is attributed to knowledge gaps and poor adherence to the agreed protocols and recommendations issued as part of the MOH Logistics and Supply Chain guidelines. In addition, poor record keeping at district vaccine stores and health facilities and the lack of regular monthly vaccine stock taking routines, is compromising flows of up-to- stock data to the centre. This impacts on UNEPI and NMS's ability to gather accurate consumption estimates and other key stock data needed to forecast accurately and plan logistic supplies effectively.

[30] EPI CCE temperature data analysis

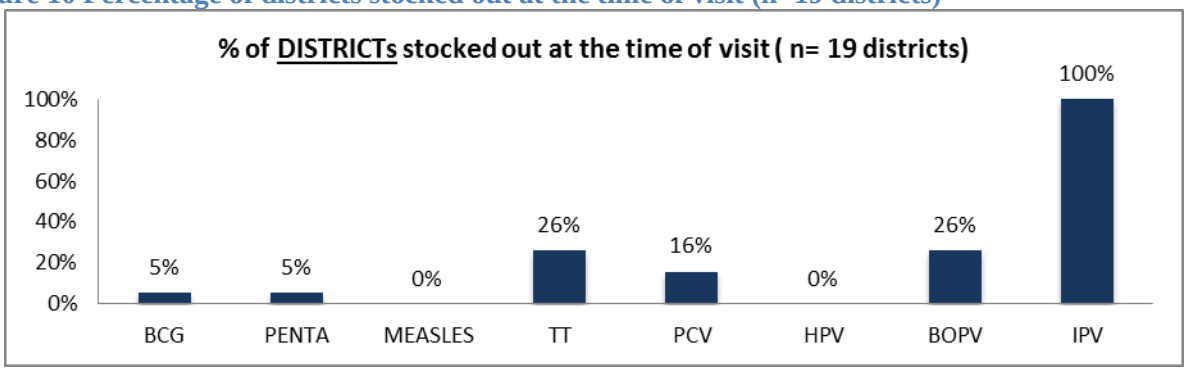
Figure 9 District Vaccine Ordering (DVO) tool utilization



Global vaccine supply shortages: An assessment conducted in 2016[31] captured the impact on districts and health facilities of global IPV shortages and stock outs of some other vaccines. Inactivated Polio Vaccine (IPV) was 100% out of stock at DVS and 63% at health facilities in 2016. In addition some vaccines such as bOPV (26%), PCV (16%) and TT (26%) at the DVS and bOPV (12%), HPV (14%) and TT (8%) at Health Facility were out of stock (**Figure 10 and**

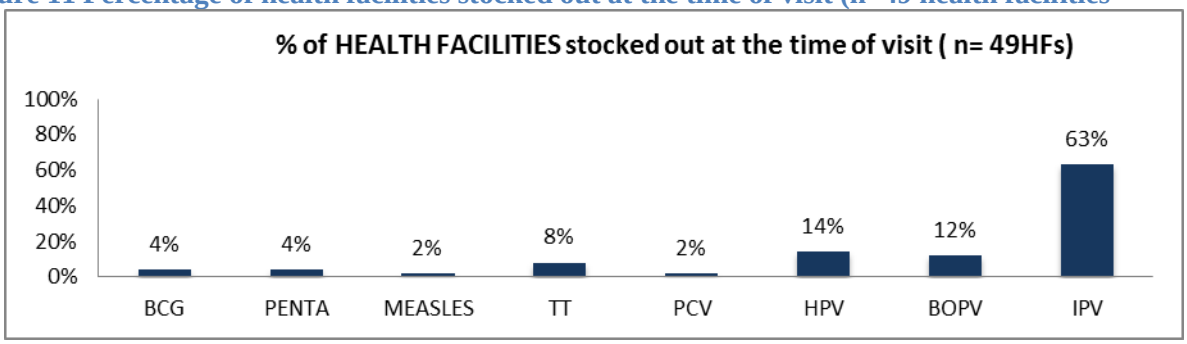
Figure 11 **below**).

Figure 10 Percentage of districts stocked out at the time of visit (n=19 districts)



[31] *Rapid supply chain assessment conducted in October 2016*

Figure 11 Percentage of health facilities stocked out at the time of visit (n=49 health facilities



Old and sub-optimal cold chain equipment: in some DVS and health facilities, old and sub optimal CCE has caused weaknesses in Uganda's vaccine supply chain. Through Gavi's CCEOP and HSS support, most of these sub optimal CCEs are being targeted for replacement. The expansion and rehabilitation plan for the CCE has taken into consideration equity and access factors for immunization services, targeting those districts and sub-districts with the highest reported issues. UNEPI plans to conduct an assessment to further inform the planning in sustenance of an efficient cold chain system in the districts.

Demand generation / demand for vaccination:

Limited use of key stakeholders, to raise awareness and increase demand for RI*:* In the past demand generation has been left to VHTs, political, religious and other stakeholders, who play a voluntary role in mobilising communities and in demand generation. However, there are a number of permanent (paid) government officers (community development officers, health inspectors, health assistants etc.) and structures in Uganda, with formal responsibilities to mobilize, educate, work with and link communities to health and social development services, including immunisation.

UNEPI does not have a full time dedicated officer for Advocacy Communication and Social Mobilization (ACSM); the program uses the mainstream Ministry of Health ACSM officers from the health promotion department. In 2016 the ACSM team worked to build the capacity of District Health Teams (DHTs), key government line ministries (including Education, and Community Development), District Chief Administrative Officers (CAOs) teams and Sub-County Technical Extension workers, for improved EPI communications. EPI communication training sessions were carried out in the 10 districts of Busoga Region, where over 800 district officials and over 1000 Sub-County Extension workers were trained to advocate and mobilise for routine immunisation in their respective localities. In the same year, District and Sub County strategic Communication for Development (C4D) plans were drafted and now need to be finalised. It is envisaged that the district officers will provide the much needed technical support and supervision of extension workers in order to help increasing demand generation and uptake of immunization services in 2017 and beyond.

Limited use of non-health stakeholders and communities in RI activities*:* in 2016 UNEPI, with immunisation health partners, has been implementing a REC-Quality Improvement (QI) approach engaging non-health stakeholders and communities (caretaker's representatives – VHTs/CHEWs) in planning, brainstorming (on causes for identified routine immunisation performance problems), decisions on villages to be served by a routine immunisation service point, and the most convenient location, days and times for outreaches and services. Preliminary results show that when non-health stakeholders and communities are involved, communities can mobilize extra resources for health, identify 'left-outs', engage

in better defaulter tracking and also identify other social economic barriers to accessing routine immunisation services[32].

Demand and awareness for HPV vaccine among caretakers: This is generally low (as shown by a recent assessment to identify the barriers to uptake of HPV). Of 212 individuals surveyed, only 64% were aware of the HPV vaccine. Only 14% could correctly describe what disease the vaccine prevents and less than 5% were aware of the number of doses to be received[33].

Gender-related barriers[34] - limited involvement of men in RI activities: in Uganda household decision-making is often dominated by men, who often need to give their support before mothers are allowed to seek health services, such as immunisation for children. Deliberate efforts have been made in 2016 by government and development partners to ensure that within broader district and sub-county C4D plans, men are specifically targeted through mobilisation, health education and participatory guidance thus empowering them to support their families in immunisation uptake and demand generation.

Leadership, management and coordination*:*

Inadequate numbers of staff at UNEPI: UNEPI's new structure indicates a gap of only 4 technical officers (1 medical officer, 1 nursing officer and 3 CCT). However this is an underestimation of the resource requirement, the program requires additional 2 medical officer, 1 M&E officer and 3 nursing officers.

Inadequate staffing to deliver optimal immunisation services at district level*:* this includes public health nurses to deliver immunisation services and adequate numbers of cold chain technicians. Task shifting between health staff can mean that immunisation is often left to unqualified health workers[35].

Inadequate roll out of Mid-Level Management (MLM) training at district levels*:* Uganda has many mid-level health managers who have not undergone WHO's mid-level manager's course, particularly those in new districts with new management teams. This results in gaps in routine immunisation management.

Infrastructure:

UNEPI Level: The government team lacks adequate office space at national level to support effective programme management and efficient performance of assigned duties. The program proposes to create extra space through construction of new offices.

District level: A total of 30 districts currently lack adequate district vaccine stores. The creation of 6 new additional districts in FY 2017/2018 increases this to a total of 36 district vaccine stores required. Although many districts have Health Facilities in every sub-county, in some isolated cases there are still glaring gaps which negatively affect RI performance. Such cases are being identified and will be presented for discussion and action.

Service delivery:

Operational Level (OPL) training has not been rolled out nationwide on a regular basis*:* there is a need to build capacity through training in OPL and Vaccine management in a total of 50 districts (including new and old districts). Over 50% of sub-national Health Workers in Uganda have not had OPL training. MOH is working with immunisation partners to adapt the OPL training course to incorporate the newly revised Immunisation In Practice (IIP) and 'Competence-based Education and Training (CBET) as opposed to the historical 'theory based' training.

[32] REC-Quality Improvement (QI) approach reports
[33] Identifying barriers to uptake of HPV Uganda-2017
[34] EPI review 2014

Uganda adapted the WHO EPI prototype curricula in 2016. This was used during the review of pre-service training curricula in Q1 of 2016 to guide planning for immunization training in pre-service health training institutions. The adapted curricula will need to be rolled out to training institutions and the CBET incorporated in the OPL training slides, which will be used to train sub-national health workers. All training materials for OPL are extracted from the revised IIP which is designed to act as reference material for both pre- and in-service training.

MOH and partners are adapting lessons learned on taking a consultative and consensus building approach to mapping Health Facility (HF) catchment areas, to help generate more accurate target populations for HF REC microplanning. This includes mapping immunization inequities, logistics estimation, last mile vaccine delivery, identification of communities missed and making HFs responsible and accountable for all people in the catchment area. In 2016, this helped District Health Teams (DHTs) in selected districts to better monitor individual HF's performance and use the RED categorization tool to generate key management information for action e.g. on communities with high numbers of unimmunised or under-vaccinated children.

Training: An EPI Training Needs Assessment (TNA) was conducted in December 2016. This aimed to assess EPI training in pre-service and in-service health institutions, to identify gaps and potential new EPI training needs. This highlighted the urgency to ensure EPI trainers at all levels and Middle Level Managers at district level need updated knowledge and skills in EPI. The TNA recommended organizing follow-up 'Pre-service' and 'In-service' training activities as follows:

Pre-Service training:

a) To organise training for Medical and Nursing, Allied Health and Other institutions on the revised EPI Prototype Curriculum, to encourage institutions to revise the EPI curriculum and content across their academic programmes in order to better equip students to meet current expectations for service delivery upon graduation.
b) To organize a curriculum review workshop for teachers in Medical and Nursing, Allied Health and Other institutions. This is ready for implementation. It is recognized that once teachers knowledge is updated, new content is embedded in courses almost immediately whilst the longer academic process of curriculum review may take more time to be implemented bureaucratically, at an institutional level.

In-Service training:

c) To organize cascade training at District level for designated cadres of EPI workers (Focal persons, Logisticians, Surveillance Officers, Data Managers, Social Mobilization Officers, etc).
d) To organize cascade training at Facility level for the various cadres of EPI workers. This should improve the performance of EPI practitioners and also provide adequate and appropriate support for the practical training of visiting students.

The TNA recommended organizing post-training monitoring and supportive supervisory activities in EPI for Pre-service and In-service institutions. Including developing appropriate tools and checklists, based on training activities conducted, for trouble shooting and to identify new areas to strengthen EPI training. Periodic EPI review and update meetings/workshops with joint participation from Pre-service, In-service and Partners (e.g. WHO, UNICEF) were also recommended, to promote collaboration and better appreciation of the practical links between training and service delivery in EPI as well as new developments internationally.

Public financial management:

In 2013, the Ministry of Health central level financial system including the Gavi financial management modules was upgraded to the Integrated Financial Management System (IFMS) to enable timely release of funds to the districts and improved electronic financial records management. Despite this upgrade

challenges still remain at the district level, these include delayed release of funds due to slow internal processes and change of district collection accounts every financial year as a requirement by Ministry of Finance. Internet breakdown on several occasions in 2016/17 also affected the use of IFMIS system resulting in delayed receipt of funds and submission of accountabilities from the districts.

Other critical aspects:

Any other aspect identified, for example based on the cMYP, EPI review, PIE, EVM or other country plans, or key findings from available independent evaluations reports[36].

Key findings and recommendations from Gavi FCE reports (2013-2016)

Planning and roll out of New Vaccine Introductions: New vaccine introductions have faced recurrent challenges including :

(i) Inadequate training of health workers due to late release of funds at all levels affecting the quality of the training sessions, especially at the health facility level due to lack of resources to facilitate the training;

(ii) Delayed printing and distribution of monitoring and evaluation tools;

(iii) Inadequate forecasting, leading to vaccine stock outs.

There is need for meticulous planning to ensure that funds, plus other logistics are sufficiently available at the sub-national level, before any training is conducted for a new vaccine to be introduced into the routine immunization schedule. Without this being addressed the country will continue to face challenges with new vaccine introductions.

Routinization: Uptake varied across the new vaccine introductions, from rollout to actual routinization. Analysis of HMIS data shows that it has taken almost three years for PCV to stabilize due to its phased introduction due to the above mentioned challenges. IPV delivery increased quickly after its introduction in April 2016, because the introduction was synchronized across all districts at the same time, but began to drop after June due to stock outs. Lessons learnt from IPV should be documented for future new vaccine introductions. The national rollout of HPV was slow, with a considerable drop-off in coverage between HPV1 and HPV2 doses. The MOH should prioritize the regular monitoring (preferably quarterly) of newly introduced vaccines, including beyond initial Post Introduction Evaluations (PIE), in order to ensure the effective ongoing routinization of new vaccines.

Co-financing: The introduction of multiple vaccines into routine immunization has increased the country's co-financing obligations. To ensure sustainability, during its planning the MOH should carefully consider its ability to meet co-financing and other operational cost requirements associated with proposed new vaccine introductions. This will be addressed through the planned development of an immunization financial sustainability plan in Uganda.

Technical Assistance: There was lack of clarity on the definition of technical assistance (TA) with regard to PEF as observed during the JA process in 2016, however this is much clearer for the year 2017 whereby monthly updates are being provided by partners during the EPI monthly technical meetings. There is a need for Gavi to devise an operational definition of TA to guide country stakeholders in identifying proper TA needs and increase in-country appreciation of PEF's approach to TA allocation, in particular for non-traditional partners who are currently being brought on board.

During the 2016 JA process, the majority of the stakeholders believed that the JA process was of benefit to the country and considered the process to be highly useful in controlling and/or mitigating risk.

HSS 1: The implementation of HSS-1 was delayed due to protracted procurement of equipment and civil works. Such processes should be considered carefully as the country embarks on implementing HSS-2.

[36] If applicable, such as Full Country Evaluations (relevant for Bangladesh, Mozambique, Uganda and Zambia) and Technical Assistance evaluations (conducted for Gavi Partners' Engagement Framework tier 1 and tier 2 priority countries).

3.2. Data

Uganda continues to implement its multi-stakeholder immunization data quality improvement team (DIT) strategy under the leadership of the Ministry of Health (UNEPI and MOH Resource Centre) and with support from implementing partners (including CDC, GAVI, WHO, UNICEF and MCSP). The DIT strategy was developed following the 2013 Uganda immunisation Data Quality Self-assessment, where a wide range of data quality gaps were identified at all levels of the health system in Uganda.

In its initial phase of implementation (November 2014 to September 2016), the following key challenges related to availability, quality and use of Routine Immunization data, were observed during baseline assessments of (the then) 116 districts in Uganda:

(i) Discrepancies between primary data sources e.g. between Child Tally Sheets and HMIS 105 monthly reports

(ii) Underutilization of Child Registers, with discrepancies observed between Child Registers and HMIS 105 monthly reports

(iii) Only 43% of health facilities visited in all 116 districts knew their target populations during initial DIT visits, conducted between November 2014 and September 2016

(iv) Only 43% of Health Facilities utilized a standard Vaccine and Injection Materials Control Book

(v) Less than 50% of health facilities charted and displayed immunization monitoring charts for DPT3 and Measles coverage

(vi) Inadequate data archiving was observed, with less than 50% health facilities found to have good archiving practices

Immunization data quality improvement teams (DITs) were trained and deployed in all 116 districts during Phase 1 implementation (November 2014 to September 2016). DITs were able to complete health worker mentorship in 3439/3810 (90.02%) of health facilities which provide immunization services. Regions implemented from July 2015 also received National Support Supervision from UNEPI teams. Year 2 of the strategy implementation commenced in March 2017, focusing on the pilot regions of Mbarara and Lira. Results from recent assessments show:

(i) An increase in the proportion of districts using Routine Immunization data for action from 67% in Year 1 to 84% in Year 2 (n=18) in Lira and Mbarara pilot Year 2 regions

(ii) An increase in the proportion of health facilities that know their target population, from 51% to 78.5% in Lira region, and an increase from 38% to 81.8% in Mbarara region districts

(iii) Increased use of standard EPI tools (from Year 1 to Year 2 of the project) with an observed increase from 51.5% 80.6% for vaccine control book use; an increase from 86.6% to 92.2% for Child Register use; increase from 82.6% to 98.5% for Tally Sheet use and increase from 94.6% to 99.2% for HMIS105 use

(iv) An increased proportion of health facilities where DPT3 data is being analyzed, charted and displayed, going from 19.9% to 47.3%of HFs between Year 1 and Year 2 of project implementation

Key lessons, innovations and good practices for improving immunization data quality in Uganda include:

(i) Continued capacity building of core staff/ immunization data managers at district and health

facility level, through training of district Biostatisticians, EPI focal persons and Surveillance focal persons, and on-the-job mentorship of health workers on immunization data quality gaps identified at health facility level

(ii) Incorporation of support supervision by national-level staff during the deployment of trained immunization data quality improvement team members

(iii) Follow up of mentored health workers, by incorporating data quality review as part of routine supportive supervision visits conducted by trained district data managers

(iv) Planning for regional review meetings for increased follow up, feedback and accountability for quality of routine immunization data

(v) Ongoing development of a national strategic data quality improvement plan, with a committee constituted of multi-stakeholder membership, with agreed terms of reference to oversee and steer immunization data quality improvement activities over the next 5 years (2017-2022) and beyond.

Others innovations identified in the JA meeting discussions included:

(i) Coaching and mentoring for population disaggregation on HF level (including head of the unit)

(ii) Stock level data design and implementation (on HF level)

(iii) Integration of stock data in DHIS2

(iv) Coordination of EPI and district bureau of statistics at district level to improve pop estimates

(v) Increased coordination with regulatory body for private sector (requirement of reporting as a prerequisite for licensing

(vi) Pilot system for tracking children in the HF level (not necessarily digital)

(vii) Increased coordination in tracking and distributing standard updated tools for all HFs

(viii) Collaboration with academic institutions for operational research

(ix) Support to customize/pilot and implement ISDR system: case based system for surveillance data (including AEFI) building on surveillance guidelines existing

3.3. Role and engagement of different stakeholders in the immunisation system

National Coordination Forum (ICC, HSCC or equivalent):

The Uganda Health Policy Advisory Committee (HPAC) was established as a forum for the Government, Health Development Partners (HDPs) and other stakeholders to discuss health policy and provide advice on the implementation of the Ugandan Health Sector Development Plan (HSDP) and other national policies. The HPAC is a donor and stakeholder coordination mechanism which supports the functioning and decision-making of the MOH top management, on policy related issues. HPAC has been performing a function similar to that of an Inter-Agency Coordination Committee (ICC) in approving Gavi proposals, developed by UNEPI.

In order to further strengthen leadership of the Government's immunisation programme in Uganda and provide high level operational and strategic guidance for UNEPI, the MOH is currently in the process of establishing a Uganda National Immunisation Coordination Committee (UNICC), to support the functions of HPAC and to provide focused operational and strategic oversight once fully established. Specifically the UNICC will provide:

(i) Sustained advocacy and mobilization for immunisation through various governmental structures (such as Parliament, agencies, MOFPED, and the Private Sector Foundation).

(ii) Identification of national immunization champions.

(iii) Revive the Parliamentary-based Immunization forum

(iv) Operationalize the Government's new Immunization Fund.

(v) High level advocacy meetings by MOH Top management to poor performing districts, to engage district political and administrative leadership to address key issues on equity, coverage and sustainability

District leadership coordination forum

Leadership coordination of health development partners and stakeholders exists in districts but lacks a strong structure and coherence to contribute effectively towards immunisation service delivery. At district level leadership coordination meetings take place between the District Health Team, District leaders, Health Development Partners and Stakeholders working in the districts. This coordination forum focuses on general health discussions and the existing support of health development partners provided in the districts. The meetings are irregular, usually called due to emerging priorities such as Polio campaigns or National Immunisation Days.

The EPI program, with support from EPI partners, are in the process of strengthening this coordination forum through the establishment of district health stakeholders and non-health stakeholders forums and through conducting leadership, management and coordination training. Lessons learnt will be used to inform the scale-up of this approach in the districts.

Civil society:

The Ugandan Civil Society Immunization Platform (UCSIP) is intended to help CSOs have a unified voice, as well as work closely and harmoniously with the Government of Uganda, Development Partners and other immunization stakeholders taking part in the country's immunization and health system strengthening processes. The civil society platform is hosted by the Malaria and Childhood Illness NGO Network Secretariat (MACIS) drawing on its networks at National, Regional, District, Health Sub-district and Sub-County levels, to align CSO activities with national EPI structures. The platform project's activities have been supported by GAVI, through CRS and the Uganda Civil Society Immunization Platform (UCSIP).

To improve the functionality of the platform, the following activities was undertaken in 2016: a platform secretariat/desk was set up at MACIS offices and 2 full-time staff recruited; an advocacy strategy/plan was developed through a participatory process; a monitoring and evaluation framework for the project was developed; 78 CSOs were mapped in 7 targeted districts (Kibuku, Bukedea, Kapchorwa, Kumi, Bududa, Iganga and Busia); 7 consultants were identified and of these 5 contracted to provide technical support to the platform; 3 steering committee meetings were held; and CSO Platform Alignment to Government Structures was operationalized in the seven targeted districts with support from the respective District Health Offices.

To improve the CSO platforms financial sustainability, the following was achieved in 2016: the contact information of 61 CSOs was forwarded to CRS to register platform members with Gavi's CSO Constituency; a Resource Mobilization Strategy/plan was developed; one non-Gavi proposal was developed and submitted for funding; 4 CSOs participated in the development of the HSS2 proposal; a regional training in advocacy, resource tracking and monitoring of immunization activities was conducted for 13 CSOs in the 7 targeted districts; CSO immunization platform presence was maintained on the Web and USCIP engaged corporate and private agencies to support immunization activities.

The CSO platform improved its capacity to contribute to national health sector planning and coordination by: participating in HPAC and EPI Technical Working Group meetings; maintaining a database of

immunization and health-related policies; conducting a situation analysis on immunization access and utilization in 7 targeted districts; selecting strategies and building the capacity of 14 CSOs to bolster immunization access and utilization in 7 targeted districts; supporting District CSO teams to undertake advocacy, community dialogues, resource tracking, and participate in key immunization activities; and carrying out monitoring to ensure that the platform project activities keeps on track.

The platform project had planned to implement 31 activities, but only achieved 24, (77%). Seven activities not implemented were postponed to next year including: developing a participatory platform 5-year Strategic Plan (2016-2020); conducting an organizational capacity self-assessment with CRS support; developing an implementation plan to strengthen the platform's organizational capacity; providing input into EPI annual planning and mid-year review; recruiting a civil society "champion" within Government; conducting an independent assessment to evaluate the impact of platform project, as well as documenting best practices and lessons learnt; conducting a trend analysis of the government allocation of the health budget towards immunization.

***Other donors**: the role and investments of other bilateral and multilateral donor in the immunisation system. Please include information on possible reductions in non-Gavi donor support that influence the overall system capacity (e.g. reductions in Global Polio Eradication Initiative funding.*

PATH: With funding from the Bill and Melinda Gates Foundation, CHAI provided technical support for immunization supply chain strengthening, specifically on Cold Chain Equipment (CCE) maintenance, temperature monitoring, reviewing and reporting, CCE and technology evaluations, advocacy for supply chain improvement, increasing domestic financing and various related capacity development for EPI staff.

CHAI: In collaboration with MoH-UNEPI and with funding from Gavi and the Bill and Melinda Gates foundation CHAI provided technical support in:

- Increasing the speed and efficiency by which newly introduced vaccines reach target coverage (HPV, PCV, and IPV) through continuous tracking and monitoring of reporting on PCV against PENTA. Supporting supervisions in 14 under performing districts to improve reporting practices to close the PCV3-PENTA3 gap.

- Conducted assessments to identify barriers to uptake of HPV supporting demand generation efforts, such as district meetings, sms campaigns and engagement with adolescent health programs to improve uptake. Provided support in revision of the Rotavirus vaccine training guide, implementation budgets and timelines for the introduction of rota vaccine.

- Improving cold chain logistics and vaccine supply-chain: leveraging the increased uptake of the vaccines ordering tool, CHAI has built capacity among District Cold Chain Technicians in using the tool to ensure timely accurate month orders, providing training on how to maintain minimum /buffer stock levels to ensure districts do not run out of stock before their next refills by NMS. CHAI has also supported the site readiness assessments in preparation for the CCEOP. CHAI is working with PATH to support the MOH develop a sustainable regional maintenance model for cold chain maintenance.

- Strengthening program-planning capacity: CHAI supported UNEPI to develop a comprehensive annual work plan to guide program planning, resource allocation and prioritisation. The annual work-plan is reviewed during every EPI TWG meeting to monitor progress on execution of activities and to flag priority but unfunded activities.

MCSP RI & CH/SS4RI: MCSP funded by USAID and SS4RI funded by the Bill & Melinda Gates Foundation (both managed by JSI in Uganda) are supporting routine immunisation system strengthening through a 'Reach Every Child-Quality Improvement' approach that aims to institutionalise REC in Uganda. The MCSP Child Health (CH) project is scaling up lessons learned in RI to the broader CH project. In total 23 districts in 5 regions have been supported by JSI (MCSP and SS4RI) in collaboration with MOH. The key focus over the past year has been on:

- Printing and dissemination of Uganda's Immunization policy

- Adaptation of WHO EPI prototype curricula and inclusion into the revised IIP (reference material) and training curricula for pre-service training institutions for HWs. Need to rollout the IIP & adapted curricula.

- Supporting and working as the secretariat for the review and updating of the Uganda Immunisation In Practice (IIP) manual, to include new developments, equity, and aligning it to support the adapted EPI curricula for pre-service training institutions.

- Supporting Operational Level (OPL) health worker trainings in 13 districts, covering a total of 513 health workers (about 40 per district) using the revised Immunization in Practice Manual and Competence based Education & training (CBET) approach. In all 13 districts, all functional health facilities in the district had representation in the OPL trainings.

- Developing a detailed and consultative approach to Health Facility Catchment areas mapping that generates more accurate target populations for each HF. With each HF target populations the District Health Teams can monitor performance and targeted support to weak health facilities, support REC microplanning and identification of underserved communities for support. Supported 18 districts to map out HF catchment areas and developed HF REC micro plans. M&E data analysis shows progressing increments in the absolute number of villages reached with RI.MOH/UNEPI through the EPI TWG adopted this approach to be used in the whole country by all partners supporting microplanning.

- Supporting improvement to last mile vaccine delivery from District Vaccine Stores to Health Facilities (HFs); assessing bottlenecks, working with sub-national level staff and EPI partners for solutions in the supported districts.

- Worked with HFs to provide RI services to communities through Village Health Teams (VHTs) and increase their involvement in planning, implementation and monitoring. When communities are involved and allowed to make decision on location, day and time of an RI outreach, more attendance is realized.

- Successfully engaging non-health stakeholders (civic & political leaders) in RI using locally generated data and communities supporting in contribution towards the immunisation activities.

- Facilitating and improving the use of data for action at HF, district and national levels through increased availability of RI monitoring charts at HF, Quarterly review meetings at Health Sub District (HSD) and district levels. Feedback provided to all districts quarterly through Newspaper print of the district RI performance; this creates transparency and accountability of individual district performance. The current funding for these projects ends in 2018.

UNICEF, PATH and CHAI: with UNEPI, conducted a country-wide health facility readiness assessment exercise for health facilities in preparation to receive Gavi funded CCEOP equipment in 2017, working to complete the Operational Deployment Plan to be submitted to UNICEF SD for tendering of service bundle contracts with manufacturers.

Private sector: a study is currently being undertaken to determine the existing and potential role of the private sector in immunization service delivery in Uganda. This is being supported by WHO in close collaboration with CDC.

Cross-sectoral collaboration*: e.g. collaboration between health and education programmes.*

Schools host much of the individuals targeted for immunization, especially HPV vaccination, the

Advocacy, Communication, Social Mobilisation (ACSM) team has made Ministry of Education (MoE) one of its key partners in an effort to increase uptake of HPV vaccination.

In this regard, realizing the poor uptake of HPV Vaccination following its introduction, the Health Promotion and Education Division supported by UNICE, organized HPV regional planning meetings toward the end of 2016 covering the entire Country, targeting District Health Officers (DHOs), District Health Educators (DHEs), District Education Officers (DEOs), District Inspectors of Schools (DISs), District Community development Officers (DCDOs) and Secretaries for Social Services/Health for political support of the HPV Social Mobilization Regional Planning Meetings.

The country was divided into 10 regions covering all the (then) 112 districts. During the meetings, an overview of the immunization programme was provided; the introduction of HPV its benefits and the School Health package were discussed. District teams were also introduced to the Communication for Development (C4D) approach; the C4D strategies and use of the Social Ecological Model for developing communication and social mobilization plans.

District teams were also introduced to the Micro Planning template for HPV vaccination which facilitated mapping of all schools to their closest Health Facilities and DHOs. In collaboration with DEOs, DISs were tasked to ensure their completion, so far 60% of districts have completed the mapping of schools to Health Facilities.

4. PERFORMANCE OF GAVI GRANTS IN THE REPORTING PERIOD

Programmatic performance

Achievements against agreed targets, as specified in the grant performance framework (GPF), and other grant-related activity plans

HSSI (USD 11.4M)

Achievement against agreed targets

- No cost extension running from July 2015 to June 2016 (US$ 11,494,704). Exceptional no cost extension running from July 2016 to June 2017 (US$ 6,144,044)
- Major funding was for 26 staff houses and 19 medical stores
- Procurement of 4 vehicles through UNICEF
- We were at 40% construction completion as at Dec 2016

Challenges/Barriers

- Delay in execution of procurements
- Delay in processing of payments to suppliers partly because of upgrade of IFMS and delay in processing payments by MoH
- Quality management issues in construction and delays by contractors majorly related to capacity constraints
- Delay and low quality of accountability for funds by officials within MOH and District local governments
- Human resource capacity constraints in supervision of construction and financial management at MoH/UNEPI
- Low fund absorption of HSS funds leading to protracted grant extensions

Good practices and innovations

- Good level of engagement with development partners such as WHO, UNICEF and CHAI.
- Use of DCC – World Bank model and third party procurement agent
- Adopting the Health Monitoring Unit to support supervision of construction
- Use of IFMS to make payments for Gavi grants
- Use of Gavi TA – to monitor the program and support financial management

IPV ($1.35M)

Achievement against agreed targets

- Funds were received in March 2015 and the IPV introduction was implemented in April 2016
- 60% coverage in 2016 (Admin data) versus target 90%

Challenges

- Shortages in Global supply of IPV supplies

Good practices and innovations

- Use of previous lessons learned from previous introductions for NVI

HPV (USD1.337M)

Achievement against agreed targets

- Introduction and funding was received in November 2015 but full introduction into routine of introduction started in February 2016 this was due to slow and staggered distribution of vaccines to the districts and lack of M&E tools
- HPV 1 coverage – 89% and HPV 2 coverage is 22% with a target of 82% for 2016

Challenges

- No clear guidelines to districts about funds disbursed since this was an integrated activity of HPV introduction and measles campaign thus affecting the quality of reporting and accountability
- Slow routinization of HPV vaccine in the routine immunisation. Some districts continued to deliver the HPV vaccines during the Child Days plus
- Late delivery of the M&E tools due to protracted procurement process
- Mismatch between the launch date and the school calendar, and the delayed rollout in several districts due to late receipt of vaccines and monitoring and evaluation (M&E) tools

Men A campaign (USD4.3M)

Achievement against agreed targets

- Funds were received in November 2016 but implementation was done in January 2017
- Achieved coverage for MenA was 104% against the target 95%
- Implementation of coverage survey commenced on July 17, 2017
- Establishment of meningitis case based surveillance in the high risk districts is ongoing

Challenges

- The Program Capacity Assessment (PCA) was ongoing and therefore there was a delay in the choice of a fund management model
- Delayed release of funds

Good practices of innovation

- Use of WHO for funds management due to the Program Capacity Assessment. There is need to strengthen capacity of the Program to manage Gavi Grants.

Any other initiatives not supported by Gavi.

- Polio campaigns (3) supported by WHO and UNICEF
- Yellow fever campaign in 3 districts
- Switch from tOPV to bOPV supported by WHO and UNICEF

Overall implementation progress *of Gavi grants including* ***NVS***, ***HSS*** *(incl. performance based funding* ***PBF****) and* ***CCEOP****.*

Uganda was approved for the HSS2 grant and the CCEOP grant. The implementation awaits the countries successful agreement of a final HSS2 budget with Gavi in order to release the grant. Gavi and the country have put in place a new independent Fiduciary Management Agent structure and increased staff capacity in UNEPI, to ensure appropriate, timely and efficient use of these Gavi funds.

Past performance for measles and rubella (immunisation coverage analysis and rubella surveillance, performance[37]) and progress against the country's ***measles-rubella 5 year plan****.*

Uganda has not introduced a rubella containing vaccine into its routine immunization schedule. The UNITAG is developing a new vaccine introduction prioritization framework for the next five years.

Please mention any other ***relevant initiative not supported by Gavi*** *that addresses the key drivers of low coverage (described in section 3).*

4.1. Financial management performance (for all cash grants, such as HSS, vaccine introduction grants, campaign operational cost grants, transition grants, etc.)

Provide a succinct review of the performance in terms of financial management of Gavi's cash grants. This should take the following aspects into account:

- *Financial* ***absorption*** *and utilisation rates[38];*
- ***Compliance*** *with financial reporting and audit requirements;*
- *Major issues arising from cash programme* ***audits*** *or programme capacity assessments;*
- *Financial management* ***systems***[39].

Performance absorption

Grant	Funding (USD)	Utilization (USD)	Percentage utilization
HSSI (ENCE)	6,144,044	1,468,872	25%
IPV	1,356,500	1,237,866	91%
Men A	4,300,000	3,400,000	79%
HPV	1,337,000	1,272,452	95%

Compliance with financial reporting and audit requirements

- Financial and programmatic reports were irregularly submitted to GAVI, Internal audits were done by MoH for Gavi funds but delayed due to work overload by the internal audit team
- An external audit of Gavi funds were done but delayed. Currently the 2016 external audit is ongoing
- The procurement of civil works generally complied with PPDA requirements, and currently the civil works are ongoing

[37] Please include analysis of MCV1 and MCV2 routine immunisation and MCV campaign coverage at national and sub-national levels (admin and survey data), information on case distribution by age, geography, vaccination history, etc. for measles and rubella (including CRS), including outbreaks, at national and sub-national level.
[38] If in your country substantial amounts of Gavi funds are managed by partners (i.e. UNICEF and WHO), it is recommended to also review the fund utilisation by these agencies.
[39] In case any modifications have been made or are planned to the financial management arrangements please indicate them in this section.

Major issues from program audits and PCA's

Cash program audit (April 2017)/External audit (2015)/Internal audit and TA

- Weaknesses in oversight mechanism: poor coordination of oversight, recurring audit issues, and no dedicated oversight body over immunization programs.
- Gaps in vaccine supply management: gaps in recording data and weaknesses in forecasting and ordering and cold chain replacement.
- Gaps in budgeting and financial management.
- Low absorption of funds, weak financial reporting, and weaknesses in IFMS.
- Weaknesses in management of disbursements and expenditure: Delays in submitting accountabilities by district and MOH personnel. Questioned expenditure in audit reports.
- Gaps in recording of advances and use of funds outside the budget, absence of guidelines for jointly implemented.
- Payment of VAT and other taxes using Gavi funds.
- Weaknesses of procurement at district level and gaps in asset management.
- Inconsistencies within the financial management guidelines.
- Weak follow up of prior audit recommendations.

Program Capacity Assessment Issues (August 2016)

- Discontinuing of the PMU in favor of strengthening UNEPI. (recommended recruitment of Gavi funded EPI staff- Grant coordinator, M&E specialist, project accountant and procurement specialist)
- Recommended the appointment of the FMA.
- Recommended using third party procurement agent for civil works.
- Use of GOU procedures but using the World Bank model (with DCC).
- Recommended establishment of a new ICC and review of TORs of membership of TCC and streamlining governance arrangements.
- Updating of the fixed assets register
- Preparation of internal audit plan
- Follow up of previous audit recommendations.

Financial management systems.

- Gavi uses IFMS however the system needs to be optimized to enable management of advances and enable tailored reporting for Gavi.

Key recommendations

- Document lessons learnt from HSS1 to address future bottlenecks
- Identify capacity gaps at MoH/UNEPI and strengthen: grant management, procurement and financial management.
- Build procurement capacity at MoH, consider using a mentoring approach
- Harness the additional resources at UNEPI to strengthen leadership and management of the grants and to improve activity planning and funds absorption.
- Implement the Grant Management Requirements for the Gavi Grant
- Work with Local Governments to strengthen oversight over Gavi grants and build capacity for reporting and accountability of Gavi grants
- Develop financial management guidelines at central and LG level
- Follow up and address audit recommendations

4.2. Sustainability and (if applicable) transition planning

Provide a brief overview of key aspects and actions concerning the sustainability of Gavi support to your country.

***Financing of the immunisation programme**: key challenges related to the financing of the immunisation programme, including co-financing requirements*

Uganda has a Financial Sustainability Plan, for its Immunization Program 2016/17-2020/21. This plan is focused on UNEPI's objectives for the next five years and uses five scenarios to estimate the potential need/program cost. **Table 4** presents a summary of the resource needs estimated under the 5 scenarios. In all of the scenarios, the resources required are on an increasing trajectory over the 5-year period. This is largely due to planned introduction of new vaccines during the period, as well as to an expected increase in the target population (and currency inflation). In all scenarios, vaccines costs alone account for more than a quarter of the resources needed.

Table 4 Total Resource needs for immunisation for all the scenarios (US$)

Scenario	Vaccine Costs	Recurrent Costs	Capital Costs	Total (US$)
Scenario 1 (Status Quo)	348,422,643	325,716,273	81,429,068	755,567,984
Scenario 2 (Status Quo + NUVI - Rota & MR)	377,926,826	339,764,659	84,941,165	802,632,649
Scenario 3 (Status Quo + NUVI - Rota & YF)	378,683,974	339,764,659	84,941,165	803,389,797
Scenario 4 (Ideal - cMYP)	310,879,583	229,227,271	10,087,321	550,194,175
Scenario 5 (Incremental Needs excl. NUVI)	416,577,969	124,139,698	-	540,717,668

- Several scenarios have been proposed how the Ugandan immunization program can be financed. Draft report is attached of the financial sustainability plan.

***Gavi transition planning**: if your country is transitioning out of Gavi support, specify whether the country has a transition plan in place. If no transition plan exists, please describe plans to develop one and other actions to prepare for transition. N/A*

***Polio transition planning**:*

Uganda is developing a polio transition plan that will be finalized by 2018. Mapping of all polio assets has been completed. Polio Eradication Initiative (PEI) best practices in Uganda include :

(i) Polio SIAs integrated with other public health interventions namely Measles, Vitamin A, Deworming, Bed nets, etc.);

(ii) PEI support to routine immunisation and new vaccine introduction activities and other child survival strategies;

(iii) PEI has strengthened Viral Haemorrhagic Fever and other epidemic response activities;

(iv) PEI has supported strengthening communication infrastructure in the health system;

(v) PEI has supported IDSR structure which is currently being used in the country and this has enabled the community to report any suspected MOH priority diseases

(vi) Resistant religious sects were reached through their regular gatherings instead of using house to house strategy

(vii) Data sharing during preparatory meetings made poor performing district leaders appreciate the need for a catch-up campaign and the importance of strengthening routine immunization

(viii) Use of village health teams to fill the gap of inadequate human resources

(ix) The malaria programme used a house to house strategy to distribute mosquito nets

A concept note to establish a polio transition oversight committee has been developed with plans to commission this formally so that a plan is developed by end December 2018. This committee will be responsible for developing the polio transition plan.

4.3. Technical Assistance (TA)

Briefly summarise key insights generated during the appraisal of Gavi supported Targeted Country Assistance (TCA) activities and milestones.[40] Specify whether amendments to the currently planned and ongoing Technical Assistance activities and milestones are envisaged (short term). If changes are envisaged please provide a justification.

Note: New Technical Assistance requirements for the next calendar year should be indicated in section 6 rather than this section.

1. **TCA through UNICEF PEF**

Leadership, Management and Coordination:

- Supported the development of the cMYP, HSS proposal including C4D,iSCM and equity and coverage strategies and activities

Coverage and Equity:

- Conducted 2016 Equity Assessment and strategy development with assistance of consultants
- Conducted capacity building at operational level (priority districts) and support for REC microplanning with community involvement

Supply Chain:

- Supported country to strengthen immunization supply chain and EVM priorities
- Supported the Logistics working group in the preparation of training materials and methodology

[40] A summary of Technical Assistance approved under Gavi's Partner Engagement Framework (PEF) for the year under review and reporting status can be accessed via the PEF portal by registered users, or by contacting the Gavi Secretariat.

- Supported UNEPI in conducting training on 30 Daily Temperature Recording (DTR) at district and health facility level
- Provided technical support in the installation and training for Remote Temperature Monitoring (RTM)
- Provided supportive supervision and Monitor performance and data for action
- Provide support in the selection of CCE technology including new ones and procurement
- Provided support in the installation and training of CC technicians
- Provided support in the development of proposal linked to CCE platforms
- Supported to enhance the CCE inventory management and update
- Developed TOR and working guidelines for the logistics working group
- Provided training on the planning and monitoring aspect of ISCM and use of data for action from the LMIS
- Participated actively in the LWG annual workplan and sharing regular updates
- Aligned communication plans with participation of communities in RED/REC microplanning
- Trained and equip religious, political, and community leaders to be informed and vocal champions of immunization
- Trained and equipped community health workers and Village Health Teams promote immunization, mobilize communities, and keep track of and follow up with eligible children.
- Trained health workers and journalists how to respond appropriately to potential rumours about vaccines and vaccination

2. **TCA through WHO PEF**

During the 2015 JA, several areas were highlighted for additional technical support in order for Uganda to achieve key expected outcomes. These activities were implemented in close collaboration with Ministry of Health and other stakeholders. Specifically WHO was responsible for:

(i) Supporting the processes of the Joint appraisal of HSS grant

(ii) Supporting MoH to streamline NITAG roles and development of work plans

(iii) Preparedness and support in introduction of IPV

(iv) Support in updating cold chain inventory and support temperature monitoring and EVM implementation Plan

(v) Analytical work conducted to identify national and sub-national barriers to financial sustainability

(vi) Technical support provided to finalise and submit Rota and MCV2 applications to GAVI

(vii) Monthly surveillance reports on Rota and IBD available to determine baseline of diseases and impact of following introduction. The following activities were implemented in 2016:

- WHO also supported preparations for the immunization coverage survey, specifically finalization of budget process, identification of external and internal consultants including surveyors. This provided both nationally and international scientifically derived immunization coverage, using the 2015 WHO vaccination cluster survey guidelines. The data collection process has been finalized in all districts. Report writing has commenced and the final report will be available by end of September 2017 focusing on routine immunization estimates by district as part of promoting coverage and equity.

- WHO supported MOH to introduce one dose of IPV into routine immunization schedule and switch from tOPV to bOPV within the globally agreed timelines for the polio endgame. Switch validation process was supported and found that 11 (10%) of the 112 district vaccine stores and 108 (5% of the 2,056 health facilities) validated had tOPV in their cold chain facilities after the national switch date.

- WHO supported the printing of 3,500 re-usable monitoring charts that were distributed to over 4,000 health facilities by NMS. This effort helped institutionalize immunization performance monitoring

at the health facility level.

- Provided technical and financial support to the Uganda National Immunization Technical Advisory Group (NITAG) of experts. The key outputs were capacity building in evidence based decision making and increasing the functionality of the committee through meetings to review and advise MOH on key strategic areas for policy decisions, in particular a new vaccine introductions prioritization framework. This has enabled the development of a functional independent body that can guide Uganda's policies and strategies based on local epidemiology and cost effectiveness, thus reducing dependency on external bodies for policy guidance.

- WHO supported a costing of immunization service delivery study in order to inform effective planning and sustained investment in immunization, specifically, to determine the unit cost of fully immunizing a child. The report presented the cost of routine immunization, new vaccine introduction and of supplementary immunization activities. The total routine immunization cost is estimated at US $62.8 million for 2015/16, and the estimated cost per dose is US$ 3.33. For 2015/16, the cost per fully immunized child (defined based on the number of children immunized with DPT3) is US$ 39.42; the cost per child immunized is US$ 34.21; and cost per capita is US$ 1.71. When compared to a previous cost analysis for routine immunization, the cost of providing immunization services significantly increased (by 57%) between 2011 and 2015. The cost per child immunized was US$ 0.88 for the polio SIA, while the cost per child immunized for the combined measles and polio campaign was slightly higher at US$0.95. The total incremental economic cost for HPV introduction was US$ 6,139,325 and the total financial cost was US$ 6,803,182. The total economic cost of introducing PCV was US$ 24,903,975 and the financial cost was US$ 25,135,524.

- WHO supported MOH to develop an immunization financial sustainability plan that will be used by the government and partners to mobilize adequate resources to maintain the gains in immunization service delivery in Uganda. The financial sustainability plan is an added tool that will be used for resource mobilization and help enable the country achieve the goals of Decade of Vaccines.

- Supported UNEPI to conduct an EPI Training Needs Assessment (TNA) 2016 to identify and strategically address some of the key issues in training for improved immunization service delivery. The key findings included significant gaps in knowledge and skills in all EPI operational, supportive components and special priority areas among both pre-service and in-service personnel. However, gaps in the supportive component areas (Management, Capacity building and Finance) were most profound and may contribute significantly to the current inadequacies in EPI performance. A TNA 2016 road map was developed that now needs to be implemented.

- Continued to support for the functionality of new vaccine sentinel surveillance sites. Paediatric Bacterial Meningitis (PBM) Surveillance is implemented by three sentinel sites in the country and these are, Mulago National Referral Hospital, Lacor Hospital and Mbale Regional Referral Hospital. Rota Virus Surveillance is currently being done at Mulago National Referral Hospital, however in preparation of the Rotavirus impact evaluation Naguru and Lubaga hospitals were incorporated as part of the need to expand the number of sentinel sites to achieve the required sample size for the vaccine effectiveness study that will be conducted once the vaccine is introduced into the routine immunization program.

    - In 2016, a total of 462 suspected paediatric bacterial meningitis cases were detected and enrolled into the surveillance system and of these 393 had a lumbar puncture done of which 29 had probable meningitis. Of the 393 suspected meningitis cases 4 (1%) cases had HI identified by culture, latex or PCR (Target 5%) while 3 (10%) of the 29 probable meningitis cases had HI cases identified by culture, latex or PCR (Target 5%).

    - Regarding Pneumococcal infection, of the 393 paediatric bacterial meningitis 15 (4%) cases with pneumococcus identified by culture, latex or PCR (Target 20%) while 11 (38%) of the

29 probable bacterial meningitis cases with pneumococcus identified by culture, latex or PCR (Target 20%).

- Regarding rotavirus surveillance a total of 521 acute diarrhea cases were enrolled into the surveillance system of which 514 (99%) had a stool sample collected. Of the 521 cases with stool specimens collected, 150 (37%) of 405 tested stool specimens by ELISA were positive for rotavirus.

The following TCA milestones will be carried over to 2017:

(i) Support in updating cold chain inventory and support temperature monitoring and EVM implementation Plan. This will be integrated with the HPV PIE

(ii) Technical support provided to finalize and submit Rota and MCV2 applications to GAVI. The GOU is waiting for the final report from UNITAG on the new vaccine prioritization framework for the next five years. Rotavirus vaccine introduction preparations are ongoing.

3. **TCA through CDC PEF**

CDC provided technical support to the Ministry of Health to improve immunizations data quality through a multi-partner (WHO, UNICEF, Gavi) strategy using Data Improvement Teams (DITs), under the leadership of the Ministry of Health (National Immunizations Program and the Resource Centre). The overall objective of DITs is to support the implementation of the Strategic National Plan for Immunization Data Quality, focusing on improving the completeness, accuracy, timeliness and reliability of routine immunization data at all levels of the health system. The strategic approach is to build district level capacity to mentor health facility teams on improving data quality and to build a pool of supervisors at the national level to supervise district level activities.

CDC-specific objectives were to provide technical assistance in strategic planning, develop the monitoring and evaluation (M&E) framework and support development of data collection tools, analysis and reporting and assist in the development of the training curriculum and adaptation of materials.

Key achievements from Year 1

Planning and coordination:

- The strategic plan, M&E framework and tools and all training material were developed for implementation.
- Providing national level coordination for all DITs activities
- Training and Mentorship:
- Supported national level training of trainers and supervisors, 17 Regional level trainings for all 112 Districts.
- Built capacity of 438 district and health district staff (3-4 per district on average) in the country on data quality.
- Built capacity of over 20 students from the Makerere University School of Public Health to support mentorship in all 112 districts in the country
- Mentored health workers in 3,422 health facilities across all the districts on data quality
- Monitoring and Evaluation:
- Monitored Year 1 activities and assessed progress at mid-year and end of year
- Conducted a pilot in 2 Regions (19 Districts) and documented findings in data quality in these districts
- Discussed findings from all assessment with all stakeholders through review meetings for informed decisions on the DITs strategy.

Main findings between Year 1 and Year 2 Pilot (averages from 2 regions)

Improvements in some key areas of data quality

- Improved knowledge of target population at health facility level (N=283) from 44.5% to 80.2%
- Improved routine immunizations data analysis and use at district level (N=18) from 67% to 84%
- Improved use of standard EPI tools at health facility level (N=283) from 51.5% to 80.6% (vaccine control books), 86.6% to 92.2% (child registers) and 82.7% to 98.5% for tally sheets].

Identified Challenges

- National supportive supervision and follow-up mentorships not conducted due to limited resources,
- Review meetings were not provided for in the strategic plan
- Persistent under-utilization of child registers in health facilities
- Staff-related issues (inadequate numbers, staff attrition, new staff and poor attitude)

5. UPDATE OF FINDINGS FROM PREVIOUS JOINT APPRAISAL

Provide the status of the prioritised strategic actions identified in the previous Joint Appraisal[41] and any additional significant IRC or HLRP recommendations (if applicable).

6. UPDATE OF FINDINGS FROM PREVIOUS JOINT APPRAISAL	***Provide the status of the prioritised strategic actions identified in the previous Joint Appraisal[42]***
Prioritised actions from previous Joint Appraisal	***Current status***
1. Vaccines and Logistics: Strengthening Immunization supply chain capacity to manage the expanded EPI scope of vaccines	**1. Vaccines and Logistics: Strengthening Immunization supply chain capacity to manage the expanded EPI scope of vaccines**

[41] Refer to the section "Prioritised Country Needs" in last year's Joint Appraisal report
[42] Refer to the section "Prioritised Country Needs" in last year's Joint Appraisal report

Operationalize and implement HSS II and CCEOP grants	• HSSII and CCEOP DL received by MoH • CCEOP implementation plan (Operational Deployment plan) under development at the finalization stage • HSSII budget and implementation plan being reviewed to update timelines, operationalize the budget as per current working and identify new priorities
Initiating the procurement and disposal process for cold chain equipment	• 2017/2018 Procurement plan for the program has been developed and incorporated into the departmental plan and is available • The CCEOP project management team with the coordination of the procurement specialist have begun the process of developing a disposal plan for all obsolete UNEPI assets
Conduct a national level waste management assessment	• Not done. Need TA to support the country to conduct a national assessment of health care waste management practices
Implement exceptional NCE activities	• Construct 19 district stores in new districts: Ongoing construction of 19 DVS, completion expected in August 2017 • Construct 26 semi-detached units providing 52 dwellings in hard to reach districts/areas for HWs; Ongoing construction of 26 semi-detached units, completion expected in August 2017 • Salary for three additional cold chain staff: Working with the program and receiving salary • Supervision, Monitoring & Evaluation of the ongoing construction work at national level (UNEPI & HID): Ongoing supervisions to construction sites and reports available • Support of internal audit activities: Not done • Salary for M&E Specialist for UNEPI: Working with the program and receiving salary • Salary for accountant to manage internal GAVI funds and accountability: The designated MoH staff is receiving allowance to support the accounts work. • Salary for the project administrative officer: Working with the program and receiving salary • Allowances to Project Coordinator, UNEPI, TCC Chair: Working and receiving allowance • Salaries for drivers: Working with the program and receiving allowance • Engagement of an external audit firm: Was accomplished and report available
Conduct bi-annual CCIs	• Conducted once February 2016 and report is available
Conduct Cold chain repair and maintenance	• Conducted biannual in the March and May 2016
EVM self-assessment	• Not done. It is planned for September 2017

EVM implementation plan and monitoring Review and print job aids on key EVM and cold chain maintenance tasks and distribute them to all health facilities and DVSs (include printing)	• Reviewing of Job aids done and finalised • Printing and distribution pending. To be complete by September 2017
Establish 14 logistics regional team in efficient vaccine management	• Not done. Teams have been identified, Pending orientation and deployment
Train 14 teams (of three people) to be Regional TOTs in efficient management of vaccines/EPI commodities and other essential medical supplies with emphasis on quantification, forecasting, Vaccine Tracking and Vaccine Temperature Monitoring.	• Not done. Training planned for September
Monitor implementation of TSC guidelines	• Ongoing
Design and develop an LMIS system	• Ongoing. Dash board developed consultation still ongoing
Prioritised actions from previous Joint Appraisal	***Current status***
2. Coverage and Equity: To strengthen the capacity of district and health facility teams to reach every child with immunization services	**2. Coverage and Equity: To strengthen the capacity of district and health facility teams to reach every child with immunization services**
Scale up the implementation of 2016 RED/REC approach within districts with focus on equity and coverage through health Facility catchment area mapping and micro-planning	• A total of 40 districts with immunisation inequities • RED/REC Micro planning was done in a total of 54 districts were supported
Carry out Operational level health worker training and mentorship using focused problem solving support supervision	• Conducted OPL training in 20 districts
Implement recommendations of 2016 Equity Assessment	• Conducted equity assessment, report available, findings discussed at 2017 JA, implementation ongoing
Implement recommendations of the Training Needs assessment	• Assessment done, recommendations not yet implemented. Activities planned for 2018
Support districts to reach the underserved and hard to reach communities through micro-mapping	• Micro mapping done in 54 districts as mentioned above
3. New Vaccine Support : Support and strengthen new vaccine application and introduction processes	**3. New Vaccine Support : Support and strengthen new vaccine application and introduction processes**

Rota vaccine Introduction	• Not done, due to global shortage of Rotavirus vaccine, planned for February 2018
Application for MR, MSD and Yellow Fever	• Not done, waiting for UNITAG prioritisation guidance
Support NITAG activities	• Done and ongoing
PIEs for HPV, IPV and Rota	Not done. PIE for HPV, IPV and fridge tag planned for October/November 2017
4. Financial Sustainability: Support the setting up of the Immunization Fund and its implementation as provided in Immunization Act (2016)	**4. Financial Sustainability: Support the setting up of the Immunization Fund and its implementation as provided in Immunization Act (2016)**
Support development and implementation of resources mobilization framework to ensure financial sustainability *Establish and operationalize mechanism for tracking and reporting immunization financing and expenditure*	• Ongoing, through review (stakeholder's consultation on development of implementation guidelines , incorporated stakeholder input and submitted to Ministry of Justice and the first parliamentary council for review and guidance) • Planned for gazette of the Act in Uganda gazette which is a legal requirement, presenting to the National Disease Control Working group, Senior management, HPAC and Parliament by end of 2018
Support development and implementation of resources mobilization framework to ensure financial sustainability	• Conducted and report available
Establish and operationalize mechanism for tracking and reporting immunization financing and expenditure	• Not done, Planned for 2017
5. Data and Surveillance: Support and strengthen data and surveillance Systems for improvement of quality and data use for action	5. **Data and Surveillance: Support and strengthen data and surveillance Systems for improvement of quality and data use for action**
Conduct in-depth assessment of EPI information management system and data quality	• Not done, Preparations are ongoing planned for 2017
Develop and Implement the national multi-year data quality improvement plan	• Not done, planned to be part one of the expected output of the assessment TA in 2017
Strengthen regional IDSR hub	• Concept developed, consulting stakeholders
6. HSS Grant: Support and strengthen the capacity to implement Gavi HSSII	6. **HSS Grant: Support and strengthen the capacity to implement Gavi HSSII**

Incorporate EPI content into curriculum for pre service training and implementation OPL training	• Ongoing, curriculum developed using the WHO prototype curriculum draft available awaiting endorsement by top management • OPL training is ongoing • Updated the Ministry of Education curriculum for health training institutions
7. Communication: Social mobilization campaign on routine immunization	**7. Communication : Social mobilization campaign on routine immunization**
Conduct orientations with religious leaders in low coverage districts on RI and their roles	• Not done. Strategy changed to district leadership, DHT and related sectors to capacity building to coordinate community level advocacy and mobilization activities in Busoga region; 10 districts
IPC training for health workers in low coverage districts	• Conducted EPI communication training in 10 districts of Busoga region
Review and finalisation of communication materials on RI	• Done. IEC communication package developed for different target audience
Updating of National and sub-national level EPI communication plans based on findings from recent Harvard Polling Study Findings	Not done. Planned for 2017 including risk communication strategy
8. National and Districts level dissemination of immunization act	**8. National and Districts level dissemination of immunization act**
Develop, translate and disseminate communication friendly versions of immunization act	Not done
Districts level orientation meetings focused on the roles of the immunization actors	Done in 10 districts of Busoga region
Additional significant IRC / HLRP recommendations (if applicable)	Current status: NONE

If findings have not been addressed and/or related actions have not taken place, provide a brief explanation and clarify whether this is being priorities in the new action plan (section 6 below).

Some of the activities identified in the previous Joint Appraisal were not accomplished due to:
- Competing activities in the program such as MenA campaign
- Late releases of funds causing delay in implementation

7. ACTION PLAN: SUMMARY OF FINDINGS, ACTIONS AND TECHNICAL ASSISTANCE NEEDS IDENTIFIED AND AGREED DURING THE JOINT APPRAISAL

*Briefly outline the **key activities to be implemented next year** with Gavi grant support.*

*In the context of these planned activities and based on the analysis provided in the above sections, describe the five **highest priority findings and actions to be undertaken to enhance the impact of Gavi support**, indicating timelines and Technical Assistance needs.*

Please indicate if any modifications to Gavi support are being requested, such as:

- *Changes to country targets as established earlier, either from the agreed Grant Performance Framework (GPF) or as part of the NVS renewal request submitted by 15 May;*
- *Plans to change any vaccine presentation or type;*

- *Plans to use available flexibilities to reallocate budgeted funds to focus on identified priority areas.*

Note: When specifying Technical Assistance needs, do not include elements of resource requirements. These will be discussed in the context of the Targeted Country Assistance (TCA) planning, which will be informed by the needs indicated here.

Overview of key activities planned for the next year:

1. Conduct Leadership, Management and Coordination (LMC) training for national and sub national levels
2. Build capacity of Health workers to plan and deliver routine immunisation services
3. To operationalise CCEOP, regional cold chain system and implement recommendations of the EVM assessment 2017 in order to improve vaccine availability and quality
4. Support districts to implement tailored communication plans involving non health stakeholders as key drivers of demand creation for routine immunisation services.
5. Implement the multi-year data quality improvement plan and LMIS; strengthen VPD surveillance system with special focus on AEFI detection and reporting, measles and NNT case based surveillance.

Key finding 1	**Program management, planning and financing** • Weak leadership, management and coordination at district level negatively impacting efficient resource utilization and compliance to set standards • Program requirements have expanded without matched increases in government human resources and financial allocations
Agreed country actions *The percentages refer to proportion of districts to be covered by that particular partner*	i. Conduct on site mentorship and coaching on leadership, management and coordination of UNEPI and district managers of immunization services –**UNICEF - 40%, WHO -** 40%, CHAI **(support TOT), JSI-20%.** Reactivate and support the parliamentarian immunization forum for resource mobilization and institutionalisation of immunization Act-**PATH** ii. Consolidate information from assessment to inform the contents of the Act-**PATH** iii. Support country ownership of the Addis Declaration on Immunisation (ADI) – **WHO** Revitalize the Health Man Power Centre training program for immunization Training Needs WHO
Associated timeline	April 2018 to April 2019
Technical assistance needs	Human resource and Financial through PEF

Key finding 2	**Service delivery** • According to UDHS 2016: 20% of the population is not reached with routine immunization • Inadequate appreciation and ownership of the planning process for immunization • High dropout rate for HPV vaccine at 67% and lack of optimal approach of the delivery model outside the Integrated Child Health Days
Agreed country actions	i. Review and update the micro planning tool to improve utilization **(HR TA- WHO)** ii. Conduct nationwide mentorship and supervision to develop/update and utilize REC micro plans including immunization inequity using uniform approach **(HR TA-UNICEF-40%, WHO-40% & JSI-20%)** iii. Support development and implementation of the immunization strategy for urban population **(WHO & CDC)** iv. Conduct an assessment and implementation of the Missed Opportunities of Vaccination (MOV) findings **(WHO&CDC)** v. Plan and respond for refugees through routine immunization activities and surveillance strengthening**-(UNICEF/WHO/Gavi)** vi. Strengthen the functions of UNITAG **-WHO** vii. Support districts to deliver HPV within the routine immunization schedule viii. Sensitization of district leadership, care takers and stakeholders on HPV uptake with emphasis on utilizing the school mapping of static and outreach strategies per health facility- **(UNICEF - 80% / JSI-20%)** ix. Orient Parent Teachers Association and School management committees on school health focusing on HPV **(UNICEF - 80% / JSI-20%)** x. Conduct reorientation of health workers, managers and VHT on HPV starting with the 2017 polio campaign in 73 districts and focused support on low performing districts **(WHO 80% /CHAI-20%)** xi. Support implementation of the 2017 HPV PIE recommendations **-WHO**
Associated timeline	April 2018 to April 2019
Technical assistance needs	Human resources already available in country and financial support through PEF
Key finding 3	***Immunisation supply chain and Logistics management*** • Stock out of vaccines and related supplies at health facility • Inadequate cold chain maintenance, temperature monitoring and reporting • Inadequate human resource at the national and District level • Lack of country specific guidelines to implement the shift that integrates storage of Vaccines and non EPI items in the EPI fridges

Agreed country actions	i. Operationalize the stock management and cold chain tools and identify platforms for integration **(UNICEF, PATH,CHAI) HR -TA** ii. Support the implementation of the CCEOP plan (To conduct health facility assessment, monitoring and supervision, developing ODP) **UNICEF 70%, PATH 15%, CHAI 15% TA & funds** iii. Functionalize the regional model of cold chain equipment management **(UNICEF, PATH TA-HR)** iv. Implement the Disposal plan of obsolete equipment as per GOU legal frame work**(Funds for disposal)-PATH** v. Support implementation of recommendations of the EVMA – **UNICEF-60%, PATH-20%, CHAI-20%** vi. Procure and distribute the inner fridge compartments for existing fridges to separate EPI and non EPI supplies **-UNICEF**
Associated timeline	**April 2018 to April 2019**
Technical assistance needs	**Human resources and financial through PEF**
Key finding 4	**Social Mobilization:** • Lack of sustained engagement of VHTs, communities, opinion leaders and stakeholders in routine immunization activities
Agreed country actions	i. Engaging the non-health stakeholders (CAO, RDC, LC5, district planner, Secretary for Health, district councils, CDOs, etc.) in performance monitoring for immunization **(UNICEF-80%, JSI-20%)** ii. Support districts to develop, implement and monitor tailored communication plans for routine immunization including risk communication-**UNICEF**
Associated timeline	April 2018 to April 2019
Technical assistance needs	Financial support through PEF
Key finding 5	**Vaccine Preventable Disease Surveillance:** • Suboptimal data management, Low detection and reporting for notifiable vaccine Preventable Diseases (AEFI, measles, NNT) through case based surveillance
Agreed country actions	Strengthen Vaccine Preventable Diseases **(WHO)** i. Revitalize and regularly monitor the EPI/IDSR Support supervision strategy (supervision, mentorship) **-WHO** ii. Strengthen the new vaccine sentinel surveillance sites including capacity building in documenting impact of NVs **-WHO** iii. Strengthen capacity of Health workers to investigate, document and report NNT-**WHO**
Associated timeline	April 2018 to April 2019
Technical assistance needs	Financial support through PEF

8. JOINT APPRAISAL PROCESS, ENDORSEMENT BY THE NATIONAL COORDINATION FORUM (ICC, HSCC OR EQUIVALENT) AND ADDITIONAL COMMENTS

Briefly describe how the Joint Appraisal was reviewed, discussed and endorsed by the relevant national Coordination Forum (ICC, HSCC or equivalent), including key discussion points, attendees, key

recommendations and decisions, and whether the quorum was met. Alternatively, share the meeting minutes outlining these points.

If applicable, provide any additional comments from the Ministry of Health, Gavi Alliance partners, or other stakeholders.

The JA report development was a joint collaborative effort involving all key stakeholders for the EPI program. The planning process was discussed and agreed on by UNEPI, Gavi and EPI partners before the meeting and this provided the best time and availability of all the stakeholders.
The JA report was presented to the EPI technical Committee which conducts monthly technical meetings and is comprised of all immunization stakeholders; WHO, UNICEF, CDC-AFENET, CHAI, USAID-MCSP, PATH, CSO and Gavi FCE. This provided inputs and approved the report for presentation to the Ministry of Health management structures for inputs and approval. These included the National Disease Control (NDC) technical working group, the Senior Management Committee (SMC) and Health Policy Advisory Committee (HPAC). The HPAC is the highest committee for Operational Policy direction and is the equivalent of the Immunisation Coordination Committee. All these committees contributed and approved the JA report. Among the comments made by the HPAC were:

- The report shows stagnating performance and actions should be taken to improve performance
- Requested UNEPI to report back to HPAC on strategies to address low demand for immunisation services in community
- HPAC recommended the use of community resource persons and local media to improve immunisation uptake through increasing demand
- HPAC recommended that all partners receiving PEF should be engaged towards improving routine immunisation uptake
- The HPAC appreciated the support provided by Gavi in support of MoH-UNEPI
- HPAC approved the establishment of ICC as a stand-alone committee chaired by the Permanent Secretary MoH and regular report to HPAC meetings

9. ANNEX

Compliance with Gavi reporting requirements

Please confirm the status of reporting to Gavi, indicating whether the following reports have been uploaded onto the Country Portal.

It is important to note that delayed reporting may impact the decision by Gavi to renew its support.

	Yes	No	Not applicable
Grant Performance Framework (GPF) reporting against all due indicators	Yes		
Financial Reports			
Periodic financial reports	Yes		
Annual financial statement	Yes		
Annual financial audit report	Yes		
End of year stock level report		No	
Campaign reports	Yes (Men-A)		
Immunisation financing and expenditure information		No	
Data quality and survey reporting			
Annual desk review	Yes		
Data quality improvement plan (DQIP)	Yes Draft		
If yes to DQIP, reporting on progress against it			NA
In-depth data assessment (conducted in the last five years)		No	
Nationally representative coverage survey (conducted in the last five years)		In progress in 2017 but not reported yet	
Annual progress update on the Effective Vaccine Management (EVM) improvement plan	Yes		
Post Introduction Evaluation (PIE)		Not yet for IPV/HPV PIE but planned for 2017	
Measles-rubella 5 year plan		No	
Operational plan for the immunisation program	Yes – annual EPI workplan		
HSS end of grant evaluation report		Not yet – planned after HSS1 end (Aug 2017)	

HPV specific reports	Yes – rapid assessment (CHAI); Gavi FCE reports have covered	No PIE yet – expected October 2017	
Transition Plan			NA

In case any of the required reporting documents is not available at the time of the Joint Appraisal, provide information when the missing document/information will be provided.
